Attitudes of Mathematics Teachers in Turkish Lower Secondary Schools Towards the Inclusion of Children with Special Educational Needs in Those Schools

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Declaration

I, Bahaddin Demirdis, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

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Abstract

Inclusive education is an educational practice based on the premise of equality that advocates for equal access to educational opportunities for all children, regardless of their special educational needs and disabilities. Teachers have a major responsibility in terms of inclusive education practices, and their attitudes and knowledge are key factors in the successful practice of inclusive education. The current study investigated the attitudes of mathematics teachers in Turkish lower secondary schools towards the inclusion of children with special educational needs in those schools.

A mixed-methods approach was adopted in the current study. Eighteen interviews and 262 questionnaires were conducted with mathematics teachers working in Turkish lower secondary schools. The findings of the current study showed that mathematics teachers have a negative attitudes towards inclusion of students with special educational needs. To provide a deeper investigation of this negative attitude, factors affecting teacher attitudes were also investigated. Training and experience, age, years of teaching experience, educational environment-related and child-related factors all had an effect on mathematics teachers' attitudes towards inclusion, while gender and having a friend with SEN had no influence on their attitudes. For example, younger mathematics teachers had more positive attitudes towards inclusion of children with special educational needs than older and more experienced teachers.

Teachers working in rural areas showed more positive attitudes than other teachers in semi-urban and rural areas. Moreover, any type of training has a positive effect on mathematics teachers' attitudes towards inclusion of children with special

educational needs. It was also revealed that most mathematics teachers did not make and implement individualised education programmes for each student with SEN. Finally, recommendations were offered, including fostering a more positive attitude towards inclusion among mathematics teachers, and enhancing pre-service and in-service training and assistance.

Impact Statement

Inclusive education is strongly dependent on the willingness and skill of individual teachers, who are crucial to developing inclusive settings that depend on awareness, expertise, comprehension, skills, and attitudes (Hornby, 2010). The significance of teachers' attitudes has been emphasised, as well as the connection between positive attitudes and effective inclusive practices (Avramidis & Norwich, 2002).

Several studies have examined teachers' attitudes towards inclusion in many countries, however, existing studies on Turkish teachers' attitudes towards inclusion of children with special educational needs (SEN) are insufficient and limited at the time of the current thesis submission. For example, there has been no existing research examining Turkish teachers' attitudes towards inclusion of students with SEN in-depth and more specifically mathematics teachers in lower secondary schools. As a result, the present research is significant and unique for many reasons.

First, the current study should assist researchers, educators, and policymakers in gaining a better understanding of mathematics teachers' attitudes towards inclusion of children with SEN in Turkish lower secondary schools. Earlier research on teachers' attitudes towards inclusion of children with SEN in Turkey has not comprehensively investigated teachers' attitudes towards inclusion and the impact of various factors on these attitudes. For example, most studies have only carried out single city centres with few schools and do not reflect the broader attitudes of teachers across Turkey.

Second, the study used a valid and trustworthy instrument that has been implemented several times globally, assisting in narrowing the gap between prior research findings and helping to explain some of the discrepancies. For example, a revised version of the ‘Opinions Relative to the Integration of Students with Disabilities’ (ORI) scale was used in the current study; the ORI has been used as a valid and safe tool in many recent studies that measure teachers’ attitudes towards inclusive education in regular classrooms (e.g., Rakap et al., 2016; Alasim & Paul, 2019).

Third, the thesis provides a well-informed viewpoint and understanding that could aid in reforming and refining inclusive practices and the identification and process of inclusion of students with SEN in regular classes. Fourth, it could add to the body of knowledge by supplementing the limited number of existing studies on teachers’ attitudes towards inclusion of students with SEN in Turkey. Finally, it could stimulate other researchers to duplicate the research to corroborate its findings or to do additional research into the many factors that impact teachers' attitudes, both positively and negatively.

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Chapter 1: Introduction

1.1 Setting the scene

Since the Salamanca Statement (UNESCO, 1994), inclusive education has been a contentious subject (Ainscow et al., 2019). Students with special educational needs (SEN) who need more help owing to their unique condition have been integrated into mainstream schools to prevent social exclusion and promote equity via classroom diversity (Ainscow, 2005; Magnsson, 2019). According to Ainscow et al. (2006), inclusive education is a process that focuses on identifying and removing barriers to the presence, involvement, and achievement of all students. Simultaneously, it prioritises students at risk of discrimination, exclusion, or underperformance. However, the term 'inclusive education' is now widely understood to refer to all students, as well as school staff and members of the community. Inclusion is primarily concerned with human rights, equity, and social justice, as well as the challenge of establishing a non-discriminatory culture (Armstrong & Barton, 2007).

The Salamanca Statement raised global awareness and facilitated inclusion in educational institutions, while encouraging governments to implement inclusion and provide educational services to all students (Adams & Tan, 2020). However, the Statement's inclusive education model is philosophically and practically distinct from students with SEN and from the 'integration' or 'mainstreaming' model of education (Bunch, 2015). In the Salamanca Statement, inclusive education was used solely to meet the special educational needs of students with disabilities, enabling them to integrate with their peers in regular education. According to the inclusion model,

students with SEN would spend the majority (or all) of their education with their peers in mainstream classes (Allen & Cowdery, 2014), as inclusion requires the creation of an environment in which students interact regardless of ability (Pasha et al., 2021).

Inclusive education ensures equal access to education that meets students' educational requirements (Moschkovich et al., 2018). Existing studies indicate that inclusion is a positive framework for all students (De Silva, 2013; Makoelle & Somerten, 2021). However, debates persist about the educational benefits of inclusion for students with and without SEN, as well as the problem of equal education. For instance, students with SEN who attend inclusive settings typically develop a greater sense of self-esteem as a result of their teachers' higher expectations and their better interactions with other students (Armstrong & Tsokova, 2019). The benefits of inclusion go beyond social and emotional development. Additionally, students with SEN who attend regular education demonstrate greater academic progress (Henninger & Gupta, 2014). On the other hand, inclusion of children with SEN into regular education does not always result in meaningful educational access (Strogilos, 2012). Schwab (2018) discussed some of the disadvantages of inclusion from the perspective of students, parents, and teachers, stating that because typically developing students frequently reject and are less welcoming in classrooms to students with SEN (Avramidis et al., 2017), students with SEN do not belong in mainstream education (Garrote et al., 2020). This finding implies that inclusive education may be detrimental to students' social development.

'Inclusive education' is founded on the principle of offering a supporting and appropriate education to everyone in order to fight prejudice at all levels of society,

particularly in education (Kauffman et al., 2018). However, inclusion is a contentious subject that has generated discussion about what constitutes the best supportive school environment for children with SEN (Florian, 2019). As numerous studies have observed, the lack of a focus in special education discourse continues to obstruct increasingly radical efforts. Indeed, this conservative narrative has served to protect opponents of the reforms they anticipate (Ainscow et al., 2019). Despite these obstacles, numerous countries have made major efforts in recent years to reorient educational policies and practices toward a more inclusive stance (Ainscow, 2020).

In many countries around the world, including Turkey, education policies are centred on providing a suitable educational environment to every child enrolled in mainstream school. Although inclusive education is a relatively new concept in Turkey, there have been a number of beneficial developments in the education of students with SEN. There has been a rapid expansion in inclusion practices within mainstream schools, despite the lack of suitable support services for children with SEN and aid for teachers working in inclusive settings (Melekoglu, 2014). These variables create many difficulties, as most teachers are not prepared to implement inclusive practises and teach students with SEN. As a result, a high number of these students are unable to receive a sufficient (or any) education (Melekoglu, 2014). The majority of teachers in inclusive settings have been found to be anti-inclusive and teachers and school administrations frequently hold negative attitudes towards children with SEN (Melekoglu, 2013).

It is thus hard to achieve full inclusion and acceptance of students with SEN unless positive attitudes are fostered among teachers towards the inclusion of students with SEN. It is more critical to remove psychological barriers than it is to remove physical or environmental restrictions. While construction standards regulate certain physical and environmental variables, no legislation exists to compel individuals to modify their ideas (Antonak & Larrivee, 1995).

Inclusive education is highly dependent on the willingness and ability of individual teachers, who play a critical role in establishing inclusive learning environments that are highly dependent on awareness, expertise, comprehension, abilities, and attitudes (Hornby, 2010; Horne & Timmons, 2009). Successful inclusive education practices require teachers' positive attitudes (Varcoe & Boyle, 2014; Vaz et al., 2015). Additionally, emphasis has been placed on the critical nature of teachers' attitudes and the link between positive attitudes and effective inclusive practices (Avramidis & Norwich, 2002). Teachers' attitudes towards the inclusion of students with SEN are influenced by their knowledge of SEN, their feelings towards students with SEN, and their willingness to engage with those students (Avramidis et al., 2019). Thus, teachers who hold negative attitudes towards inclusion may cause the failure of inclusive practices, as a result of students receiving insufficient educational opportunities (Dias & Cadime, 2016; Monsen et al., 2014). Positive attitudes towards teachers are determined to be a critical component of successful inclusive practise, whereas negative attitudes are identified as a barrier to inclusion (Wolstenholme, 2010). Numerous studies have identified negative attitudes towards students with SEN as a significant impediment to successful inclusive education practices (Avramidis et al., 2000; Blackman et al., 2019;

Li & Cheung, 2021; Van Mieghem et al., 2020; Woodcook & Woolfson, 2019). In the Turkish context, although there is insufficient data on teachers' attitudes towards inclusion in Turkey at present, existing studies indicate that Turkish teachers have negative attitudes towards the inclusion of students with SEN (Ozer et al., 2013; Rakap & Kaczmarek, 2010; Secer, 2010).

Teachers' attitudes towards inclusion can be influenced by their values and awareness, as well as their feelings and actions towards students with SEN. The three components model has the ability to determine their actual and potential responses to inclusive education practices, either explicitly or implicitly. The findings of studies using this model in the field of special education indicate that the three components of attitude may provide a more accurate representation of the nature of attitudes (e.g., Avramidis et al., 2000; De Boer et al., 2011; Paramitha & Kurniawati, 2019; Sermier Dessemontet et al., 2014).

1.2 Research aims and questions

Studies in Turkey have highlighted negative attitudes towards students with SEN as a significant barrier to successful implications of inclusive education (e.g., Rakap & Kaczmarek, 2010; Ozer et al., 2013). There is a rapidly increasing volume of research examining teachers' attitudes towards the inclusion of students with SEN, as teachers are critical components of effective inclusive education practices (e.g., Avramidis et al., 2000; Kurth & Forber-Pratt, 2017; Shin et al., 2019). Most research

in this field investigates the situation in ‘developed’ countries rather than ‘developing’ countries (Lee & Low, 2013). Additionally, the objectives and significance of inclusive education and teachers’ attitudes are often considered exclusively in the educational systems of developed countries.

At the time of the current thesis submission, data related to Turkey in this field are insufficient and limited. For example, a considerable number of teachers in Turkey have inadequate knowledge of inclusive education and training has the potential to generate positive change (Sarı, 2007; Sari et al., 2009; Rakap et al., 2016; Ozokcu, 2018a; Ozcan, 2020). Different teacher education programmes are applied for each subject (e.g., math, art and science) at universities in Turkey and modules/courses related to special and inclusive education take place differently among these different teacher education programmes. However, only a few studies have examined the specific subject of teachers attitudes towards the inclusion of students with SEN. Those studies conducted in Turkey have not comprehensively examined teachers’ attitudes towards inclusion and the impact of various factors on these attitudes.

Understanding teachers' attitudes and the variables that influence them is necessary for the creation of a model of inclusive practise fit for Turkish mainstream schools. Therefore, the aim of the current study is to investigate the attitudes of mathematics teachers in Turkish lower secondary schools towards the inclusion of children with SEN in those schools. This primary aim led to the formulation of two research questions:

1. What are the attitudes of mathematics teachers in Turkish lower secondary schools towards the inclusion of children with special educational needs in those schools?
2. What factors influence these teachers' attitudes towards the inclusion of children with special educational needs in Turkish lower secondary schools?

1.3 Research design

The methodological approach taken in this study is a mixed methodology based on an initial engagement with the existing literature and the nature of the research questions. A combination of quantitative and qualitative approaches was used in the data analysis. A mixed-methods approach allows for the collection of the rich data necessary for an in-depth examination of the attitudes of mathematics teachers in Turkish lower secondary schools towards the inclusion of children with SEN in those schools and the variables that influence these attitudes regarding the implementation of inclusive education in Turkey. A quantitative method (questionnaire) was used to investigate overall attitudes (research question 1), while a qualitative method (semi-structured interviews) was used to gain a better understanding of the attitudes as well as the factors affecting teachers' attitudes (research question 2). The mixed-methods strategy necessitates multiple design decisions on the part of the researcher, as it can involve a number of sequential and concurrent approaches (Khaldi, 2017).

After establishing the setting for the current study, it is essential to offer an overview of my professional experience to demonstrate my positionality in the current study and to assess any potential effects (positive or negative) which it may have had on this research. Bogdan and Biklen (1997) suggest that researchers cannot separate their research and writing from their prior experiences. It is thus critical for me to discuss my background and the experiences that have informed my thesis.

In terms of my professional experience, I graduated from the department of mathematics in teacher education at university. Between 2012 and 2014 I had the opportunity to work as a mathematics teacher in a lower secondary school in Turkey. When I started working as a teacher, like many other teachers in Turkey, I had little or no knowledge of inclusive education. The education I received during my university years did not include a course for inclusive education. I had difficulties for a long time at the point of application, since I did not have knowledge about inclusive education. The teacher's guidebooks provided alongside the curriculum did not provide the necessary information and guidance for inclusive education. In addition, during my work, I witnessed the knowledge and attitudes of other teachers towards the inclusion of students with SEN. This working experience inspired me to develop the idea of researching inclusive education in Turkey and to explore the attitude of mathematics teachers towards its implementation. I believe that inclusive education is a process that focuses on identifying and eliminating obstacles that prevent all children from being present, participating, and succeeding. Simultaneously, it identifies and assists children who are at risk of discrimination, exclusion, or underperformance.

1.4 Overview of the thesis

The overall structure of the current study takes the form of seven chapters. Chapter 1 explains the study and its context, including the study's objectives and research questions, as well as the study's rationale and significance. Additionally, the chapter provides a short overview of the research context and design.

Chapter 2 provides a review of the existing literature, with a threefold purpose. First, to provide a framework k for data collection and analysis in this research; then, to examine teachers' attitudes toward inclusion of children with SEN; and finally, to analyse the notion and significance of inclusive education. The chapter seeks to provide a review of pertinent studies in this subject to contextualise and explain the study's location within the existing body of literature, as well as to highlight the connections between the research questions and the major themes in the literature. The literature review begins with an examination of inclusion and its evolution as a concept and concludes with an examination of inclusion's objectives and benefits. The review examines inclusion from a variety of perspectives and considers theories and their implications for inclusive education in this study, including an examination of attitudes, which is critical for understanding how attitudes may be interpreted in light of teachers' daily classroom practices. International research on this subject, with a particular emphasis on that conducted in Turkey, is analysed to establish the study's place within the existing body of knowledge by identifying areas that require additional investigation and determining appropriate techniques for conducting this study.

Chapter 3 is concerned with the methodology used for this study. It examines the methodological concerns and methods associated with the design of the study, as well as the gathering and analysis of data. It defines the mixed methods approach used in this research and discusses the instruments used to gather data and their development. Additionally, it outlines the study's demographic and sample, as well as the data gathering processes and inquiry stages. It also discusses the procedures and actions used to ensure the validity and reliability of the study results, as well as the data analysis mechanism and process, and it addresses ethical concerns.

Chapter 4 provides a summary and analysis of questionnaire data regarding the attitudes of teachers towards inclusion of students with SEN. To begin, demographic information about the participants is offered. Then, item by item, descriptive statistics on questionnaire responses are presented. Following that, an independent sample t-test and a one-way ANOVA were used to determine the factors that influence mathematics teachers' overall attitudes about the inclusion of children with special educational needs in Turkish lower secondary schools. Finally, differences between subscales are presented using independent sample t-tests and one-way ANOVA.

Chapter 5 introduces the qualitative analysis process and outlines the causes and circumstances that influence teachers' attitudes toward inclusion of students with SEN in Turkish lower secondary schools. The chapter is presented using interview data that was analysed using thematic analysis, which generated themes and sub-themes and included analysing each participant's data in the current research separately;

viewpoints were then merged to construct outlines of participants' perspectives on each theme and sub-theme.

Chapter 6 discusses the results of the study regarding the attitudes of mathematics teachers in Turkish lower secondary schools towards the inclusion of children with SEN. It examines both quantitative and qualitative results, including comparisons of these results, and their relevance and connections to the existing literature.

Finally, Chapter 7 summarises the study's findings and implications. It summarises the major results and draws conclusions from the research, with a focus on the findings' relevance to the Turkish context. Additionally, it discusses the study's prospective implications for inclusive practices in Turkey. Lastly, this chapter discusses the study's limitations and makes recommendations for future research in the field.

Chapter 2: Literature Review

The current study aims to understand the attitudes of mathematics teachers towards the inclusion of children with SEN in Turkish lower secondary schools and offers an in-depth and critical look at the inclusive practices from the teachers' perspective. The literature study begins with an examination of inclusion, its evolution as a concept, and the rationale for its creation, before finishing with an examination of inclusion's aims and advantages. Therefore, the national context of the current study is mainly Turkey, and the literature review focuses on special education in that country. The review addresses inclusion from a variety of different viewpoints and investigates theories and their implications for inclusive education, including exploring attitudes, which is important for understanding how attitudes might be interpreted in light of teachers' daily practice in the classroom. International research on this subject, with a particular emphasis on that performed in Turkey, will be examined to establish the study's place within the literature by highlighting areas that require more investigation, and determining appropriate techniques for conducting this study. The final section discusses teachers' attitudes towards inclusion, issues that affect their attitudes, and the factors that may impact the attitudes of teachers towards inclusion.

2.1 Inclusion: definitions and practices

Following the Universal Declaration of Human Rights (1948), significant efforts have been made in certain parts of the world to ensure that appropriate education is provided to students with SEN. The document states:

> *Every individual and every organ of society, keeping this declaration constantly in mind, shall strive by teaching and education to promote respect for these rights and freedoms and by progressive measures, national and international, to secure their universal and effective recognition and observance* (UNESCO, 1948).

The notion of inclusion holds that every student is entitled to attend their local school, while each member of school staff is required to respect their individual identity, along with their appearance, culture, beliefs, interests and uniqueness (Armstrong et al., 2016). Inclusion is a notion that, although it applies to all, is particularly important for the education of students with disabilities or special educational needs. Inclusion has proven to be one of the most significant, but least well understood, models of teaching (Haug, 2017). The model has been highlighted at global, regional, and local educational levels, prompting considerable debate concerning its implications. Inclusive education is a vital concept, representing a potential transformation of existing attitudes that have excluded many students from mainstream education (Kutay, 2018). Inclusive education is based on the belief that every human being is entitled to access education on an equal basis. However, inclusive education has remained an elusive concept, subject to many interpretations, generally dependant on: the identity of those using the term; the

context in which it is employed; and its purpose (Armstrong, Armstrong and Barton, 2016).

UNESCO established the Salamanca Declaration and Framework for Action in 1994, which prioritises the establishment of education for all on an equal basis. This declaration put forward a particular consideration of the issue of children with special educational needs (SEN) (Ainscow, 2020). The statement set out guidance for governments, including: students with special education needs must be given access to suitable mainstream schools in a child-centred pedagogical environment that is capable of meeting their needs; all children must be registered in mainstream schools, apart from those children designated as requiring a special needs school (UNESCO, 1994).

The Salamanca Declaration both developed global awareness and facilitated inclusion in educational institutions, while governments were encouraged to implement inclusion and offer all students education-related services (Adams & Tan, 2020). However, the inclusive education suggested in the Declaration differs both in philosophy and practice from students' special educational needs (SEN) and differs from the 'integration' or 'mainstreaming' model of education (Bunch, 2015). Inclusive education in the Declaration was only employed to address the special educational needs of students with disabilities, enabling them to integrate with their peers in a mainstream classroom. The inclusion model proposed that students with SEN would spend most (or all) of their education with their mainstream peers (Allen & Cowdery, 2014), as inclusion demands the development of a setting in which students interact regardless of ability

(Pasha et al., 2021). However, the Salamanca Declaration provided insufficient information on how to develop this setting.

A fundamental difficulty for education systems everywhere is working out how to include all children in school (Ainscow, 2020). About a million children in economically poorer nations were not able to attend formal education (UNESCO, 2015). Faced with these difficulties, there is evidence of rising interest in the idea of inclusive and equitable education (Ainscow, 2020). However, the field remains unclear about the actions necessary to accomplish this idea in policy and practice (Ainscow, 2020). One of the main reasons the field remains unclear could be that the existing studies cannot be generalized at the international level, since education differs from country to country.

Inclusion recognises and responds to diversity in an open, shared and democratic community, including the right 'to be oneself' (Armstrong & Tsokova, 2019). The concept of inclusion therefore differs from that of integration, which concentrates on how individual students (or a group of students) fit into a class or a school (Allen & Cowdery, 2014). Inclusive education demands a conversation concerning the social, cultural, educational, and physical life of a school, while integration traditionally refers to ideas and practice relating to students labelled as having SEN (Rodriguez & Garro-Gil, 2015). While the integration method is intended to meet the requirements of children with SEN, it results in increased labelling of individuals as a result of pre-existing structures and attitudes. The main difference between inclusion and integration models is that integration views children's perceived deficits as barriers to involvement, whereas

inclusion considers any such barriers as arising from social attitudes, along with policies and procedures in place in schools and colleges (Rodriguez & Garro-Gil, 2015).

To develop an effective inclusive setting, teachers of general and special education need to work in collaboration with the entirety of the class to support students with SEN and meet their individual educational needs (Buli-Holmberg & Jeyaprathaban, 2016). To develop the effective inclusive setting, it is necessary to better understand and identify students' special educational needs and disabilities. For instance, Kirk and Kirk (1983) defined a learning disability as relating to disorders and delays triggered by potential mental disorders and/or emotional or behaviour disorders during one or more aspect of: speech; spoken or written language; arithmetic; and a range of school-based subjects. The outcome is not seen as related to mental delay, sensory disability, or cultural and educational conditions (Kirk & Kirk, 1983).

Inclusive education has been seen as significant since universal accessibility to education is widely considered to be one of the most effective tools for ensuring a fairer society, along with promoting social cohesion and confidence. The initial aim of inclusive education was to concentrate on students with SEN, who had not previously been included in mainstream education (Forlin, 2008). The focus was on students with SEN only, as stated above, but later widened its scope. Therefore, inclusion is regarded as a far broader practice than having access to mainstream schools, focusing on inequality and justice, as well as the inclusion of all students, regardless of disability, race, ethnicity or special needs (Forlin & Sin, 2010). The aim of inclusive education subsequently suggested focusing on the concept of equity and social inclusion, rather

than simply aspects of disability. Likewise, Terzi (2005) claimed that inclusion has been considered within the greater theoretical context of social justice, involvement and advocacy and that this philosophy has been centred on an assumption that inclusive education should be equitable and available and adapted to the requirements of all children.

Although there is now a general recognition of the concept of inclusive education, the term ‘inclusion’ remains contentious, being somewhat ambiguous and failing to clearly indicate its relationship to students with SEN. According to the existing literature, inclusion as an educational notion lacks a specific agreed-upon definition and educational researchers have offered differing definitions. Avramidis and Norwich (2002, p.131) stated that it was:

> A restructuring of mainstream schooling that every school can accommodate every child irrespective of disability (‘accommodation’ rather than ‘assimilation’) and ensures that all learners belong to a community.

Ainscow et al. (2006) defined inclusive education as a process that focuses on identifying and removing barriers to all students' presence, involvement, and achievement. Simultaneously, it places a special emphasis on students who are in danger of discrimination, exclusion, or underperformance. However, the term 'inclusive education' is currently seen as referring to all students, along with school staff and community. Armstrong and Barton (2007) viewed inclusion as being primarily concerned with human rights, fairness and social justice, accompanied by the challenge of establishing a non-discriminatory culture. These can be seen as the values upon which

inclusive policy and practice are currently based. However, Booth (2003) viewed participation in inclusive settings as consisting of learning with others, including active involvement and collaborating in shared lessons, while being accepted as an individual (Booth, 2003). Booth's definition supports a view of inclusive education as offering equal access and opportunities for all learners, not only students considered 'vulnerable' or with SEN.

Guralnick (2001) viewed complete inclusion as being unable to benefit all SEN students, highlighting a need to recognise differences in relation to students' cultural circumstances and in the degree of involvement of those both with and without SEN. Guralnick (2001) outlined four models of inclusion, as discussed below.

1. Full inclusion: This model demands the complete integration of students with SEN into mainstream school programmes (Nishan, 2018). As with any model, its success requires preparation. All classes are required to be fully adapted to satisfy the requirements of each individual student and teacher, including specialists providing a periodic or continuous services to students with SEN (Mangal & Mangal, 2019). Full inclusion can be problematic to achieve in the absence of adequate resources, as well as due to teachers' differing attitudes towards inclusion (Mangal & Mangal, 2019).
2. Cluster inclusion: This model is like full inclusion in that it allows for the presence of a small group of children with special needs inside a regular classroom, accompanied by their own special needs teacher (Odom et al., 2009). Several parallels exist between the cluster and partial inclusion models (i.e.,

‘mainstreaming’). Students with SEN are taught for part of the day in the mainstream classroom with their typically developing peers, with the other portion spent in a special education school, or a resource room within the mainstream school (Cumming & Dickson, 2013).

3. Reverse inclusion: This model ensures that mainstream learners are taught outside public schools for a brief period, without any specific requirement to communicate in a special education school with students with SEN (Schoger, 2006). Reverse inclusion allows SEN students to create a close relationship with their typically developing peers, while at the same time being supported in the development of their social and communication skills (Odom et al., 2009). The benefits of this model are not limited to students with SEN. Reverse inclusion is also beneficial for students without SEN by providing those students with a chance to enhance their social skills (Schoger, 2006).
4. Social inclusion: This model offers a minimum level of contact between students with and without special needs (Koster et al., 2009), as they are taught in separate classrooms within the same school. This allows students with SEN to be taught according to their specific needs by special education teachers, while facilitating their interaction with others during free play and other recreational activities (Odom et al., 2009). Compared to other models, this model gives students limited time for their social skills.

Inclusive education is delivered in accordance with cultural and national factors (Artiles et al., 2011). The ideal objective of all inclusion models is the encouragement of academic achievement and engagement for students with and without SEN within the

school setting (Schuelka et al., 2019). Models and definitions of inclusion vary according to countries and social factors and there is no single fully accepted definition, as previously stated, but all discussion of the inclusion definition could be seen to encompass several comparable points, including: participation, educational rights, equal opportunities, acceptance, and access for all students to appropriate education (Frostad & Pijl, 2007; Turnbull & Turnbull, 2001; Voltz, et al., 2001).

This section has discussed the development of the roots of inclusive education. It was stated that the history of inclusion was firstly globally discussed in the Salamanca Statements. Although there were some obstacles, the Salamanca Statements were important in the history of inclusion. In addition, inclusion definitions were presented to provide a better understanding of the current study. As the idea of inclusion has changed over time, definitions have changed too. These definitions, which were more SEN-oriented at the beginning, were later replaced by the broader idea of "offering equal access and opportunities for all learners". Definitions of inclusion were presented with a critical approach, considering various factors. These factors are included as the common point of these definitions, which are equality, rights, participation, and access for all students to appropriate education.

2.2 Inclusion in mathematics education

Most mathematics teachers and researchers consider mathematics to be a coherent base of information comprising ideas, methods, reasoning, and interaction. In this

context, the aim of educational mathematics is to develop a foundation of knowledge defined by relationships between various mathematical disciplines, and knowledge which could be used to model and solve problems and to clarify mathematical principles (National Council of Teachers of Mathematics, 2014). Furthermore, researchers in the field of mathematics education have seen learning as an activity though which children develop knowledge by dynamically linking new knowledge to their existing knowledge and by cooperating with others to aid in difficult circumstances (Sheppard & Wieman, 2020).

However, little attention has been paid to inclusion practices in mathematics education. The term ‘inclusion’ is often applied in mathematics education, curriculum texts, and studies, as well as among educators (e.g., Askew, 2015; Solomon, 2009). Studies on special and inclusive education in mathematics (Kollosche et al., 2019; Ross, 2019; Schmidt, 2016) reveal an increasing concentration on inclusive education in mathematics education. Nevertheless, these studies often focused on the aspects of inclusion indirectly, and no study has been concentrated clearly on their definition or importance in the field of mathematics education (Ross, 2019). The topic of inclusion has also been addressed in several publications. The form of inclusive education in mathematics education is implicitly addressed, with linked concepts which include an emphasis on equity (Darragh & Valoyes-Chávez, 2019; Straehler-Pohl et al., 2014) and involvement (Jaremus et al., 2020; Smith, 2020). This gap could be explained by the lack of an inclusive education theoretical model in the field (Figureiras et al., 2016).

In conclusion, when inclusion is exploited ideologically, its meanings and values are stated and represent an inclusive outlook. However, if the concept is not tied to operationalizing inclusion, it may have little influence in classrooms. If inclusion is only a teaching method, it is difficult to demonstrate why one should engage with inclusion in mathematics education. As a result, the concept of inclusion is a field that needs to be examined in more detail, integrating mathematics to better understand inclusion practices in mathematics education. In the next section, the benefits and drawbacks of inclusion are discussed in relation to debates on inclusion practices.

2.3 The benefits and drawbacks of inclusion

Inclusion provides equal access to education and responds to the educational needs of students (Moschkovich et al., 2018). Existing studies have generally indicated inclusion to be a beneficial framework for all students (Makoelle & Somerten, 2021). However, ongoing discussions of the educational benefits relate to the inclusion of students with and without SEN, as well as the issue of equal education. Several aspects have often proved controversial. In the next two subsections, these aspects are discussed in the light of studies in the existing literature.

2.3.1 Educational benefits of inclusion

Several studies have outlined the benefits of inclusive education for students both with and without SEN (Graham, 2020; Schuelka et al., 2019; Storey, 2020). For example, Hehir et al. (2016) observed that there were academic, social and emotional benefits for all students attending a regular programme. Many other studies have presented similar results. Mangal and Mangal (2019) outlined additional academic and social advantages, such as how inclusive education results in students being better prepared for adulthood, while Hehir and Katzman (2012) reported that inclusive education provides more effective and straightforward access to the curriculum in regular education. It has been frequently cited that inclusive education has a role in improving social skills among students with SEN as well as students without SEN. Moreover, inclusion helps students without SEN to develop improved tolerance and a positive attitude towards individuals with differences, which can also improve their views of social equality (Hehir et al., 2016). Thus, inclusive education can be considered as enhancing social relationships and attitudes; educational abilities relating to the acquisition of knowledge; and family participation in society (Pather & Slee, 2018).

Various studies have demonstrated that students with SEN attending inclusive settings tend to develop increased self-esteem as a result of firstly, their teachers' higher level of expectations and secondly, their positive relationships with other students (Armstrong & Tsokova, 2019). The advantages of inclusion are not limited solely to the field of social and emotional growth. Students with SEN participating in regular education also demonstrate higher levels of academic achievement (Henninger

& Gupta, 2014). Studies have demonstrated the positive academic outcomes of inclusion across multiple nations and types of SEN throughout the years. These studies demonstrated that educating children with SEN in mainstream classes, regardless of the kind or degree of their needs, resulted in academic development. For example, Henninger and Gupta (2014) noted that inclusive education offers students with SEN opportunities to participate in challenging educational tasks, while other findings have indicated that such students show higher levels of achievement in examinations, as well as rates of graduation (Adams et al., 2018).

The advantages of inclusive education are not limited only to students with SEN. Firstly, the presence of additional staff can be seen to benefit all students, while inclusive education in small groups offers additional opportunities for individual attention (Bakken & Obiakor, 2016). Secondly, the benefits of inclusion for children without SEN also include: a greater degree of accessible and individualised education programmes; additional support facilities and technology; and the use of advanced teaching methods (Hehir et al., 2016). Several studies have supported this finding with similar results. For example, a study conducted by Kart and Kart (2021) stated that students taking part in mainstream educational programmes in inclusive settings demonstrated achievements higher than those in non-inclusive settings. To achieve the full potential advantages for students both with and without SEN, inclusion practices in inclusive settings need to be research-based and devised with careful preparation (Henninger & Gupta, 2014).

The benefits of inclusion are not just limited to students, they have various benefits for teachers. Van Mieghem et al. (2020) stated that teachers can expand their traditional

teaching role within an inclusive environment, thus placing a greater emphasis on meeting the needs of individual diversity, as well as the required academic, social and cognitive levels. Moreover, responding to individual educational needs enables teachers to comprehend the individuality of all students within the school community, offering an inclusive setting that ensures the delivery of effective education (Bakken & Obiakor, 2016).

As a result, inclusion benefits not only students with SEN but also every individual involved in the inclusive settings. Teachers benefit from inclusion because it enables them to improve their skills while working in inclusive environments. In addition to educational benefits, difficulties as a counterargument are also discussed in the existing literature. The next section discusses those difficulties in implementing inclusive education.

2.3.2 Difficulties in implementing inclusive education

The history of education contains widespread debates concerning the issues surrounding inclusive education (Akhmetova et al., 2017), including the difficulties faced by both classroom teachers and school administrators (Pazey & Cole, 2013). This debate has continued to take place globally, with several concerns being expressed about the move to teach students with SEN alongside their typically developing peers. These concerns were identified in relation to competitiveness at school, limited resources and support services, a lack of infrastructure, financial restrictions, class

sizes, the inadequate training of teachers, and the need to deal with differing degrees of disability and ability (Bhatnagar & Das, 2014; Malinen et al., 2013). These concerns are not only limited to in-school factors, but also take place in various issues that affect inclusion from outside the school. For example, parents of children with SEN have expressed concerns that their child may be unable to obtain assistance (Wong & Whitburn, 2018), as well as doubts over the qualification of teachers in mainstream schools to meet the requirements of children with SEN (Wiele, 2011). The concerns of the families of students with SEN are also stated as difficulties in implementing inclusive education.

Wiele (2011) argued that inclusive education programmes are better able to facilitate specific and intensive instruction than those in mainstream schools, indicating that the special needs of each student can be more effectively addressed in inclusive settings. However, it is generally accepted that the implication of an inclusive education requires more effort and resources than a regular educational setting. As a result, the advantages are considered greater than the cost, with proponents asserting that schools focusing on inclusion are academically more efficient than those practicing exclusion (Schuelka et al., 2019). Teachers could be opposed to the idea of inclusion and exhibit significant levels of anxiety toward students with SEN (Roll-Pettersson, 2008). Additionally, they might link students' learning difficulties to their disability (Bandura, 1997) and view students with SEN as a danger to their professional success rather than a challenge (Hutzler et al., 2005).

The evidence indicates that integrating students with special needs in regular classrooms does not always provide meaningful access to education (Strogilos, 2012). Booth and Ainscow (2016) stated that the opponents of inclusion have been supported by research that found a lack of self-esteem and feelings of isolation among students with SEN. Inclusive education practices could be determined by considering many factors. Bateman and Cline (2016) discussed concerns raised by teachers that it might not be practical to meet the special needs of all students without compromising the quality and frequency of teaching. It was seen that one of the most important benefits of inclusive education is social development, as stated in the previous section. However, Schwab (2018) pointed out some of the disadvantages of inclusion from the perspective of students, parents and teachers, stating that, as typically developing students frequently reject and are less welcoming of the inclusion of students with SEN in their classrooms (Avramidis et al., 2017), students with SEN do not belong in mainstream education (Garrote et al., 2020). This result suggests that inclusive education may have negative effects on students' social development. Giangreco (2010) explained that students in inclusive settings requiring one-to-one assistance are frequently seen as the responsibility of specialised teachers and therefore do not really become part of the class.

In summary, there are continuous debates over the educational benefits of inclusive education. Many factors that are seen as benefits of inclusion can be encountered as difficulties in other studies. For example, as mentioned in the previous section, inclusive education helps to improve the social skills of students with SEN, however, other studies have claimed that peer rejection is frequently encountered as a

challenge in the inclusive education process. The main reason for this could be the difference in inclusion settings and other factors that differ in the nature of research. The next section provides an overview of special education in Turkey as per the context of the current study.

2.4 Special education in Turkey

This section provides an overview of special education to better understand inclusion practices in Turkey. The Turkish education system is overseen by the Higher Education Council and the Ministry of National Education (MEB). All primary, secondary and high schools in Turkey are subject to the Ministry of National Education, which is also responsible for the provision of special education at all levels of education, apart from higher education. The Turkish education system is divided into three stages: as 12 years of compulsory education. The first level is a four-year primary school (1st, 2nd, 3rd, and 4th grades), the second level is a four-year lower secondary school (5th, 6th, 7th, and 8th grades); and the third level is a four-year secondary school (9th, 10th, 11th, and 12th grades). The Turkish Ministry of National Education is operated by several General Directorates, while the Special Education Department operates under the General Directorate of Special Education, Guidance and Counselling Services.

The first psychology clinic in Turkey is currently known as the Guidance and Research Centre, and was established in Ankara in 1955 to provide access to education for children with intellectual disabilities, including by examining their needs and providing appropriate guidance. The Guidance and Research Centre is in charge of identifying and guiding students with SEN. Article 22 of the special education services regulation (2018) mentioned that the Turkish Ministry of National Education is required to ensure the correct precautions were in place for children with SEN viewed as being in need of protection. This law No. 6972 was implemented in relation to children in 1957. In the revised 1961 version, Article 50 also guaranteed the rights of those with

disability/ies to obtain special education services, stating that government should take the necessary precautions to ensure they are valued by the community. Furthermore, the Elementary and Education Act No. 222, introduced in 1961, focused on the development of special education, officially setting out the specific educational needs of children with disabilities and stating that special education must be obtained for school age children who were disabled as a result of intellectual, orthopaedic, mental and social difficulties (Yazicioglu, 2018).

In 1980, the Turkish Ministry of National Education guided the Department of General Elementary Education in transforming special educational facilities into a department, rather than a branch, thus raising the visibility of Turkish special education. Turkey subsequently implemented its first special education legislation in 1983, in the form of the Law on Children with Special Education Needs No. 2916, which endorsed several special education rules and requirements. In addition, the legislation was revised in 1982 to contain clauses in relation to special education that have remained in effect until the present day, including Article 42 stating that it is the responsibility of the constitution to take the required measures for those with SEN and ensure they are valued by their community (Sisman, 2018).

The above elements have influenced the acceptance (and valuing) of inclusive education in Turkey, particularly as the Turkish Ministry of National Education accepted the importance of inclusion practices. The Ministry has therefore encouraged the spread of information concerning the importance of the inclusion of SEN pupils into the country's mainstream education. Inclusion procedures have been seen, in principle, to

promote understanding of the requirements of children with SEN and to enhance public awareness. Moreover, the significance of inclusion practices was further highlighted when 1993 was declared the year of special education by the Turkish Parliament (Yazicioglu, 2018). The subsequent 1997 Law of Special Education Regulation No. 573 has remained in force to the present day, leading to an increased amount of private special educational and rehabilitation facilities in response to government funding of rehabilitation and treatment costs (Yazicioglu, 2018). Finally, in 2009, the Turkish Ministry of National Education adopted the Special Education Services Regulation in accordance with the following definition of the practice of inclusive education (MEB, 2018):

> In order to enable students in need of special education to network with other students at all forms and stages and to succeed their educational objectives at the maximum level, additional education services are offered to these students in full-time or part-time education in their peer regular classes. (MEB, 2018, Article 4)

2.4.1 Prevalence and incidence of students with SEN

Although Turkey releases annual statistics showing the number of SEN students, there has not yet been an official report on the number of students with each type of SEN. National statistics reveal that there were 88,931 students in Turkey with SEN during the school year 2008-2009 within official education systems (MEB, 2009a). This number rose to 398,815 during the 2018-2019 school year (MEB, 2019). Due to the Covid-19

pandemic, 2019-2020 and 2020-2021 school year statistics have not been revealed. The annual statistical results also revealed a steadily increasing number of students with SEN (see Table 1). These results indicate that there has, over the previous ten years, been a considerable rise in Turkey in the total number of children with SEN included in public education.

Table 1: Students with Special Needs in Turkey

School Year	Total Number of Students in Formal Education	Total Number of Students with Special needs in Formal Education	Percentage of Students with Special Needs in Formal Education System
2008 – 2009	15,351,849	88,931	0.058
2009 – 2010	16,137,436	120,111	0.074
2010 – 2011	16,845,528	141,248	0.084
2011 – 2012	16,905,143	199,513	1.180
2012 – 2013	17,234,452	220,649	1.280
2013 – 2014	17,532,988	242,716	1.384
2014 – 2015	17,559,989	259,282	1.476
2015 – 2016	17,588,958	288,489	1.640
2016 – 2017	17,702,938	333,598	1.884
2017 – 2018	17,885,248	353,610	1.977
2018 – 2019	18,108,860	398,815	2.202

There remains a serious lack of statistical data related to the analysis of students with SEN in mainstream education. While statistical data relating to all Turkish

educational activities are published annually by the Turkish Ministry of Education, this only shows the number of students currently in inclusive classrooms, rather than being an in-depth analysis of those having needs that fall within specific special education categories. This differs from data provided by most developed countries, which offers in-depth statistical information on both numbers in inclusive classrooms and in specific special education (Cakiroglu & Melekoglu, 2014).

These publications provide an invaluable source of information to researchers and educators regarding the current trends and developments in inclusive environments and various special education categories. This can be effectively demonstrated within the United States (US) education system, with the US Department of Education publishing annual reports to Congress regarding the implementation of ideas, including in-depth statistical data on all students with special needs, as well as the range of special education categories within mainstream education (US Department of Education, 2011). Turkish publications often refer to data provided by the US as highlighting the lack of such relevant information in Turkey concerning the numbers of students within special education categories (Gorgun & Melekoglu, 2019).

2.4.2 Trends in laws and regulations in Turkey

Turkey has concentrated for a considerable length of time on issues relating to the special education system. These issues were intensified when Turkey became an official candidate for membership of the European Union, which required an emphasis

on inclusive education (Cakiroglu & Melekoglu, 2014). For this reason, Turkey follows many educational developments in Europe and makes various adjustments in the regulations and laws.

Since its enactment in 1926, the Constitution of the Republic of Turkey has introduced legislation regarding special education for people with disabilities. This was first mentioned by Turkish Civil Law no. 743 implemented in 1926, which required parent/s to look after their children if they had a disability and ensure they received proper education. The Constitution was subsequently revised in 1961 to include regulations for those with special needs, including for the first-time specific principles of special education (Yazicioglu, 2018). Following the revision of the Constitution in 1982, it now contains several fundamental laws covering persons with disabilities, focusing in particular on their human rights. The first detailed law was implemented in 1983, immediately following the constitutional amendment.

The Children with SEN Law No.2916 included the organisation of special education, special education activities, diagnostics, and the monitoring of children with special educational needs. This remained in place until the Special Education Law was adopted in 1997 (Akcamete, 1998; Yazicioglu, 2018) to regulate the rights of people with SEN in relation to mainstream and professional education and in accordance with the overall aims and fundamental values of the National Education. The law outlines issues related to diagnosis, the evaluation of special education, and special education assignment procedures. It also defined educational environments and values in relation to inclusive education, for example, the effective involvement of family members in each

aspect of educational procedures for their children, the importance of the contribution of special education organisations to the growth of strategies, the need for participation in the social interaction of special educational services and procedures of adaptation. This law put in place various fundamental values relating to special education, including that:

- special education should be regarded as an essential aspect of regular education;
- special education services should be provided to all students with disabilities, regardless of severity;
- early diagnosis is crucial to improving standards of special education;
- individualised educational programmes should be available for each SEN student to fulfil their particular needs;
- students with SEN should learn with students with typical development in less restrictive education settings;
- there is a need for continuous professional education and rehabilitation services for students with SEN;
- appropriate organisations should arrange for the education activities offered at all stages for students with SEN (Melekoglu, 2014).

These objectives are clearly stated and position the inclusion of children with SEN as a vital aspect of the education system and have led to a rise in the number of children with SEN being enrolled. However, these principles have not been completely enforced by special needs educators, owing firstly to economic difficulties and, secondly, a lack of qualified special education practitioners (Melekoglu et al., 2009). In

2006, the Ministry of National Education adopted the Regulation on Special Education Services. This was comprised of nine sections, which placed particular emphasis on the arrangements of Turkish special education practices, including: components of the regulation; general provisions for evaluation and placement; obligations towards special education services; working methods and fundamental aspects of evaluation; educational methods related to inclusion, educational services, organisations, employees, duties, authority and responsibility, training, diverse and final provisions. This guideline covers the objectives of special education. For instance, encouraging individuals to play their part in their own culture and society and establishing strong ties with others, working together, adapting to their settings and being efficient. This regulation is mentioned not only in goals for society, but also in goals for individuals: for example, developing fundamental life skills to live independently and self-sufficiently in society and preparing individuals to enter the next level of education, business and the professions, according to their own educational requirements, skills, interests and talents, achieved through the application of suitable education programmes, special techniques, staff and facilities (Melekoglu, 2014).

Inclusive education in Turkey is currently implemented through three different models: full, partial and reverse inclusion. Full inclusion is defined as offering teaching activities employing special education needs staff, as well as specialised facilities and materials allowing students with SEN to become integrated and educated in the same educational environment as their typically developing peers (Melekoglu, 2014). The evaluation of the model for a student with SEN depends primarily on their school and classroom requirements, as well as their individual educational programmes (MEB,

2006). Individual educational programmes have, to date, been drawn up in relation to Turkish Education Settings, which states that they should support educational goals and specify: the use of education support services, the duration of education in inclusive settings, the regularity of such classes, the identity of the teachers, and the procedures, techniques, instruments and facilities employed.

Once a student is registered as needing special education, members of staff are faced with three alternatives:

1. The student remains in their current classroom environment, learning without Individualized Educational Programmes (IEP).
2. An individual educational programme is employed to enable the student to continue their education in their existing school.
3. An IEP is prepared to enable the student to study at a special school (i.e., in a separate classroom from the current school) (Vuran, 2013).

Within the scope of the Ministry of National Education textbooks and educational tools regulation, teachers must apply the curriculum in accordance with the teacher's guidebooks. Every detail about in-class activities is included in these guidebooks. All content related to the course is explained in detail in these guides, including examples to be given on the subject, and educational technologies and materials. However, there are no specific guidelines for individualised education programmes provided or permitted by the ministry in Turkey. Teachers are required to prepare and implement an IEP within the scope of their knowledge and skills.

The law states that a single school cannot accommodate more than two students with any type of SEN. If both are taught within the same classroom, this must consist of no more than twenty-five students, while a single student with SEN must be taught in a class of less than thirty-five. This provision continued to remain in place in the 2009 Regulation on Special Education Services (MEB, 2009b), which states that when – as part of reverse inclusion – typically developing students attend special schools, their classes must not exceed twenty students if there are five students with SEN.

According to the ethics directive of the Ministry of National Education guidance and psychological counselling services, the confidentiality of the private files of individuals in the school counselling service is protected. However, this protection only covers the information and documents that remain within the school counselling service of the students. There is no law within the scope of the Ministry of National Education regarding the sharing of information about the disability status of students. For example, the Guidance and Research Centre guide does not contain any information about the confidentiality of the data related to these students. In the same guide, it is stated that cooperation with various institutions and organisations can be implemented to support these students, but the limits and confidentiality of the data that can be shared are not specified. As a result, there is no legal confidentiality in sharing any data about these students.

The Law on Special Education Services (MEB, 2009b), amended in 2012, categorises students with SEN into the following fourteen categories:

1. Individuals with autism.

2. Individuals with Attention Deficit Hyperactivity Disorder (ADHD).
3. Individuals with cerebral palsy.
4. Individuals with chronic illnesses.
5. Gifted individuals.
6. Individuals with emotional and behavioural disorders.
7. Individuals with mild mental disabilities.
8. Individuals with moderate mental disabilities.
9. Individuals with severe mental disabilities.
10. Individuals with speech and language disabilities.
11. Individuals with specific learning difficulties.
12. Individuals with orthopaedic impairments.
13. Visually impaired individuals.
14. Hearing impaired individuals.

This was the first time the Turkish education system had set out categories of SEN. However, despite being broad in terms of different educational needs, the nature of this categorisation could still marginalise students failing to fall into any specified category.

An in-depth analysis of the unique educational legislation and laws of Turkey reveals the significant impact of special education legislation in the US and European countries on the Turkish education system (Yazicioglu, 2020). Many Turkish laws have been founded upon US special education laws (2004), as a result of several leading special education specialists (Melekoglu, 2014). The legal infrastructure developed to

support Turkish special education laws and regulations has been created and implemented by educators, researchers and politicians, with a lack of representation from those with disabilities and their families. As a result, standards remain below the level required and far from the realities of the mainstream Turkish education system.

2.4.3 Educational interventions in Turkey

The Special Education Services law of 2006 (MEB, 2006) specifies the significance of inclusive education by defining it as a special implication centred on the concept of the education of students attending early, primary, secondary and higher education schools alongside their typically developing peers and having special education requirements, including facilities to improve their educational well-being. Inclusion – the importance of which is emphasized by laws and regulations – has been put into practice at least as placement. Official Turkish statistics reveal that almost three quarters of students with SEN have studied in inclusive classrooms, with the remainder taught in separated schools or classrooms.

Over the previous decade there has been considerable encouragement to increase inclusion practices, which have subsequently experienced a rapid increase, particularly since the adoption of the Special Education Law (Melekoglu, 2014). Although inclusive practices are currently not at the required standard, data concerning their use are viewed as a significant aspect of educational strategy (Melekoglu, 2013). Nonetheless, existing Turkish studies of inclusive practices have been very limited to an

examination of the views of teachers, including their suggestions for improvement, studies on the influence of inclusive practices on students with intellectual disabilities, and an examination of the variables impacting on the social acceptance of those students by students without SEN (Diken & Batu, 2010).

2.4.4 Development of inclusive education

Although inclusive education in Turkey is a relatively new area, there have also been several positive improvements in the education of students with SEN. Firstly, although the majority of inclusive schools and guidance and research centres still have an inadequate number of special education teachers, the existing standard of education and assessment procedures are improving (Yilmaz & Batu, 2016). Secondly, there has been a rapid increase in inclusion practices within mainstream schools, although there are not yet sufficient support services for children with special needs or adequate assistance for teachers working in inclusive classrooms (Melekoglu, 2014). These factors pose several challenges, as many teachers are not qualified to deliver inclusive practices and/or educate students with SEN. Consequently, many such pupils are unable to obtain an adequate education (if any) (Melekoglu, 2014). Most teachers in inclusive settings have been found to be opposed to inclusive education, with teachers, school administration, as well as typically developing students and their families often holding negative attitudes towards children with special needs (Melekoglu, 2013). This suggests that inclusion can prove damaging for children with SEN.

There are currently nineteen university departments dedicated to training special education teachers in Turkey. Although the department of Special Education supports educational departments in the Faculty of Education by offering courses in Special Education/Inclusion, many higher education institutions lack specialised tutors. Teachers who graduate from these universities are therefore ill prepared to deliver good practice regarding inclusive education (Melekoglu, 2013). Furthermore, even those trainee teachers following a university course in inclusive education are taught from a theoretical perspective, instead of experiencing a practical perspective.

Melekoglu (2014) highlighted four issues associated with inclusive education in Turkey. The first is a need to develop a new model to ensure staff can implement inclusive education, particularly as the current model of teacher training fails to meet the requirements of the Turkish education system. This inadequacy of teacher training negatively affects inclusion practices in the classroom. In this context, all teachers in inclusive classrooms must be fully trained in best practice for special education and should be supported as required (Ozturk, 2019). It is now an accepted fact that providing the necessary support to teachers is a prerequisite for the successful implementation of inclusive education. The provision of effective inclusive education is one of the challenges faced by Turkish educational facilities, with each individual school requiring the support of at least one special education teacher (Sevim & Atasoy, 2020). Secondly, there is a need for an improvement in family involvement and assistance. Thus, immediately following a child's diagnosis, their family should be fully informed of their needs, freedoms, procedures, education methods and associated issues. The government therefore needs to operate this education process systematically and in a

scheduled manner. Thirdly, there is a need to address current deficiencies in laws and policies relating to special education, which should be amended in response to criticism of the Turkish education system from both non-governmental organisations and specialists (Eripek, 2012). As mentioned earlier, although many laws and regulations are adapted from other countries, they do not meet the needs of the education system in Turkey. Fourth, the government needs to ensure the implementation of effective strategies. This requires the Ministry of National Education to play a major role in formally establishing an atmosphere in which the required research-based methods are introduced and promoted in special education classrooms (Melekoglu, 2014).

As special education generally takes place within the wider system, it is also subject to the existing issues within mainstream Turkish schooling (Melekoglu, 2014) cultural attitudes towards disability in Turkey. There are several problems including a lack of essential equipment, the poor physical condition of school buildings, large class sizes, and programmes that are inappropriate for individualised educational needs (Gulec-Aslan, 2020). These factors exert a negative impact on both mainstream and special education, while students within these settings are unable to reach the required education level in compliance with their needs and interests.

As in almost every culture, cultural definitions have been created for individuals with disabilities in Turkish culture. Social attitudes, values and institutions in the socio-cultural structure are much more effective than biological factors in determining the reality of the body (Siebers, 2001). Burcu (2011) conducted research on cultural definitions of people with disabilities in Turkey. This study was limited to 100

participants and one city centre. In this analysis, those who defined a person with disability in relation to "pity, need for attention and help", whether male or female, were those who spent most of their lives in rural areas, primary school graduates, and those working in service jobs. Those who defined persons with disability as "undesirable individuals excluded from society" were those who spent most of their lives in the city, were middle aged, in administrative, commercial and scientific professions, married, and have higher education. Those who described the disabled as "incompetent, unsuccessful individuals" were primary school graduates, those who spent most of their lives in rural areas, worked in service jobs, and were widowed. Those who defined the disabled as "combatant, defending their rights" reflected sociodemographic characteristics that showed them to be high school graduates, workers and single people.

Moreover, 99% of the Turkish population is Muslim (Durmus, 2021). In a 2006 study by Sabanci University (Carkoglu & Toprak, 2006), 16% of Turkish Muslims identified as "very religious," 39% as "somewhat religious," and 32% as "not religious." Disability is a controversial topic in Islam. While some individuals see it as a test of God, others see it as a punishment. The issue of whether the troubles, misfortunes and accidents that happen to a person are tests by God, his punishment, or whether they are caused by a person’s own carelessness or mistakes has been widely discussed among Islamic scholars and different interpretations and opinions have emerged (Sancakli, 2006). In addition, there is an unstructured practice in which individuals follow Islam as they perceive it, but not particularly in its precise meaning, and where culture, rather than religion, contributes to the formation of ideas on disability (Al-Aoufi, Al-

Zyoud, & Shahminan, 2012). As a result, this understanding and interpretation may result in a conflict between Islamic beliefs and indigenous culture, and therefore it may be seen as a factor influencing attitudes toward disabilities and, ultimately, the development of special needs services in the area.

In summary, inclusive education in Turkey has evolved significantly and still needs to develop. There are numerous obstacles remaining in inclusive education in Turkey, but they are not entirely unique to the field of inclusion. Numerous nations have already addressed these issues, and Turkey can study and change them for its own requirements and aspirations when considering the needs of its education system.

2.5 The theoretical framework

The current study aims to understand teachers' attitudes towards the inclusion of children with SEN. Most researchers who have examined teachers' attitudes and self-efficacy have discovered relationships between these two aspects (e.g., Miesera et al., 2019; Sharma et al., 2012). In addition, self-efficacy and attitudes have been employed synonymously as predictors or outcomes (Savolainen et al., 2020). Malinen (2013) focused on the connection between self-efficacy theories and planned behaviour by stating that attitudes could act as a modifier of self-efficacy on behaviour. As a result, it is reasonable to assume that self-efficacy has a positive effect on attitudes. The following section discusses the history of self-efficacy and how it could apply to teachers.

2.5.1 Bandura's social cognitive theory

Bandura's (1995) social cognitive theory explains self-efficacy as "beliefs in one's capabilities to organize and execute the course of action required to manage prospective situations. Efficacy influence how people think, feel, motivate themselves, and act" (p.2). This highlights how individuals can organize and regulate themselves, as well as take action and reflect on their action, thus influencing their own education and behaviour. In an educational context, the efficacy of teachers generally implies confidence in their own capacity to influence their students' learning (Hoy, 2000), which is essential for exerting a positive influence on children's education (Henson, 2001).

Efficacy theory incorporates the following four factors: mastery experiences, vicarious experiences, social persuasion, and emotional and physiological states (Bandura, 1995).

1. Mastery experiences: The most successful method for people to grow a strong sense of self-efficacy is through mastery experiences or repeated performance achievements (Bandura, 1977, 1982; Gist, 1987; Wood & Bandura, 1989). In addition, performance disruptions reveal that a continuous effort is needed for success. For this reason, mastery experiences provide ideas for future performance to be positive (Lent & Hackett, 1987). That individuals develop a sense of confidence in their abilities by experiencing their success helps to better manage failures or setbacks (Wood & Bandura, 1989). The formation of a strong

sense of self-efficacy is possible through direct experiences of individuals. For this reason, obtaining positive experiences will help people develop a sense of self-efficacy for similar future situations (Arseven, 2016). As a result, successful experiences that people create with their own efforts strengthen self-efficacy, while unsuccessful experiences reduce the sense of self-efficacy (Maddux, 2000).

2. Vicarious experiences: Self-efficacy beliefs are also affected by our observations of the behaviour of others and the consequences of these behaviours (Bandura, 1997). A second way, slightly less effective than mastery experiences, in developing self-efficacy beliefs is indirect experience/modelling. In the modelling process, individuals reveal the empirical or observational learning process (Gist, 1987). Adequate role models offer necessary techniques for dealing with problems and influence self-efficacy with a process of social comparison (Boyd & Vozikis, 1994; Laviolette et al., 2012). In other words, individuals acquire opinions about their own talents by comparing themselves to each other. By observing that individuals like themselves can cope with difficulties, they can form the belief that they have the same abilities (Arseven, 2016). Whenever there is an observed match between the individual and the model in relation to personal features and talents, and the modelled behaviour creates evident outcomes, modelling effects are developed (Bandura, 1977; Gist, 1987).
3. Social persuasion: A third technique to promote self-efficacy is via social persuasion/verbal persuasion. Persuasive discussion and detailed assessment reviews may be used to elicit information about an individual's capacity to

complete a task (Gist & Mitchell, 1992). If individuals obtain positive feedback and incentives to convince them that they can perform a task, they may expend more effort (Gist, 1987; Wood & Bandura, 1989). The biggest risk in using this technique is that self-efficacy can be raised to unrealistic levels. In addition, when evaluating the usefulness of persuasive information, it is vital to study factors such as the credibility, expertise, reliability, and reputation of the persuasive individual (Bandura, 1977; Gist & Mitchell, 1992). Incentives that do not reflect the truth can thus cause a rapid decrease in the sense of self-efficacy in people as a result of failure, despite all the efforts of people (Arseven, 2016). The third method, social persuasion, is seen as a less effective method when compared to the first two methods (Bandura, 1982; Gist, 1987).

4. Physiological and emotional states: Stress and anxiety levels of individuals can positively or negatively affect the development of self-efficacy feelings. However, individuals are generally content with their perceptions of their own physiological states when evaluating their personal abilities. These emotional arousals and tensions can be interpreted as poor performance versus indicators of weakness. For instance, the anxiety felt can be seen as a debilitating fear that will increase the probability of failure and decrease expectations of self-efficacy (Bandura & Adams, 1977; Hackett & Betz, 1981). Individuals who are psychologically comfortable are expected to develop a high self-efficacy to be successful in a job (Arseven, 2016). There are also empirical studies showing that there is a negative correlation between anxiety and expectations of self-efficacy (Stumpf et al., 1987). In addition, factors such as a person's overall physical condition,

personal characteristics, and emotions could all impact self-efficacy through changing the level of arousal experienced when confronted with an assignment (Gist & Mitchell, 1992). However, the physiological manifestations of self-efficacy expectancy extend beyond autonomic arousal. For example, perceived competence in activities involving strength and endurance, such as exercise and athletic performances, is affected by experiences such as fatigue and pain (Maddux, 2000). These achieve efficacy through individual views and interpretations.

Bandura's Social Cognitive Theory (1997) views human behaviour in terms of a reciprocal and dynamic engagement between three aspects: personal, behavioural, and environmental. Performance-changing efficacy is seen as conditional on personal, social and situational variables, including perceptions of the challenges posed by a specific task, personal capabilities, performance during an assignment, external support, physical and emotional status and the situation itself (Bandura, 1995). Social Cognitive Theory thus offers a structure for the analysis of an individual's motivation, ideas and behaviour (Ziegler, 2005). In the analysis of human behaviour, a structure of the analysis is created by considering the three aspects of the Social Cognitive Theory. Social Cognitive Theory shapes the importance of an individual's self-efficacy in deciding behaviour (Bandura, 1997), while behaviour can also be created and altered by experience (Bandura, 1997). Moreover, Ziegler (2005) states that Social Cognitive Theory recognises the learning and regulation of behaviour: it helps to clarify why an educator may be unwilling to teach in an inclusive setting.

2.5.2 Teachers' self-efficacy

Social Cognitive Theory considers self-efficacy as a reflection of attitudes arising from an individual's perception of their ability as formed by personal experience, as well as the relevant social, emotional and physiological aspects (Lee et al., 2013). A teacher's self-efficacy is described as their belief in their capacity for taking the necessary measures to undertake a specified educational role within a particular setting (Tschannen-Moran et al., 1998). In other words, teachers' self-efficacy is defined as the belief of the teacher who has the ability to organise and perform the actions required to successfully fulfil a particular educational task in a given setting. The specified educational role of teachers is involved in creating an educational environment in the classroom. Teachers are required to create educational settings to enhance cognitive skills, thus facilitating productive learning (Bandura, 1997). High teacher self-efficacy is associated with higher academic achievement among students (O'Leary, 2016). Moreover, low teacher self-efficacy could result in the low academic achievements of students.

The stronger teachers' self-efficacy is, the more they can overcome difficulties, find solutions to the problems that teachers encounter, and more importantly, learn from their own life experiences. In addition, self-efficacy creates differences in a teacher's self-development, allocating time for teaching, classroom management, coping with problematic behaviours, and professional satisfaction (Bangs & Frost, 2012). These differences in a teacher's skills have an important place in the role of the profession.

The reflection of teachers' self-efficacy patterns and their results on children varies in the context of primary and secondary school (Guo et al., 2010). Differences in knowledge, skills and behavioural competencies of students in preschool classes add extra responsibility for teachers. Primary and secondary school education are important stages in terms of their contribution to the child when compared to other education levels. The most critical years of human life are in this period. The high qualifications and self-efficacy beliefs of teachers working in this period are also important for the success of education (Ertan, 2016). Self-efficacy of teachers is reflected in their communication with students in the institution in which they work. Teachers with high self-efficacy enjoy dealing with self-confident children and become positive role models for children; on the other hand, the tense and stressful behaviours of teachers with low self-efficacy may set a negative example for students (Babaoğlan & Korkut, 2010).

Classrooms differ in the scope and types of feedback they provide, which depends on how teachers process information (Cappella et al., 2016). Therefore, various characteristics of the classroom may contribute positively or negatively to teachers' self-efficacy (Guo et al., 2010). For example, students' problematic behaviours in the classroom negatively affect teachers' self-efficacy. Furthermore, the research found that in-service training in problematic behaviours in the classroom could positively change teachers' self-efficacy (Suchodoletz et al., 2018). The research shows that training is a factor which could have a positive effect on teachers’ self-efficacy. Teachers frequently use their past experiences in the teaching process. The past experiences as mastery experiences make a strong contribution to self-efficacy beliefs (Mulholland & Wallace, 2001). A teacher's tenure in the field and mastery experiences both increase teachers'

self-efficacy. Tschannen-Moran and Hoy (2007) found that new teachers have lower self-efficacy beliefs than experienced teachers as their mastery experiences differ.

A teacher's level of self-efficacy relates to their attitude or approach to activities and difficulties (Block et al., 2010; Brown et al., 2012). On the other hand, the teacher's self-efficacy level could be determined in the process of accepting this responsibility before encountering the behaviour. For example, Block et al. (2010) stated that self-efficacy consists of an individual's view of their capacity to undertake an assignment or behaviour. Brownell and Pajares (1999) claimed that the concept of self-efficacy is about undertaking actions in which an individual feels confident and thus able to avoid any scenarios potentially resulting in self-doubt. When it comes to inclusion, those working in regular education who hold a belief in their ability to teach students with SEN are more prepared to include such learners in their classroom activities and practices (Brownell & Pajares, 1999). On the other hand, high self-efficacy is a prerequisite for successfully fulfilling the already assigned task. Garberoglio et al. (2012) considered that a teacher's level of self-efficacy is a powerful determinant of their behaviour, commitment, perseverance and objectives within the school setting. Hamman et al. (2013) noted that the higher a person's level of self-efficacy, the more likely they are to remain positive, including using considerable effort to address difficult assignments. However, high self-efficacy does not guarantee that an individual will succeed in a task, even if they have the capacity to undertake it effectively (Bandura, 1997; Block et al., 2010). Whether successful or not, self-efficacy is an important factor in determining their performance for the given task. Individuals with comparable abilities can perform

differently in response to changing conditions, or to their own feelings of self-efficacy (Bandura, 1997).

The self-efficacy of teachers can influence both educational practice and the performance of students (Caprara et al., 2006; Tournaki & Podell, 2005). Teachers are far more likely to help the educational achievement of their students if they feel qualified to assist all their pupils in achieving similar high standards (Archambault et al., 2012). Furthermore, Teachers' belief in their capacity to handle students in the classroom is a precondition of a successful educational setting (Bandura, 1997). Teachers with high self-efficacy can assist their students to improve their educational achievement by encouraging their development (Ayllón et al., 2019). Higher levels of teacher efficacy can therefore lead to: improvements in students' educational performance; productive teaching practices; enhanced family participation; reduced referrals to special education; greater engagement with, and satisfaction in, the workplace; and reduced levels of fatigue (Ayllón et al., 2019; Shahzad & Naureen, 2017). This shows that self-efficacy has a direct effect in all classroom practices of teachers. Self-efficacy bears several similarities to self-confidence, particularly in its mixture of beliefs and emotions about ability, understanding and outcomes (Van Aalderen-Smeets et al., 2012). In this context, self-efficacy takes into account an individual's evaluative ideas about their future potential, such as their self-confidence, to earn a specific examination grade or complete a particular form of activity successfully (Sheldrake, 2016).

A teachers' self-efficacy determines their classroom practice, together with their attitude towards inclusion (Diken, 2006). Self-efficacy of teachers has been identified as

a crucial component in student learning (Kelley et al., 2020). Nadelson et al. (2012) studied teachers' professional development and underlined the relevance of teacher self-efficacy; they discovered a correlation between teachers' level of comfort and their motivation. Teachers who feel skilled and comfortable at teaching find that it affects their self-efficacy and confidence in the classroom (Poulou et al., 2019). Thus, every factor that affects teachers' skills and comfort has the potential to have an impact on their self-efficacy. A teacher's perception of efficacy can therefore be enhanced by successful practice, while training can be improved by understanding the impact of efficacy (Garberoglio et al., 2012). Teacher self-efficacy is a critical factor in teacher effectiveness since it has an effect on both teacher conduct and student results.

Bandura's (1997) concept of self-efficacy can therefore be seen as having the potential to improve the attitudes of teachers towards the inclusion of students with SEN. Pan (2014) stated that teachers' self-efficacy shapes: the motivation of students; a school's educational environment; and student satisfaction with learning. A teacher may possess the essential preparation and expertise for teaching students with SEN in an inclusion classroom, but this may not be transferred into practice if they fail to understand the child's ability to achieve. Thus, an individual's view of their ability is a higher determinant of behaviour than their existing ability (Bandura, 1997). The efficacy of a teacher may also dictate the type of educational activities they will undertake, as well as factors influencing students' success, i.e., an ability to meet their requirements in diverse classrooms, alongside appropriate classroom management techniques (Brown et al., 2012).

Bandura (1995) indicated that, to maintain a motivation to succeed, individuals must retain confidence in their selected career, particularly as individuals tend to avoid circumstances in which they feel they lack confidence and skills (Bandura, 1977). Although successful inclusive practices involve multiple factors, teachers remain a key influence. It has been stated that the success of classroom practices is related to teachers' self-efficacy, and inclusion is considered to be an example of these in-class practices. Viel-Ruma et al. (2010) indicated that successful inclusion depends on a teacher's own confidence and efficacy. Therefore, the ability of a teacher to fulfil pupils' requirements can be seen as influencing efficacy (Joo et al., 2018), while Bandura (2006) viewed the self-efficacy of a person (including their views and behaviours) as crucial for success. Therefore, a teacher's ability to meet students' needs in inclusion practices is linked to their self-efficacy.

There are several challenges to successful practice in inclusive settings, including: a lack of time for increased preparation; a lack of expertise in working with small groups while also teaching large groups; and low levels of ability (Schulte et al., 2001). Bandura (1994) stated that a strong sense of efficacy can improve self-confidence by enhancing an individual's ability to face potential difficulties (Bandura, 2006). Teachers may encounter many problems in their daily education practices, and these problems still exist in inclusive practices, depending on teacher experiences and classroom environment. Teachers able to adapt to difficult circumstances tend to: experience lower levels of stress and depression; prove capable of drawing up strategies to address problems within a school; and demonstrate greater self-efficacy when it comes to their own teaching (Ryan, 2009). Such teachers have also been found to show a more

positive approach to inclusive classroom settings (Savolainen et al., 2020). As a result, teachers with higher self-efficacy demonstrate a more positive approach to inclusive education.

Most researchers who have examined teachers' attitudes have found a relationship between teachers' attitudes and self-efficacy (e.g., Hutzler, et al., 2019; Miesera et al., 2019; Ozokcu, 2018a; Yada et al., 2018). Additionally, self-efficacy and attitude have been employed equally as predictors of outcomes. Currently, researchers in this field lack solid data about the most probable fundamental link between the two concepts (Savolainen et al., 2020). Mieghem et al. (2018) noted that much research has been conducted on teachers' attitudes towards the inclusion of students with SEN. The results of this research show that attitudes are critical for inclusive education practices and are mainly shaped by both teachers' awareness of special needs and experience with inclusive education. Numerous researchers have emphasized the critical significance of teachers' attitudes in successful practices of inclusive education (e.g., Avramidis & Norwich 2002; Pit-ten Cate et al., 2018; Mngo & Mngo, 2018; Saloviita, 2020a). In addition, the relationship of many factors with self-efficacy and attitude was examined in these studies. For example, attitudes of teachers become more positive, and they had a greater degree of self-efficacy following properly prepared training (Miles, 2013). The effect of training on both self-efficacy and attitudes has been proven. Teacher training, including in relation to special education, has been linked to the creation of more positive attitudes towards the inclusion of students with SEN (Demirbilek & Levent, 2020). Teachers' attitudes towards inclusion can be influenced by factors such as: the efficacy of teachers; teaching experience; grade level and subject;

knowledge and experience of working with students requiring special education; and preparation in the field of special education methods (Cassady, 2011).

Ajzen's (1991) article, *'Theory of Planned Behaviour'*, explained the connection between their attitudes towards inclusion and their self-efficacy. According to this concept, the purpose of performing a particular behaviour is defined by attitudes, subjective norms, and perceived behavioural control. Malinen et al., (2013) examined the interaction between self-efficacy theories and planned behaviour by positing that attitude may act as a moderator of self-efficacy's effect on behaviour. Savolainen et al. (2020) found that self-efficacy has a beneficial effect on attitudes. However, longitudinal research on the link between these two dimensions is currently limited. There has been no longitudinal research that analyse the connection between teachers' attitudes towards inclusion and self-efficacy in the inclusive education practices (Savolainen et al., 2020).

As a result, teachers' self-efficacy influenced their behaviour, and boosting teacher self-efficacy increases teachers' confidence and engagement in much more positive teaching behaviours. Teachers' self-efficacy influences many factors in their daily teaching practices including inclusive education practices, which requires approaching students and engagement with difficult educational tasks. Moreover, many factors affecting teachers' self-efficacy are explained, such as their training and previous experiences. These factors also affect the teachers' attitudes towards the inclusion of students with SEN. There are currently limited data on relationships between teachers' attitudes and their self-efficacy. However, it is reasonable to assume that self-efficacy

has a positive effect on attitudes. In this section, the concept of self-efficacy has been defined and associated with teachers' attitudes, and its effect on inclusive education was examined. The next section will explore the concept of attitude in relation to the existing literature.

2.6 Exploring attitudes

Attitudes are important because they shape how people see the world, what they believe and how they behave. The concept of attitude has an important place for the current study because teacher attitudes are an important factor affecting the educational practices of teachers in their classrooms, including inclusion practices. The current study explores teachers' attitudes, and to better understand the concept, this chapter provides a general discussion of the literature on attitudes and its relevance to inclusive education, including the factors that influence attitude and how it is shaped.

2.6.1 The definition of attitude

Social science researchers often examine attitudes as an element of human psychology, consisting primarily of two main perspectives – psychological and sociological. A psychological approach to attitudes seeks to alleviate bias and discrimination by directly altering behaviour, while a sociological approach to attitudes considers oral expression as capable of decreasing bias and discrimination by

influencing behaviour (Chaiklin, 2011). A considerable number of studies have been undertaken into the significance of understanding how behaviour is driven by attitudes (Ajzen & Fishbein, 2005; Albarracín & Shavitt, 2018; Marcinkowski & Reid, 2019).

Attitudes influence an individual's perspective on the world, alongside their beliefs and actions (Maio & Haddock, 2015). It is therefore vital to study the development of attitude to understand human behaviour. The definition of an attitude should be sufficiently broad to encompass the body of current knowledge and sufficiently generalizable to be relevant as research trends evolve (Eagly & Chaiken, 2007; Norris, 2019). What has remained coherent across many conceptualisations of the attitudes construct is the central role of evaluation (Eagly & Chaiken, 1993; Maio et al., 2018; Schwarz, 2007). Allport (1933) claimed that behaviour is a direct consequence of attitudes, while Johnson and Boynton (2010) argued that attitudes exert both a direct and indirect influence on behaviour. Attitudes can be viewed as created in response to experiences and knowledge, thus representing the character of an individual (Albarracín & Shavitt, 2018). However, LaPiere (1934) was of the view that behaviour is only slightly determined by attitude, due to the latter being variable and complex. As these studies show, many different views exist and, similarly, several different definitions have been created. Table 2 provides an overview of the various definitions of attitude.

Table 2: Different definitions of attitude

	Definition of Attitude	Author(s)
1	A general and permanent positive or negative feeling towards an individual.	Petty and Cacioppo (1981, p.7)
2	A psychological tendency expressed by evaluating a particular entity with some degree of favour or disfavour.	Eagly and Chaiken (1993, p.1)
3	A remembered association between a given object and its evaluation.	Fazio (1995, p.247)
4	The tendency to respond positively or negatively to objects, individuals or organisations.	Ajzen (2005, p.3)
5	General evaluation of an object based on cognitive, affective and behavioural information.	Maio and Haddock (2015)

Avramidis (2001) noted that the main theoretical issue concerning research into attitudes consists of the differences of opinion between those presuming attitudes are connected to behaviour and those who describe them as only potentially linked. The relationship between attitude and behaviour is a fundamental assumption with researchers generally predicting a person's behaviour to be in line with their attitudes. Eagly and Chaiken (1993) stated that the attitudes of individuals are linked to the impact of their behaviour, and appropriate measures can strengthen the relationship between attitude and overt behaviour. However, social sciences view the extent of this association between attitude and behaviour as challenging. For example, Albarracín and Shavitt (2018) found behaviour to be, under certain circumstances, predicted by

attitude. In addition, Glasman and Albarracín's (2006) meta-analytic analysis demonstrated that attitudes could impact behaviour when a memory is both accessible and stable over time. Furthermore, they found that immediate interaction with the object determining attitude can influence its relationship with behaviour by means of improved understanding. It was also demonstrated that the motivation to consider a particular aspect supports a greater stability in the relationship between attitude and behaviour.

2.6.2 Models of attitude

De Boer et al. (2012) specified three main theoretical perspectives concerning the primary nature of attitudes in behaviour studies: (1) the three-component model of attitude; (2) the two-component model; and (3) the single-component model. The three component model views attitude as a single unit made up of three components: affective, behavioural, and cognitive (Breckler, 1984; Jain, 2014; McGuire, 1985; Maio & Haddock, 2015). The two-component model assumes that both cognitive and affective elements are generally distinguished, while behavioural motives are excepted (Fishbein and Ajzen, 1974). The single-component model by Dillon and Kumar (1985) suggests that it is not possible to accurately estimate a difference between the three components.

Maio and Haddock (2015) defined three significant features influencing the strength of attitude: (1) content; (2) structure; and (3) function. They also pointed to a three-component model of attitude, including a choice made in relation to a specific problem, object or individual as opposed to a dislike based on cognitive, affective and

behavioural knowledge. Breckler (1984) stated that these three components tend to be closely linked, however, they are not necessarily easily separated and, as attitude can be completely cognitive or affective, not all are necessarily represented (Bohner & Wanke, 2002). The use of cognitive, affective, and behavioural terms may assist scientists in understanding the context in which attitude presents different component figures (Eagly & Chaiken, 1993). However, the cognitive component involves closely related beliefs, views, ideas or understanding (Eagly & Chaiken, 1993). Furthermore, Maio and Haddock (2015) highlighted that the attitudes of individuals tend to be impacted by their knowledge and experiences in relation to the characteristics and structures of the relevant object.

In the current study, a personal belief towards (or understanding of) inclusive education is viewed as cognitive, while positive or negative evaluations of inclusive education are seen as affective, and the tendency to act or not with inclusive education is viewed as behaviour. Teachers' attitudes towards the inclusion of students with SEN suggest the teachers' perspectives or dispositions towards the specific ‘objectives’ of inclusive education. The notion might be formed of beliefs regarding being teachers of children with SEN in an inclusive classroom environment (the cognitive component of attitudes), feelings about working with these students (the affective component), and/or actions promoting their inclusion (the behavioural component) (Jury et al., 2021). It is critical to investigate these constructs because they may help predict teachers' participation in inclusive activities (Sharma & Sokal, 2016). Therefore, the attitude of a teacher can be partly understood as their intention to practice inclusive education. In addition, these three components are considered to shape attitudes, while also being

influenced by engagement within the framework or scheme in which an individual is positioned. The formation and modification of teachers' attitudes form a significant field of educational research, aimed at comprehending the relationship between attitudes and individual behaviour, as well as emotions and values (Weisman & Garza, 2002). Researchers tend to agree that attitudes are shaped from cognitive, affective and/or behavioural components (Eagly & Chaiken, 2005; Fabrigar et al., 2005; Guillén-Gámez & Mayorga-Fernández, 2020).

The cognitive component of attitude in the current study is viewed as a leading aspect of the attitudes and responses of teachers towards inclusive practices. However, teachers' attitudes tend to be influenced by their understanding of students with SEN, or their interaction with such students. When teachers' experiences are positive, they acquire a positive view of students with SEN, revealing an optimistic perspective on inclusion practices. However, a negative experience may also colour their idea of inclusion. Thus, teachers' positive or negative attitudes towards students with SEN are informed by teachers' knowledge and personal experience. On the other hand, this can be assessed as being highly positive to highly negative as an affective component of attitudes composed of feeling, sympathy or emotion (Eagly & Chaiken, 1993).

The behavioural component relates in a specific manner to the actions of individuals towards an object. When attitudes are formed, they have a stronger correlation with future behaviour when the following factors exist: the attitudes are accessible (easily recalled); the attitudes remain stable; the individuals have had direct experience with the object of attitude; and the people frequently express their attitudes

(Hogg & Vaughan, 2018). However, attitudes do not always predict behaviour, and the relationship between attitude and behaviour can be so weak that some scholars have even advised eliminating the attitude notion entirely (Hogg & Vaughan, 2018). Eagly and Chaiken (1993) noted that individuals who hold a positive attitude towards an object will be expected to show a positive response. Teachers' attitudes towards inclusion can be shaped by their behavioural reactions to, or previous experience of, students with SEN. These effects are generally derived by the affective and cognitive components of teachers' attitudes.

Attitude, behaviour and self-efficacy have a strong connection. As stated in the previous section, self-efficacy is described as a teacher's belief in their ability to take the essential actions to fulfil a specific educational role within a particular circumstance. When a teacher's self-efficacy is high, their attitude will be positive in terms of trying to take the essential actions to fulfil a specific educational role. Teachers' self-efficacy influences their behaviour and increasing teachers' self-efficacy results in increased confidence and participation in much more positive teaching behaviours. As a result, self-efficacy has an impact on teachers' behaviour and their attitudes are directly affected by their self-efficacy.

There has been much discussion of the fact that one of the three components that mostly (or exclusively) shapes attitude (Eagly & Chaiken, 1993). Thus, each attitude component is composed of thoughts and ideas, a cluster of feelings, preferences and disapprovals, and behavioural intents (Hogg & Vaughan, 2018). The three-component model raises an issue by prejudging the relationship between attitude and behaviour

(Zanna & Rempel, 1988), which is a difficult and complex topic in and of itself. In a similar manner, behaviour towards an object of attitude is not necessarily shaped from a mixture of the three components: an individual can hold an opinion of an object without ever taking action. For example, teachers often considered that students with SEN must be socially incorporated into mainstream schools but fail to implement specific training strategies for such students (Nayir & Kepenekci, 2013).

Various studies have identified a strong connection between the attitudes of teachers towards inclusion of students with SEN and teachers' acceptance of the presence of those students in their classrooms (e.g., David & Kuyini, 2012; De Boer et al., 2011; Killoran et al., 2014; Taylor & Ringlaben, 2012). However, other studies have also shown a weak connection with certain forms of SEN. Discussion relates to whether attitudes can predict behaviour, as many cannot be predicted (Hogg & Vaughan, 2018), including: differences in social communication patterns; differences in initial religious and philosophical concepts; and differences in cultural circumstances, in which attitudes are not viewed as the principal shapers of an individual's actions (Riemer et al., 2014). Thus, as indicated by Avramidis (2001), when an individual's behaviour on several occasions is found to arise from social causes, or an expectation of beneficial results, such behaviour can avoid self-instruction. Consequently, their attitude can subsequently conform to their behaviours, leading to the creation of attitudes explaining their action. This highlights that the relationship between behaviour and attitudes is collaborative; attitudes shape actions and actions form attitudes.

As previously stated, teachers' attitudes towards inclusion can be shaped by values and awareness, as well as feelings and actions towards students with SEN. The three components can decide their actual and potential reactions to inclusive education practices, either explicitly or unconsciously. The findings of studies using this model in special education suggest that the three components attitude can offer a more accurate measurement of the nature of attitudes (e.g., De Boer et al., 2011; Sermier Dessemontet et al., 2014; Paramitha & Kurniawati, 2019). In the current study, the researcher uses the three components model, due to its potential to emphasise the complex nature of a teacher's attitudes towards the inclusion of students with SEN. The model demonstrates that attitudes can be correlated with thoughts, feelings and behaviours, which may assist in understanding how attitudes can grow, improve and alter (Maio et al., 2018). The study of teachers' attitudes in relation to their values, experiences, feelings and behaviour can begin to indicate the relative strengths of each of these three dimensions, so awarding them greater weight than a model. The behavioural, affective and cognitive components thus influence behaviour, notions and beliefs towards the objects of attitude. The following section highlights the attitudes of teachers towards inclusion and factors that influence their attitudes.

2.6.3 Teachers' attitudes towards inclusion

Education policy is focused on the provision of adequate education facilities for every child attending mainstream education in many countries around the globe, including Turkey. Nonetheless, it is impossible to ensure the full inclusion and acceptance of

children with SEN unless actual changes take place in teachers' attitudes towards the inclusion of students with SEN. It is more significant to remove barriers related to attitude than those that are physical or environmental. However, while building regulations manage some physical and environmental factors, there is no legislation capable of pressuring individuals to change their attitudes (Antonak & Larrivee, 1995). In this section, the researcher discusses the importance of teachers' attitudes in the success of inclusive education and the factors that affect their attitudes.

The values, experience and knowledge of teachers play an important role in teaching and developing students' learning. Nevertheless, further research has revealed that teachers require training to be able to practise their beliefs concerning knowledge and learning (Maggioni & Parkinson, 2008; Makoelle, 2014). Maggioni and Parkinson (2008) claimed that the assessment (or metacognitive) method of self-testing knowledge provided an opportunity for teachers to use acquired knowledge efficiently and actively search for new skills, so changing their beliefs. Cunningham et al. (2004) found that a better knowledge of a topic resulted in teachers obtaining fewer low scores when it came to teachers' knowledge-testing activities. These findings emphasized that teachers need training to recognise the position of teachers in the classroom and improve their awareness of current teaching techniques, as well as ways of transforming their training into educational practice.

Larrivee and Cook (1979) established three key factors influencing the attitudes of teachers towards inclusion: the concerns expressed by teachers in mainstream schools regarding the importance of academic success and the impact of including students with

SEN; the issues raised by teachers in mainstream school concerning inadequate administrative help and supportive resources; and that teachers' abilities, competences, training and experience are crucial when teaching children with SEN. Similarly, Koutrouba et al. (2006) attributed the willingness of teachers to accept students with SEN as relying on: the teachers' own self-confidence in their ability to teach children with SEN; the teachers' belief that, in mainstream schools, students with SEN should be taught in the same classrooms as their typically developing peers; and the belief of teachers in the ability of those with special needs to develop and become successful members of a community. It is therefore vital to ensure that teachers are better prepared for inclusive education application, including being given appropriate knowledge and skills.

Many studies have identified negative attitudes towards students with SEN as a major barrier to successful inclusive education practices (Avramidis et al., 2000; Blackman et al., 2019; Woodcook and Woolfson, 2019). For example, Malinen et al. (2012) conducted a study about self-efficacy and attitudes towards the inclusion of students with SEN among 451 teachers in Beijing. Their questionnaire results showed that negative attitudes are a significant obstacle to inclusive education. This finding was also reported by Ellins and Porter (2005) who found that such negative attitudes towards students may prevent a sense of urgency, while at the same time exerting a damaging impact on behaviour and the level of teaching. This supports the contention that teachers' attitudes are significant for successful inclusive practices, as they play a main role in creating an effective inclusive environment. Studies revealed several positive outcomes for learners both with and without SEN in inclusive environments,

such as academic, social and emotional benefits (Hehir et al., 2016), yet a variety of studies have shown a diversity of attitudes towards inclusion among teachers (e.g., Avramidis et al., 2000; Saloviita, 2020a; Zagona et al., 2017).

Teachers generally hold positive attitudes towards the values of inclusivity in relation to students with SEN (Beacham & Rouse, 2012; Gul & Vuran, 2015). Teachers tend to express support for inclusive education, but in terms of theory rather than practice. Saloviita (2020a) found that teachers generally appear to have a positive attitude towards the principles and advantages of inclusion, but this becomes more negative during its application. This finding is consistent with that of Landis (2019), which suggested that teachers may have been positive about the concept of inclusion, however, teachers' lack of experience with children with SEN resulted in negative attitudes towards inclusion of students with SEN.

Instead, other studies reported the association of negative attitude with teachers' training. Teachers who hold negative attitudes towards inclusion reported that they received insufficient training and resources to help their students overcome academic barriers (Al-Kheraigi, 1989; Al-Faiz, 2006); insufficient education results in negative attitudes. Training is therefore crucial for the development of a positive attitude among teachers, enabling them to manage the demands of an inclusive classroom. Rose (2010) emphasised that it is possible to improve the attitudes of trainee teachers by direct experience with inclusive education, which has the potential to enhance both attitudes and skills (Pijl et al., 1997). Avramidis et al. (2019) conducted a study of teachers' attitudes towards inclusion and their self-efficacy in Greece. The most

interesting finding in their study was that teachers' attitudes towards inclusion are also influenced by previous involvement in special education training courses, with those who have completed such teacher training being less worried about inclusion and more open to welcoming students with SEN into their classroom (Avramidis et al., 2019).

While positive attitudes encourage full inclusion of students with SEN, negative attitudes result in only partial inclusion and creating an environment in which less is expected from each student (Smith, 2000). Teachers tend to perform well when they expect more of students with SEN (Spencer-Iiams & Flosi, 2020); negative expectations from teachers can influence both learning opportunities and the performance of students with SEN in inclusive settings (Pit-ten Cate et al., 2018). The effect of teachers' expectations on student performance is a result of their negative attitudes. The study of Gentrup et al. (2020) examined the relationship between teacher expectations and student learning in Germany by analysing longitudinal data from 64 classes and 1,026 first-grade children. The results of this study indicated that high teacher expectations were shown to relate to increased academic performance in students, while low teacher expectations were found to be associated with poor student performance. Several studies have confirmed that teachers' attitudes impact the performance of students, as well as their levels of self-esteem and achievement (Lavy & Naama-Ghanayim, 2020; Mbuva, 2017). Lavy and Naama-Ghanayim, (2020) declared that positive attitudes towards inclusion lead to students' improved performance, while positive attitudes towards inclusion enable positive communication with learners, resulting in higher academic achievements (Hamre & Pianta, 2001). In addition, Gal et al. (2010) examined teachers' attitudes towards inclusion in Israel by conducting a questionnaire

with 53 teachers. They investigated how positive attitudes among teachers were significantly correlated with their students' academic achievements. These relationships could be explained by use of modified/special teaching methods for students with SEN. When teachers specifically modify their teaching methods for students with SEN, it would increase students' performance. Teachers holding positive attitudes towards inclusion tend to modify their methods for their students with SEN, while also exerting a positive influence on those students' peers (Ormrod, 2014). However, teachers with negative attitudes have been found to exert a negative influence on both students with SEN and the attitudes of their peers (Pellegrino et al., 2015).

Yada et al. (2018) specified that such expectations can be altered, as demonstrated by teachers proving generally more optimistic about inclusion following a single special education course. This result may be explained by the fact that teachers' self-efficacy is likely to increase by improving their knowledge in the subject during the special education course and the increase in self-efficacy could be reflected as a more positive attitude towards inclusion. There is a strong relationship between teachers' positive attitudes and enhanced inclusive educational practice (Ozokcu, 2018b). For instance, a study by Bender et al. (2008) was performed using three different questionnaires completed by 91 teachers to investigate teachers' attitudes towards inclusion and their use of effective teaching strategies. They established that regular education teachers who had necessary training related to inclusion tended to demonstrate a positive attitude and were more optimistic in their inclusion practices. Furthermore, studies have also shown that teachers with negative attitudes towards inclusion tend to have inadequate teaching strategies and weak pedagogical techniques

(Avramidis & Norwich, 2002), resulting in underperformance by students with SEN (Forlin et al., 2009).

Studies showing that students with SEN experience greater difficulties in finding social acceptance in a mainstream classroom highlight the complexities surrounding inclusion (Schwab et al., 2020). For example, De Leeuw et al. (2019) interviewed 28 students with SEN in grades 5 and 6 and discovered that students with social, emotional, and behavioural difficulties are frequently socially excluded. Comparison of this finding with other studies (Marlina & Kusumastuti, 2019; Schwab, 2019) confirmed that students with SEN are less welcomed by their classmates in mainstream classrooms, having fewer peers and finding themselves less frequently part of a social interaction network. These results demonstrate that the adoption of inclusive education requires careful thought and analysis of all factors impacting student progress. Teachers are the main people responsible for the adoption of inclusive education and creating an inclusive classroom atmosphere. Two important factors affecting their success in fulfilling this task could be their training and experience. Lee et al. (2015) noted that teachers should have an appropriate professional role to create a successful teaching environment, adding that teachers with effective training related to special education generally demonstrate a more positive perspective on inclusion, so enhancing their educational practice. This contrasted with teachers lacking such training, although most did not completely object to the inclusion model. Moreover, several barriers to inclusion were identified in the research conducted by Hicks-Monroe (2011) investigating the educational benefits of inclusion. One of the barriers reported

by teachers was that they lack the required training for working with students with SEN and this results in negative effects on their attitudes and classroom practices.

Lee and Low (2013) stated that teachers' attitudes tend to shape the social and psychological dynamics of inclusive education practices, while Buehl and Beck (2015) indicated that teachers cannot be expected to promote teaching activities that do not accord with their own belief system. This highlights the importance of teachers following their personal understanding of their ability to participate in inclusive practices (Forlin, 2010).

As a result, it is widely accepted that the success of inclusive education is highly dependent on teachers' attitudes, as they are critical in building an effective inclusive environment. It is possible to infer that investigating teachers' attitudes toward inclusion of students with SEN is inadequate and paints a contradictory image. Numerous researchers have attempted to ascertain teachers' attitudes towards inclusion of students with SEN and have identified several factors affecting their attitudes, including teacher-related, child-related and environment-related factors. According to many of these studies, teachers are generally supportive of the inclusive education concept. Although most teachers indicated that they embraced the philosophy of inclusive education, there remain several issues when it comes to their capacity for successful implementation (Alharti & Evans, 2017). This confirms the importance of studying the attitudes of teachers in order to comprehend their concerns and thus the challenges in applying inclusive education. The following section focuses on the factors influencing teachers' attitudes to inclusive education.

2.6.4 Factors influencing teachers' attitudes to inclusion

Teachers' attitudes are fundamental for successful inclusive practices and examining the factors associated with attitude is important because a better understanding of the underlying causes of attitude is an important step towards changing teachers' attitudes (Alnahdi et al., 2019; Parasuram, 2006; Saloviita, 2020b). Savolainen et al. (2012) found that a particular social relationship between children, teachers and institutions can influence the attitudes of teachers, as a result of a single variable being unable to subsist or function in isolation. Avramidis (2001) described these variables as being related to: (1) teachers; (2) children; and (3) the educational environment.

2.6.4.1 Teacher-related variables

A considerable amount of research has been undertaken into the characteristics of teachers to assess their attitudes towards the inclusion of students with SEN (e.g., Butakor et al., 2020; Galaterou & Antoniou, 2017; Ginevra et al., 2021; Khalaf, 2021). For example, Vaz et al. (2015) drew up the following set of teacher-related variables: training, gender, age, teaching experience and having a family member with a disability.

2.6.4.2 Training

The existing literature shows that most teachers, regardless of their attitudes towards inclusive education, reported training to be a critical factor in shaping their attitudes towards inclusion. Avramidis and Norwich (2002) stated that the attitudes of teachers to,

and their knowledge of, the practice of inclusion could be significantly influenced by their training, which is thus one of the most important determinants for the improvement of attitudes towards the inclusion of students with SEN. Special education courses have therefore been introduced at several universities to improve trainee teachers' knowledge of students with SEN.

Teacher training has been found to be an important factor in the research on teachers' attitudes towards inclusion in many nations. Studies undertaken in the UK (Beacham & Rouse, 2012), the US (Monje, 2017) and Australia (Vaz et al., 2015) found that teachers were less resistant to inclusive practices following specialised training in inclusive education. Kurniawati et al.'s (2017) survey was designed to investigate prior to, and following, a training course for teachers in how to teach students with SEN, as well as teacher's lacking any significant training, comprising 11 public primary schools (N (experimental group) = 33, N (control group) = 34). They revealed that the attitudes of both groups became more positive following the course. Similar finding was also reported by Beacham and Rouse (2012) who conducted research investigating the attitudes of student teachers in the UK using a pre- and post-questionnaire approach. They found that individuals who had not yet attended special education courses demonstrated more negative attitudes than those who had undertaken the training. These investigations all concluded that training forms a key factor in developing positive attitudes towards inclusion.

Similar studies have revealed that a considerable number of teachers in Turkey lack adequate knowledge regarding inclusive education, emphasising how appropriate

training can generate positive changes in the attitudes of such teachers towards inclusion (Batik, 2018; Deniz & Coban, 2019; Sonmez et al., 2019). For example, a review by Deniz and Coban (2019) examined 33 studies carried out to determine the attitudes of teachers towards inclusion in Turkey between 2007 and 2017 and used a meta-synthesis method. The most obvious finding to emerge from their analysis was that most teachers with negative attitudes do not have sufficient training and knowledge about inclusive education. In addition, Sonmez et al. (2019) carried out research on the effect of the in-service training programme which is developed to increase teachers' competence in inclusive education. The results of pre- and post-tests showed that teachers' attitudes towards the inclusion of students with SEN changed positively after in-service training related to inclusive education. In accordance with the results of Sonmez et al. (2019), previous studies also demonstrated that positive attitudes towards inclusion can be achieved by providing teachers with in-depth information about inclusive education, while simultaneously enhancing their skills regarding its practice (Sucuoglu et al., 2013). In summary, these studies suggest that additional training (whether in-service or during preparation courses) generally results in teachers having more favourable attitudes towards inclusion.

2.6.4.3 Age and length of teaching experience

In addition to training, teachers’ ages and their teaching experiences have been identified as influencing their ability to change their attitudes towards the inclusion of students with SEN. Existing studies have reported varying results, but with a significant

number concluding that age is an influential factor, with inclusive education tending to be favoured more by younger and less experienced teachers (Avramidis, et al., 2000; Bhatnagar & Das, 2014; Dukmak, 2013; Kuroda et al., 2017; Opoku et al., 2021; Saloviita, 2020b). Boyle et al., (2013) evaluated teachers' attitudes towards inclusion from a variety of perspectives by conducting a survey of 307 teachers and 84 management-level staff in Scotland. The study's primary finding was that teachers were more negative towards inclusion after their first year of teaching, but once at this level of attitude, it remained stable across the subsequent years of experience. Likewise, Mngo (2017) conducted a survey of 346 teachers in Cameroon and found that teachers with more experience were more likely to support inclusive education than teachers with less experience. However, Ahmmed et al., (2014) found that younger teachers in Bangladesh held a more positive approach to inclusive education, with older and more experienced teachers being potentially less willing to change. It is somewhat surprising that greater teaching experience influenced teachers' attitudes towards inclusion positively in the study of Ahmmed et al., (2014) and there was no possible explanation for the negative correlation between the variables of teaching experience and age. Saloviita (2020b) also identified inclusive education as being viewed as a challenge or incurring increased workload, so placing pressure on those teachers faced with implementing new methods and interacting with unfamiliar colleagues in inclusive settings.

In addition, several studies have shown that teachers with average teaching experience tend to hold more positive attitudes towards inclusion than those with less (or no) experience (e.g., De Boer et al., 2011; Khochen & Radford, 2012; Prakash,

2012; Saloviita & Takala, 2010). These results are likely to be related to increasing teachers' self-efficacy after years of teaching experience. The experience of teaching students in need of special education can strengthen teachers' self-confidence in their ability to teach all students, subsequently dispelling any problem occurring during inclusive practices (Unianu, 2012). On the other hand, several further studies have found no significant connection between teaching experience and attitudes of teachers towards inclusion of students with SEN (Logan & Wimer, 2013; Praisner, 2003). For example, in the study of Leonard and Smyth (2020), 78 teachers responded to an online questionnaire for the investigation of teachers' attitudes towards the inclusion of children in Ireland. They discovered that years of teaching experience had no significant effect on the attitudes of teachers regarding inclusion in mainstream schools in Ireland. A similar result was also found in Rakap and Kaczmarek's (2010) investigation of the attitude of regular education teachers towards the inclusion of students with SEN in Turkey, with the researchers concluding that those demonstrating the most positive attitudes tended to have between one and four years of teaching experience but there was no significant connection between teaching experience and teachers' attitudes towards inclusion.

2.6.4.4 Gender

There is currently no general agreement concerning the impact of gender on teachers' attitudes towards inclusion of students with SEN. Various studies have reported finding no relationship (e.g., Avramidis et al., 2000; Logan & Wimer, 2013; Leonard & Smyth,

2020). For example, Logan and Wimer (2013) investigated teachers' attitudes towards inclusion in the US by comparing the questionnaire results of 56 male and 145 female teachers. Their research indicated that gender had no effect on teachers' attitudes towards inclusion. On the other hand, some studies (e.g., Alasim & Paul, 2019; Saloviita, 2019; Vaz et al., 2015) found that male teachers tend to hold more negative attitudes than female teachers towards the inclusion of students with SEN. This result is explained by suggesting that male teachers tend to be less patient with students with SEN than their female counterparts (e.g., Boyle et al., 2013; Butakor et al., 2020; Vaz et al., 2015).

However, several studies have taken issue with this view, suggesting that male teachers actually hold more positive attitudes towards inclusion of students with SEN than their female colleagues (e.g., Alquraini, 2011; Ahmmed et al., 2014; Bhatnagar & Das, 2014; Dorji et al., 2021). For example, Dorji et al. (2021) investigated Bhutanese teachers' attitudes towards inclusion by comparing the survey results of 70 male and 75 female teachers. Considerable differences in attitude were seen between male and female teachers. Males had significantly greater positive attitudes towards inclusion than females. As a result, gender will be considered in this study as an effective factor in teachers' attitudes.

2.6.4.5 Influence of a family member/friend with a disability

Only a small number of pieces were found in the existing literature exploring the connection between attitudes towards the inclusion of students with SEN and having a family member or friend with a disability. For example, Alquraini's (2011) research used a quantitative technique to analyse teachers' attitudes to the inclusion of children with SEN in Saudi Arabia. Alquraini (2011) considered that having a family member or friend with a disability was a potential influence on the attitudes of teachers towards inclusion of students with SEN, although the study failed to show a significant correlation.

By contrast, Block (1995) identified a positive correlation between a positive attitude towards inclusion and having a family member or friend with a disability. This conclusion was supported by Al-Ahmadi's (2009) study, which was conducted in Saudi Arabia by using a mixed-method approach. The results of 251 questionnaires and 20 interviews showed that teachers who have a family member or friend with SEN had greater positive attitudes towards inclusion than teachers who have no family member or friend with SEN. Furthermore, Parasuram (2006) tested the impact of various variables on teachers' attitudes to inclusive education, including: gender, age, income level, having a family member with a disability, and years of teaching experience. The research findings concluded that there was a positive relationship between having a family member with a disability and teachers' attitudes towards inclusion. This was supported by Bhatnagar and Das (2014), who found that teachers with a personal relationship with an individual with SEN held more positive attitudes towards the inclusion of students with SEN than those who lacked this experience. This result could

be because teachers' close relationships may cause them to approach inclusion practices more positively, affecting their attitudes accordingly.

2.6.4.6 Specialised subjects and inclusion

In the existing literature, only a few studies have examined the relationship between a teacher's specialised subject and their attitude towards the inclusion of students with SEN. For example, Saloviita (2020a) conducted a study in Finland that surveyed 1,764 teachers, consisting of 824 classroom teachers, 575 subject teachers and 365 special education teachers. The results demonstrated that, while the classroom teachers and subject teachers held negative attitudes towards the inclusion of students with SEN, special education teachers expressed positive attitudes. The study grouped subject teachers into languages, arts, physical education, humanities, science and mathematics, identifying little difference between these groups. This result may be because subject teachers work with many groups and have several times the number of students compared to other types of teachers. Additionally, their students are on average older and exhibit a greater range of skills because of their age. This outcome is contrary to that found by Hemendinger (2015) who discovered that there were no statistically significant differences between subject areas and teachers of mathematics, science, and English in Georgia – they all had a generally neutral to somewhat positive attitude towards the inclusion of students with SEN.

On the other hand, Stauble's (2009) investigation of teachers' attitudes towards inclusion in the US identified a meaningful difference between subject areas. Mathematics teachers were found to hold more negative attitudes towards inclusion than those teaching language, arts and social studies. The results of this study also reported that a quarter of mathematics teachers felt that students with SEN should be educated in a separate classroom instead of mainstream classrooms. These results are likely to be related to teachers' training in inclusive education. Overall, there seems to be some evidence to indicate that there is no significant connection between teachers' specialist subjects and their attitudes towards inclusion.

2.6.4.7 Environment-related variables

Physical and human resources are considered to be a vital component of effective inclusion practices and the development of positive attitudes towards inclusion (Elshabrawy & Hassanein, 2015). Environmental variables influencing teachers' attitudes towards inclusive education frequently revolve around the availability or provision of human (student services workers, special teachers, and speech therapists) and physical support services (teaching materials, IT resources, a restructured physical environment) (Makoelle & Somerton, 2021). Environmental factors are important in inclusive education as they are in all classroom teaching activities. Teachers are more willing to accommodate students with special needs in their classrooms when they are supplied with enough and appropriate equipment and materials, as well as support from other school staff (Avramidis & Norwich, 2002). Additionally, "the school environment's

structure," "the school's ethos," "the availability of specialist and physical support," and "adopted teaching materials" are factors that influence teachers' self-efficacy and confidence in their abilities, which has an impact on "the translation of positive attitudes into action" (Sosu et al., 2010).

Yu and Park (2020) explored the impact of the attitudes of teachers towards inclusive education in the US by collecting written reflections from 90 teachers. The results of their study showed that teachers held a more positive attitude in a less restricted environment. Moreover, adding available resources has minor or no influence on teachers' attitudes (Chiner & Cardona, 2013). The nature of the increased resources is critical. Saloviita's (2020b) findings suggested that teachers with access to more resources held more positive attitudes compared to teachers with limited access to resources. It is somewhat surprising that additional teacher training does not always result in a shift in instructors' attitudes (Saloviita, 2020b). Instead of additional training, it has been demonstrated that fostering collaboration between teachers and other school staff helps to enhance their positive attitudes (Ahmmed et al., 2014; Chiner & Cardona, 2013).

Al-Zyoudi (2006) revealed that teachers' attitudes towards inclusion tend to differ in relation to the school environment, with acceptance of inclusion being improved when educational buildings were are made accessible to children with SEN. This suggests that physical support (i.e., accessibility and appropriate resources) is essential for ensuring positive attitudes towards the inclusion of students with SEN. Thus, the success of inclusive education relies on the effective application of appropriate human

and physical resources (Boyle & Lauchlan, 2010). This is particularly important as inadequate resources can exert a negative impact on the attitudes of teachers. It is therefore vital to recognise the importance of teacher's attitudes in avoiding any impediment to the implementation of inclusive education.

A considerable number of studies have found a lack of human and physical resources to be an important factor in teachers' attitudes towards inclusion, identifying this to be one of the greatest challenges to inclusive practices in many countries, including Turkey. For example, Nar and Cavkaytar (2019) noted that most Turkish schools do not have the essential resources available for all students to fulfil their differing educational needs and lack accessible environments. Factors negatively impacting on teachers' attitudes towards inclusion of students with SEN in Turkey were found to include a lack of financial resources, human resources, a curriculum, and educational materials.

In summary, lack of resources is a subject of concern, according to existing literature. Schools should be able to assist all students in achieving greater success in regular education settings with sufficient resources. Successful inclusion practices require not just resources, but also teachers' effective implementation; attitudes and resources are deeply connected when it comes to inclusion implementation. If, for instance, a teacher has a negative attitude towards the inclusion of students with SEN, resourcing may be ineffective. On the other side, inadequate resources could be somewhat ameliorated by positive attitudes. It is consequently

critical to consider teachers' attitudes since a negative attitude would significantly obstruct the implementation of inclusion.

2.6.4.8 Child-related variables

Many previous studies have focused on assessing the attitudes of teachers to different types of children with SEN, along with such students' suitability for inclusive education. Many have concluded that teachers' approaches to SEN can be characterised by the type of disabilities with which they are faced (Avramidis, 2001). The severity and type of disability can also have an impact on positive attitudes towards inclusion (Vaz et al., 2015). De Boer et al. (2011) indicated that teachers rarely dispute the inclusion of students with mild difficulties, who have no need of a teacher with specialised experience or communication skills, such as mild hearing loss and mild physical and visual disabilities. However, a less positive reaction was identified when it came to the inclusion of students with mild to moderate intellectual disabilities, and moderate hearing loss and visual disabilities as these were seen to require additional teaching skills. According to De Boer et al. (2011), teachers' attitudes towards inclusion are also affected by the context and type of SEN, with teachers being more positive towards inclusion of children with mild SEN than toward students with more complex needs. Additionally, research indicates that teachers' explicit attitudes towards children with learning or intellectual disabilities are often more positive than their attitudes toward students with behavioural difficulties (De Boer et al., 2011).

Schwab (2019) noted that students with emotional and behavioural issues were felt to present greater difficulties for teachers than all other forms of SEN. In addition, McCarthy (2019) surveyed 163 elementary and secondary general and special education teachers to investigate their attitudes towards students with mild and severe disabilities. The research found that those with specific learning disabilities were given less classroom support than those with other types of disabilities, such as orthopaedic, visual or hearing. This finding is consistent with that of Toya et al. (2019) who reported that teachers held negative attitudes towards students with ADHD because it appears to be poorly understood among educators. This led Kauffman et al. (2018) to highlight the need to improve teachers' awareness of the needs of such students, in order to encourage improved attitudes and inclusion practices.

Similar results concerning the relationship between teachers' attitudes towards students with SEN and their type of disabilities has also been established in relation to Turkey. For example, Rakap and Kaczmarek (2010) found that teachers demonstrate more positive attitudes towards students with physical disabilities and mild to moderate learning difficulties. At the same time, they highlighted that most of the teachers in their research held negative attitudes towards the inclusion of students with intellectual impairments and autism, as well as those with behavioural difficulties and hearing and vision impairments.

In summary, teachers' attitudes towards the inclusion of students with SEN vary according to type of SEN. While teachers have a more positive attitude towards inclusion of students with specific types of SEN that teachers have more knowledge of,

insufficient knowledge about types of SEN is associated with a negative attitude. A possible explanation for this might be that teachers who have knowledge about types of SEN have higher self-efficacy, which is associated with a positive attitude as explained earlier in the theoretical framework section.

2.7 Studies of teachers' attitudes towards inclusive education

2.7.1 International studies of attitudes toward inclusion

Most studies undertaken prior to 1995 indicate that, during1 this period, teachers generally tended to hold negative attitudes towards inclusion (Scruggs & Mastropieri, 1996). This conclusion was based on a meta-analysis of 28 studies undertaken between 1958 and 1995, investigating teachers' attitudes towards inclusive education in various nations. The meta-analysis identified little difference between countries. The research suggested that teachers' attitudes towards inclusive education were negatively impacted by viewing children with SEN as leading to additional work, and a failure to understand the social and academic benefits of such inclusion. Much of the research into teachers' attitudes reflects an increasing trend towards the implementation of inclusive education. For example, De Boer et al. (2011) reviewed 26 studies exploring teachers' attitudes that had been undertaken in various countries between 1999 and 2008. Their results indicated that teachers' attitudes towards inclusive education were generally found to be neutral or negative in relation to mainstream schools, while no research demonstrated any strongly positive results. The meta-analysis also identified

multiple variables related to teachers' attitudes towards inclusion, i.e., training, educational background, teaching experience and the form of students' special needs.

Leyser et al. (1994) undertook a cross-cultural study into the attitudes of teachers towards inclusive education in six nations: Taiwan, the US, Ghana, Israel, the Philippines, and Germany. Their study found that teachers' attitudes varied according to their national background. The results of this study endorse Armstrong's (2005) view that inclusive education must be considered in terms of the cultural diversity between nations. In the cross-cultural study, teachers holding the most positive attitudes towards inclusive education were found in Germany and the US, while the attitudes of those in Taiwan, Ghana, Israel and the Philippines were primarily neutral (Leyser et al., 1994). The most negative attitude was found among teachers in Israel. The researchers clarified the differences in terms of variables, including: teacher training related to special education; students' grade level; age; length of teaching practice; and previous experience of teaching students with SEN.

Several studies have found that the progress of inclusion depends primarily on teachers' attitudes and their ability to accept students with SEN into their classrooms in a meaningful manner (De Boer et al., 2011; Malinen et al., 2012; Saloviita, 2020a). The findings of these studies generally agree that teachers' willingness to work in inclusive settings is linked to the severity of a student's needs and the intensity of the necessary inclusive practices, as well as teachers' interactions and the educational setting – physical and human resources. For example, Bouck and Park (2016) concluded that teachers held negative attitudes towards inclusion in general. However, teachers held

positive attitudes towards students with learning difficulties, but were more negative in their attitudes towards students with mental or severe disabilities. Overall, such studies have demonstrated that, while many teachers agreed with the concept of inclusive education (Avramidis et al., 2000; Kurth & Forber-Pratt, 2017; Shin et al., 2019), a significant proportion expressed negative attitudes, which tended to be largely influenced by the types of students' SEN.

As explained earlier, teachers (who are required to take a leading role in interacting with the reality of the classroom) are often not sufficiently trained to fulfil the requirements of students with specific disabilities. Such teachers are therefore more likely to support inclusive education practices if these only involve students with sensory difficulties or mild mobility issues. Moreover, many teachers lack a positive understanding of students with behavioural problems (Devarakonda & Hodkinson, 2021). That they have insufficient knowledge of students with specific types of SEN may cause teachers to have a negative attitude towards the inclusion of these students. In addition, various studies have shown that teachers agree that exclusion is appropriate for these students for practical reasons (Sagner-Tapia, 2018). This indicates the importance of ensuring that schools are inclusive and create an environment capable of serving the needs of both children and teachers (Mangal & Mangal, 2019). Furthermore, Saloviita (2020a) found that most teachers in Finland held negative attitudes towards inclusive education practices in mainstream classrooms, due to a lack of adequate knowledge, which then led to difficulties in implementing such practices. In addition, the teachers identified ineffective systematic mechanisms for the preparation, training, and appraisal of teaching practices in inclusive education, along with a lack of trust at senior

management level when it came to methods of addressing issues related to inclusion. Likewise, Galaterou and Antoniou (2017) used a survey to assess teachers' attitudes towards inclusive education in Greece. The results of the survey demonstrated that teachers who had previously implemented inclusive practices with beneficial outcomes held more positive attitudes towards inclusion.

In the Middle East, the current literature focusing on the attitudes of teachers towards the teaching of students with SEN indicates a growing interest in inclusion. Middle Eastern teachers often express negative attitudes towards inclusive practices in response to their inadequate knowledge and understanding of the requirements of inclusive education (Weber & City, 2012). Hence, most of the related literature suggests that teachers in mainstream schools need to be trained in appropriate methods of implementing inclusive education practices (Gaad, 2011; Khochen & Radford, 2012; Weber & City, 2012). For example, Alanazi's (2012) study revealed that teachers in Saudi Arabia held slightly positive attitudes towards inclusive education, in accordance with their experience and knowledge of inclusive education and SEN requirements. The results of the interviews in this study showed that although teachers are aware of the importance of training, they think of in-service training as a burden on their workload. In addition, Almotairi (2013) examined teachers' attitudes towards inclusive education in Kuwait by conducting a questionnaire of 560 teachers and involving interviews with 30 teachers. The results of questionnaires demonstrated that teachers' attitudes towards inclusion in Kuwait were generally negative, primarily focusing on a belief that the social benefits of inclusion were not sufficiently significant in terms of children's academic achievements. In addition, the results of interviews showed that teachers who held

negative attitudes towards inclusion stated that although there were likely to be social advantages, they were insufficient to worth risking the school performance of students without SEN. As mentioned earlier, this result accords with the view that teachers do not support inclusive education because the success of students without SEN could be affected negatively.

A few studies have demonstrated a positive approach to inclusive education in the Middle East (Khochen & Radford, 2012; Ojok & Wormnæs, 2013). Such reports, however, indicate that the greatest challenge is the development of an effective educational force. Khochen and Radford (2012) examined the attitudes of teachers and head teachers towards inclusive education in Lebanon. To gather data, a mixed-method strategy was employed. Forty teachers in mainstream schools responded to surveys, and leading headteachers were interviewed. It was observed that teachers held positive attitudes towards inclusive education for students with SEN in mainstream schools. They also noted challenges when it came to the inclusion of all students, related in particular to limited training, shortage of qualified educators and the high cost of inclusion services. However, the study's results did not reflect the attitudes of the wider population of teachers in Lebanon; rather, they reflected the attitudes of individuals who participated in the national inclusion project.[1] AlShahrani (2014) conducted a study which investigated the attitudes of teachers in Saudi Arabia towards inclusion of students with SEN. The results showed overall positive attitudes of teachers but these attitudes also differed significantly in relation to type of SEN. AlShahrani (2014) also

[1] The national inclusion project was planned for the creation and implementation of a campaign aimed at promoting socio-economic inclusion and disability mainstreaming via cultural transformation.

referred to specific factors that were mirrored consistently in the majority of the examined studies, including: a lack of training to ensure successful inclusion in mainstream schools; a lack of consistency between schools and services; a shortage of appropriately trained teachers; insufficient in-service instruction, and limited experience of inclusive practices.

In this section, international studies on teachers' attitudes towards inclusive education were examined. The results of these studies generally demonstrated negative teacher attitudes, but positive attitudes were found in a limited number of cases. Factors affecting teacher attitudes mentioned in the previous section are associated with the studies presented in this section. Factors presented in the previous section have been found to have an important effect on teacher attitudes in many international studies. The next section analyses studies investigating teacher attitudes towards inclusion of students with SEN in Turkey.

2.7.2 Turkish studies of attitudes towards inclusion

There is currently insufficient data concerning attitudes towards inclusion in Turkey, but existing research has signalled that Turkish teachers often express negative attitudes towards inclusive education (Ozer et al., 2013; Rakap & Kaczmarek, 2010; Secer, 2010; Uysal, 2004). For example, in a study investigating physical education teachers' attitudes towards children with intellectual disability, Ozer et al. (2013) analysed questionnaires completed by 729 physical education teachers. The results of the study

confirmed the association between teachers' attitudes and factors concerning years of teaching experience and having family/friends with intellectual disability. However, there was no connection between attitudes of teachers and teacher's gender or having experience of teaching students with intellectual disability.

Researchers have also revealed that a considerable number of teachers in Turkey have inadequate knowledge of inclusive education, emphasising that appropriate training has the potential to generate positive change (Ozokcu, 2018a; Ozcan, 2020; Rakap et al., 2016; Sarı, 2007; Sari, Celikoz and Secer, 2009). For example, Ozokcu (2018a) used a survey to examine Turkish teachers' attitudes and their self-efficacy towards inclusion of students with SEN. The findings indicated a positive significant association between teachers' attitudes toward inclusion and their self-efficacy. Additionally, the findings indicated that teachers did not have essential skills and knowledge of inclusive education. Furthermore, the study suggested that training programmes aimed at enhancing teacher competence and attitudes in inclusive education may be included in in-service training programmes. This supported how positive attitudes towards inclusion of students with SEN could be promoted by offering teachers in-depth information and enhancing their relevant skills (Seçer, 2010).

In the previous section, it was stated that in international studies on teachers' attitudes, teachers support inclusive education as a general concept. However, Melekoglu (2013) claimed that most teachers in inclusive settings do not support inclusive education in general. Vuran (2005) reported that typically developing children were found to have negative attitudes towards students with disabilities, while their

teachers also lacked any positivity towards implementing inclusive education. Sucuoglu et al. (2013) focused on preschool teachers' attitudes to inclusion in Turkey. Thirty preschool teachers completed a questionnaire and the results demonstrated that many teachers considered inclusive practices to constitute an additional burden and described experiencing frustration when attempting to practice inclusive education. This led them to an objection to teaching students with special needs, believing that inclusion lacks any positive outcomes (Ozcan, 2020; Sarı, 2007).

Rakap and Kaczmarek (2010) examined the attitude of 201 teachers towards inclusive education in Turkey, demonstrating that they held slightly negative attitudes towards inclusion. The study also revealed that teachers who had undertaken compensatory education training at university expressed relatively more favourable attitudes towards inclusive education. Additionally, female teachers were found to express greater negative attitudes towards inclusive education than their male peers. Likewise, Sari et al. (2009) stated that teachers' attitudes were one of the most important factors in the success of inclusive education in Turkey. Sari et al. (2009) examined the attitude of 264 Turkish pre-school teachers, reporting that they demonstrated positive attitudes towards inclusion, primarily in response to their knowledge of inclusive practices. These researchers also reported that training plays an important role in teachers' attitudes towards inclusion, finding a strong correlation. These studies show that training could be an important factor in Turkish teachers' attitudes towards inclusion and should therefore be considered in the current research.

In the section examining the factors affecting teacher attitudes, it was stated that gender was a factor affecting teacher attitudes. As in international studies, this factor has been considered in studies conducted in Turkey. For example, Palavan et al. (2018) conducted a study with 500 primary school teachers working in the province of Gaziantep, focusing on attitudes towards inclusion in relation to gender, age groups and length of service. The results showed that female teachers held more positive attitudes towards inclusive education than male teachers, while the lowest scores were found among younger teachers with the least teaching experience and older teachers with the greatest length of experience. The study was limited to local surveys in Gaziantep, Turkey.

In addition, Ravenscroft et al. (2019) analysed the attitudes of 253 primary school teachers from urban and rural parts of Turkey towards visually impaired children in mainstream classrooms. The primary school teachers were found to have experienced a significantly positive influence from their initial and in-service training in disability, which led them to generally express positive attitudes towards the inclusion of students with SEN. In a similar study, Ozokcu (2018b) examined 318 teachers' attitudes towards inclusion of students with SEN in the province of Malatya, identifying fairly positive attitudes, with no significant differences in relation to the participants' gender and age. However, teachers' training background and experience in teaching students with SEN were contributary factors in relation to teachers' attitudes towards inclusion of students with SEN. It is important to note that only 11% of teachers were male in this study. Moreover, both studies (Ozokcu, 2018b; Ravenscroft et al., 2019) were carried out in only one city and did not reflect the attitudes of all teachers in Turkey.

To summarize, existing studies conducted in Turkey were examined, noting that teacher attitudes towards inclusion of students with SEN differ in studies. Teacher attitudes were generally found to be negative, but a limited number of studies found positive attitudes among teachers towards inclusion. It was seen that the factors mentioned in the international studies and the factors affecting teachers' attitudes sections, were also examined in studies conducted in Turkey with different results.

2.8 Summary

The existing literature on the research topic of the current study was presented in this chapter, providing the background to the current study. The value placed on children in education systems is determined by attitudes towards them. Attitudes are therefore important to education and many other concepts. In the present study, inclusive education is specifically considered. The literature review shows that teachers' attitudes towards inclusion are affected by multiple factors, from different sources, and that they specifically depend on all three categories of variables: child-related, teacher-related, and environment-related.

While Turkey's laws and educational practices have stressed the need for inclusive education, the studies mentioned above show that attitudes towards inclusive education in Turkey have not changed in favour of teaching students with SEN in the past decade or so. Teachers usually reported on how unprepared their schools and staff were for including students with SEN, which influences their attitudes toward inclusion

of students with SEN. This could be a cause for concern; one can ask if inclusive practices in Turkey should ever be defined by academic standards or liability criteria, especially since the concerns are not only about the child, but also about the system's competence.

The methodology used to achieve the goals of the current study is described in the next chapter. It will discuss the research methods used in this study, as well as the research design, sample procedures, and demographic data of respondents, as well as validity, reliability, and ethical issues.

Chapter 3: Methods

3.1 Introduction

As mentioned in the literature review, there is an increasing trend of research addressing teachers' attitudes towards the inclusion of students with SEN, because teachers are a key factor in successful inclusive education practices. At the time of writing, data in this area relating to Turkey are scarce and of narrow scope. The current research explores attitudes to inclusive education held by mathematics teachers in Turkish secondary schools. This chapter describes how questionnaires and interviews were used to address two research questions:

1. What are the attitudes of mathematics teachers in Turkish lower secondary schools towards the inclusion of children with special educational needs in those schools?
2. What factors influence these teachers' attitudes towards the inclusion of children with special educational needs in Turkish lower secondary schools?

First, a brief overview is given of possible methodological approaches to these questions, and the reasons for the specific approach chosen in the current research. Next, the sampling strategy is described, and the composition of the sample is set out. The structure of the questionnaire is then explained, along with the procedure that was followed in administering it. The interview schedule is presented, and the

interviewing technique is described. After that, the data analysis process is explained. Finally, the ethical considerations of the research are presented.

3.2 Philosophical underpinnings of the research

This section briefly defines the general philosophical underpinnings of this study, including the adopted epistemological and ontological views, and clarifies the research design selection and relevance. The ontological and epistemological position of a researcher suggests the philosophical basis of a study, and this will affect the whole investigation process (Maarouf, 2019). However, researchers have sometimes confused the terms ‘ontology’ and ‘epistemology’. It is important to note the differences between these concepts to gain a clear understanding of the research.

According to Daniel and Harland (2017), ontology is a way of observing the nature of existence, the study of being, and the component elements and relations of these elements. The two main philosophical positions in ontology are objectivism and constructivism (Gray, 2019). Epistemology is the theory of knowledge and deals with questions such as what determines whether information is valid or not (Gray, 2019). Epistemology frequently focuses on what it means to know, and it explores the answer to this question through what is taken to be existing knowledge, as well as its source, nature, and limits (Gray, 2019). Epistemology is traditionally divided into two main traditions – positivism and interpretivism (Alharahsheh & Plus, 2020).

Although all educational and psychological research is a complex task to separate several approaches, three basic approaches operate in social science research: positivism, critical theory, and interpretivism (Pham, 2018).

Positivism is based on the ontological assumptions of an objective reality (Ansari et al., 2016). According to Bryman (2008, p.11), positivism is defined as an epistemological position advocating the implementation of the techniques of natural sciences for studying and investigating social reality. Positivists believe that truth can be identified by observing from a stable and objective perspective (Gray, 2019). Thus, positivist research is a systematic and methodical process, and researchers should be objectivists, according to the epistemology of this approach (Walker, 2005). For this reason, research techniques are mainly quantitative and experimental, in order to test suggested hypotheses (Park et al., 2020). Hence, positivists support applying empirical research to examine hypothetical generalizations, and frequently use a deductive approach (Bryman, 2008). The primary objective of the inductive approach is to enable the emergence of research results from frequent, dominating, or notable themes inherent in raw data, independent of the boundaries provided by structured methodologies (Liu, 2016). In a deductive approach, such as those employed in experimental and hypothesis testing research, essential themes are frequently obscured, reframed, or rendered invisible as a result of the investigators' biases regarding data collecting and analytic techniques (Liu, 2016).

In quantitative study, researchers procure data by using quantifying measuring tools such as surveys and fully structured interviews (Robson & McCartan, 2016). These types of techniques are frequently used by educational researchers. Although it is often used in educational research, positivism has weaknesses that negatively affect its application in the social sciences (Purnamasari, 2016). For example, positivism requires experimental circumstances which are hard to implement in the real world. Positivism fails to provide a detailed explanation of the process and results of a single research case. As case studies are usually limited to a single individual or entity, the results are difficult to generalize (Purnamasari, 2016).

By contrast, the interpretivist approach highlights an awareness of the researcher's perspectives, procedures and contextual elements (Thanh & Thanh, 2015). According to interpretivism, there is no single reality: it is socially constructed and has been affected by culture and history (Rehman & Alharthi, 2016). The interpretivist approach is based on research as a direct data source, regarding a phenomenon studied under natural conditions (Ryan, 2018). Qualitative data are more descriptive than numbers, and use words, objects and images. The process is more often concerned with the researchers who adopt the interpretivist approach, not just the results (Ryan, 2018). The researchers examine the research data, and do not seek data to approve or reject a certain preliminary research theory (Alharahsheh & Plus, 2020). Instead, they aim to create overall norms or concepts through collecting, analysing, and connecting partial data and information; although

the researchers might know roughly what they are looking for in advance (Saunders et al., 2015).

In comparison, critical theory involves distinct positivist and ontological assumptions which take reality to be of an ‘objective’ nature, regulated by unavoidable laws (Avramidis, 2001). Critical theorists have rejected the premise that societies can be examined in ways that are comparable with the natural sciences and positivist social scientists’ practice. The difference between the critical and interpretivist approaches is related to their research objectives. Critical theoreticians are concerned not with what is, but with what can and needs to be (Bronner, 2017). It is not easy for critical scientists to find and gather social behaviour; but further stages for the explanation of socio-economic and cultural factors are essential to improve the situation (Schecter, 2019). Critical theory ontology indicates that reality is shaped by different historical, social, economic and political factors. Critical theory is epistemologically subjective, and researchers must use a methodology that has adequate methods and instruments to expose all the essentials that structure reality (Matias, 2021).

Researchers who apply critical theory believe that the knowledge gained from research will be the first step to address social injustice and promote social change (Onwuegbuzie & Collins, 2017). This theory applies in particular to fostering solutions to challenges and also to making significant progress for society (Onwuegbuzie & Collins, 2017). Critical theory enables individuals with disabilities to be empowered because it encourages the acknowledgement of the rights of every

individual to be a central assumption. Critical theory not only provides an explanation of society and behaviour, but it also states that a society should depend on equality and democracy for all (Cohen et al., 2017). In the current study, the idea of '*equality and democracy for all*' involves students with SEN having the same rights as all other students to join in education equally. The theory provides the foundation for investigating the role of inclusion in regular schools.

Critical theory gives educational policymakers and stakeholders a perspective from which they can examine educational mechanisms and practices that affect inclusive practice in mainstream education (Rexhepi & Torres, 2011). Researchers applied critical theory not only to explain the case but also to believe something might improve (Cohen et al., 2017). As a result of the current research, it is expected that higher-level departments will take these influencing factors into consideration. When there is a conflict of interest between stakeholders, generally, people with more power make the final decision without the participation of other stakeholders with less power (Giroux et al., 2020). If there is no meaningful communication between all stakeholders towards gaining new knowledge and a better understanding of the problem, it will be difficult to achieve social change (Rose, 2010). When it comes to inclusive education, representatives who have the right to formulate special education policies do not consider the opinions of teachers, school administrators, parents, or students (Schuelka, 2018). Decisions can be made by higher-level departments, but in policy implementation, teachers are the ones with power (Kress, 2011). For education to give hope to students with SEN, every individual within the education system has a vital role to play (Rose,

2010). It is intended that the current research will assist policymakers, teachers, and other important actors in Turkey's education system in making fully joint decisions. Measures should be taken to obtain the opinions of all stakeholders; giving the powerless a voice can led to a new approach that could produce more successful outcomes for inclusive education (Schuelka, 2018). In the light of previous research on attitudes of teachers towards the inclusion of students with SEN and critical theory, it was hypothesized that by addressing the factors influencing teachers' attitudes toward disabled students' inclusion, there would be some development in the inclusion of students with SEN in Turkish lower secondary schools.

Critical theorists have emphasized the use of varied research methods to examine the impact of social, economic, cultural and disability values on the construction of reality. Critical theoretical scientists primarily use qualitative approaches such as interviews, case studies and observation; although quantitative methods such as surveys can also be included (Ryan, 2018). Mixed-methods research is increasingly being used as an alternative to conventional single methods, in the design and implementation of educational and social sciences research (Clark & Ivankova, 2015). Various paradigmatic assumptions are still being debated in the literature regarding the conceptualization of mixed-method studies. For instance, paradigm purists argue that paradigm integrity should be carried, because paradigms are essentially different and contain contradictory beliefs concerning human existence and the universe (Aliyu et al., 2014). The researchers recognize the reconciliation of philosophical differences through new guidelines that efficiently adopt mixed-methods and encourage their use. For instance, the

pragmatic viewpoint denies traditional dualism and clearly chooses actions that philosophize research-related questions about assuming worlds (Yang & Yoo, 2018). This position supports methodological pluralism which applies in the current study, as so many research questions in practice cross paradigmatic borders. To summarise, it is important to choose techniques which are most likely to be helpful in answering important research questions, in view of the goals, the context of studies, and the accessible resources. This approach is consistent with critical theory's solution-oriented perspective upon which the current study is based.

Personal familiarity with the experiences of the participants may influence all parts of the research process, including participant recruitment, data collection through interviews, analysis, making sense of the data, and drawing conclusions (Berger, 2015). As stated earlier, my professional background and insider status within the context of the current research allowed for a more effective use of the data and a more in-depth understanding of participants' views and perceptions of their experiences in Turkish educational and socio-cultural contexts. However, in addition to being an insider, my position as a person studying in the UK during the current research might also place me as an outsider in the current study.

Prior to the current study, my professional experiences and expertise led me to assume that whatever was documented in the UK or Western literature on inclusion could easily be transferred to the Turkish educational system. However, as Armstrong and colleagues (2011) indicate, there are diverse implications for different parts of the world, particularly between Western or developed countries

and developing countries such as Turkey, where economic, social and cultural factors may affect students' ability to access education. For example, it was clear that teachers in Turkey varied from those in the Western countries, like the United Kingdom, in terms of classroom practices and curriculum. As a result, my knowledge and understanding of how to evaluate global goals in light of national and local settings were limited.

3.3 Mixed-methods approach: rationale and the chosen methodology

The formal definition of mixed methods in research is a class of study whereby the researcher mixes or combines qualitative and quantitative investigation, approaches, methods or concepts into one piece of research (Hogain, 2018). The 'third wave', or the third research movement, is philosophically a movement which bypasses the paradigm wars by providing a practical and logical alternative (Wiggins, 2011). In addition, mixed methods research philosophically utilizes a pragmatic technique and system of philosophy (Kaushik & Walsh, 2019). The logic of the current research covers the use of activities that are inductive (related to pattern discovery), abductive (examining and focusing on the best reasons for comprehending the research outcomes) and deductive (testing theories and hypotheses) (Wheeldon, 2010). Mixed methods study also increases rather than constrains the choices of researchers, by justifying the use of multiple approaches in answering research questions. It is a broad and creative research form, not one that is restrictive (Johnson & Onwuegbuzie, 2004). The choice, rationale and

employment of a mixed-methods approach is comprehensive, pluralist and complementary, and suggests merely that researchers employ an eclectic strategy (Meister, 2018). The most important point is that research methods should always be followed in a way that provides the best opportunity for meaningful solutions to research questions. Solutions proposed using mixed-methods research offer the best and most comprehensive answers to many research questions and combined questions. Thus, researchers must first reflect on all the relevant characteristics of the qualitative and quantitative research, in order to combine them in an efficient way (McChesney & Aldridge, 2019). For instance, the main characteristics of traditional quantitative research include inductive confirmation, testing of theories, hypotheses, justification, prediction, standardization of data collection, and statistical analysis (Johnson & Onwuegbuzie, 2004). Moreover, deductive scientific investigation, exploration, theory/hypothesis production, and the researcher as the main ‘tool’ for data gathering and qualitative analysis are all key elements of traditional qualitative research (Johnson & Onwuegbuzie, 2004).

The key assumption of a mixed methodology is to provide better knowledge of research problems by combining quantitative and qualitative methods, compared to using either strategy alone (Dawadi et al., 2021). Understanding the advantages and disadvantages of quantitative and qualitative methods enables the researcher to mix or combine methods (Dawadi et al., 2021), and to utilize the basic principle of mixed research. This principle implies that researchers should gather distinct information by using different techniques, approaches and policies, to generate supplementary strengths and non-overshadowing weaknesses through the resultant

combination or mixture (Dawadi et al., 2021; Johnson & Onwuegbuzie, 2004). The effective application of this principle is a fundamental source of justification for mixed-methods research, as this makes it superior to mono-method study. For instance, mixed-methods research helps to avoid potential problem areas, such as by applying qualitative interviews to studies as a manipulative check, and possibly as a method for discussing the problems under exploration and tapping into respondents' views and meanings (Gray, 2019). The researcher might want to observe and interview qualitatively in a qualitative research study, but supplement this with a closed-ended method to systematically assess some variables which were deemed essential in the appropriate research literature (Johnson & Onwuegbuzie, 2004). The added element of examining a randomly selected sample from the population of interest could enhance both examples, to improve generalizability, if applicable. When the findings are substantiated in various approaches, greater confidence might be placed in a single-method result; therefore, when the results differ, the investigator has greater understanding, and can modify clarifications and conclusions (Dawadi et al., 2021). In addition, in many cases the objective of mixing is not to look for confirmation, but to broaden one's understanding (Wilkinson & Staley, 2019).

Quantitative methods are best for determining group characteristics and general trends and are valuable in limiting 'experimental effects' (Robson & McCartan, 2016). Quantitative methods do not enable a deep knowledge of the contexts or of respondents' personal views (Queirós et al., 2017). Qualitative techniques influence the method of acquiring and interpreting data through the

researchers' own beliefs and thoughts (Bhattacharya, 2017). In qualitative research, the researchers' interpretation of the meanings attributed to events is an element which they consider not as a problem but as a potential strength (Bhattacharya, 2017). The aim is to create a real understanding of the field being investigated, focusing on data from the experiencing individuals and their engagement with the researcher (Willig, 2017). Furthermore, in qualitative studies, researchers embrace the idea of many realities (Willig & Rogers, 2017); this is a position that recognizes what experiences are unique to each individual, and which individuals give different meanings to their experiences. This is the 'reality' for those people involved, which is valued and investigated, and which is supposed to represent a relativistic ontology, by focusing on the subjective account of experience by individuals (Willig, 2017).

Researchers have proposed different categories for the use of mixed methods. For example, Morgan (2007) suggests a classification of mixed methods based on two principles. The first principle is the priority decision, which refers to the priority accorded in a specific study to qualitative or quantitative studies (Schutt, 2018). The second principle is the sequence decision, regarding which method takes precedence over the other (Schutt, 2018). These decisions require the researcher to decide which qualitative or quantitative research technique takes precedence, and is used before the other (Schutt, 2018). Creswell and Clark (2017) describe in more detail the mixed-methodology layout, and suggest four alternatives:

1. Sequential studies: A quantitative stage is first performed by the researcher, after a qualitative stage; or vice versa. In this type of study, the two stages are divided.
2. Parallel/concurrent studies: The researcher performs studies simultaneously through both quantitative and qualitative stages.
3. Equivalent status design: The researchers use both a quantitative and a qualitative method to comprehend the situation under research.
4. Dominant or less dominant studies: The investigator carries out research whereby a small part of the entire research is derived from a different design, within a single, dominant approach.

A mixed-methods research question is defined as one that "incorporates both quantitative and qualitative research approaches into the same question" (Onwuegbuzie & Leech, 2006, p.483). Both quantitative and qualitative questions may be stated separately by researchers. As Teddlie and Tashakkori (2009) note, all mixed-methods research incorporates at least two questions, one qualitative and one quantitative. As a result, it is normal for researchers to formulate separate questions. Separate questions are those that a researcher identifies with at least two distinct methods. Consider the questions, what is this and what is that? If this is investigated qualitatively, and that is investigated quantitatively, they should reflect distinct questions. For instance, these are different questions when ‘this’ is investigated qualitatively and ‘that’ explored quantitatively.

The word ‘sequential’ relates to gathering data in stages (Morse, 2010). First, quantitative data (from a questionnaire) were collected in the current research; the results from this stage are crucial for the second-stage scheduling, and qualitative data were provided later to increase understanding. Furthermore, by starting with a quantitative stage, the researcher was able to gain perspectives on the wide-ranging sample of mathematics teachers in lower secondary schools in Turkey, which thus increased the validity of the research findings. Quantitative data were also acquired to help understand inclusion variables. Nonetheless, the quantitative phase (using a questionnaire to measure teachers’ attitudes towards the inclusion of students with SEN) will not reveal the extent to which factors significantly contribute, or how inclusive education can be improved within the Turkish context. Therefore, researchers can use the data obtained by undertaking quantitative research to create additional hypotheses that can be tested via qualitative research (Schutt, 2018). Mixing quantitative and qualitative methods in the same research provides the ability to answer research questions and to provide useful data; this could not be accomplished using quantitative or qualitative techniques alone.

To answer this study’s research questions, a mixed-methods approach was selected because of the type of research data needed and the nature of the research questions. A quantitative method was chosen to investigate overall attitudes of teachers (research question 1), while a qualitative method was chosen to gain a better understanding of the factors affecting the attitudes of teachers (research question 2). The mixed-method approach can therefore require numerous design decisions from researchers, involving a variety of sequential and

simultaneous approaches (Khaldi, 2017). Therefore, this research opts for a mixed-methods, sequential model for its method. The next sections will describe and explain the creation of both research techniques employed in this research: the questionnaire and the interview.

3.4 Sample selection

Sample selection is an important step in both quantitative and qualitative studies. It is a vital factor in terms of analysing information, producing results, and generalizing them (Miles & Huberman, 1994; Miles et al., 2014). The logic and strength of systematic sampling depend on the selection of in-depth research cases that provide rich information (Patton, 2015). In general, the bigger the sample, the less the probability of severe bias among the sample (Coolican, 2017). However, the selection of the sample size will depend on several aspects, such as money and time (Bryman, 2016), and is affected by the research purposes and the population's nature (Hennink et al., 2020). As Yin (2011) identifies, the sample size is dependent on the field of study, design and methods used; however, here no particular requirements have been established, as statistical generalization is not required. In this study, a balance had to be struck to ensure that the participants were adequately representative and that the necessary time was allowed for comprehensive analysis of the data. The factors represented in the sample are described below.

The participants were mathematics teachers who work with children from 11 to 14 years of age in lower secondary schools in Turkey. They were volunteers who offered to take part in the study. For optimal representation of all mathematics teachers in lower secondary schools in Turkey, the data collection went across lower secondary schools in Turkey, in terms of socio-economic factors and geographical factors. A previous understanding of the research region is a significant component for researchers in the design and implementation of research (Teddie & Tashakkori, 2009). The Ministry of National Education in Turkey publishes an annual list which shows socio-economic information for all schools in Turkey (MEB, 2020). This list classifies schools into three service areas, each of which is further divided into six zones. Among these schools, those at the highest socio-economic level are placed in Area 1, Zone 1; those at the lowest level are in Area 3, Zone 6. The list also provides locations in three categories: village, town, and city. The data collection was structured to include all zones and areas to better reflect all teachers in Turkey.

Table 3: Sample of the school list and geographical information

School Code\City\Town\School Name	AREA	ZONE	Type of Settlement
337302\ADANA\ALADAĞ\Akören İlköğretim Okulu	1	4	TOWN
112770\ADANA\ALADAĞ\Akören Lisesi	1	4	CITY
790540\AĞRI\DOĞUBEYAZIT\Akbulak İlköğretim Okulu	3	5	CITY
758223\AĞRI\DOĞUBEYAZIT\75.Yıl İlköğretim Okulu	3	4	CITY

School Code\City\Town\School Name	AREA	ZONE	Type of Settlement
428569\ADANA\ALADAĞ\Başpınar Kelerbası İlköğretim Okulu	1	5	TOWN
428570\ADANA\ALADAĞ\Boztahta İlköğretim Okulu	1	5	VILLAGE
375149\ADANA\ALADAĞ\Büyüksofulu İlköğretim Okulu	1	5	VILLAGE
428594\ADANA\ALADAĞ\Ceritler Necati Özsırkıntı İlköğretim Okul	1	5	VILLAGE
536181\ADIYAMAN\SİNCİK\Hasanlı İlköğretim Okulu	2	6	VILLAGE

Below is a detailed description of both the quantitative and the qualitative stages of this study, regarding sample selection and data gathering.

3.4.1 Quantitative phase

The first goal in the quantitative stage of data gathering was to define the overall teachers' attitudes towards the inclusion of students with SEN and teachers' demographic information in Turkish lower secondary schools. The intention was to create a sample that represented all subgroups of the target population, to prevent sampling biases. The first stage was the selection of the sample of schools across lower secondary schools in Turkey, based on socio-economic and geographical factors. Thus, by using a systematic sampling technique, the researcher selected 25

schools chosen from each of the three service areas, which were further divided into six zones that complied with the equal probability selection technique which offers an equal chance of being chosen (Coolican, 2017).

The researcher contacted the selected schools to inform the teachers about the research and to offer the questionnaires involved in the project. The best way to reach teachers was through school contact details provided on school websites. Face-to-face distribution was preferred, because it enabled the researcher to explain the research and clarify when required. However, some teachers preferred not to meet in person, and requested to receive the questionnaire by email. Therefore, the questionnaire was transmitted to the teachers electronically and data was gathered online. While 76 teachers participated in the online questionnaire, 196 teachers completed the printed questionnaire. To generate and perform an online questionnaire, the researcher used a web-based survey (Google). The Internet survey is a very popular tool for gathering data, in contrast to other traditional methods, especially during the coronavirus pandemic. Online surveys offer many benefits, for example, they can be distributed more quickly and cheaply; they can reach more participants in different geographic locations; they are very convenient for respondents and simple to use, which improves the participation level; they provide confidentiality, anonymity and freedom, which can lead to greater honesty in answering questions; and they provide quicker and simpler data transmission for analysis (Nayak & Narayan, 2019). It was emphasised that demographic data and responses would be kept confidential. Teachers were required to complete the

questionnaires in their own time, to ensure further confidentiality, and they were provided with a paper copy of the questionnaire if they preferred.

The questionnaire was circulated to 300 mathematics teachers in lower secondary schools in Turkey, and 272 (84%) of them completed it. However, data received from only 262 participants were used in the study, as 10 teachers from online questionnaire repeatedly chose the same option, or left every item in the questionnaire empty. No logical connection was found between respondents of these invalid questionnaires.

3.4.2 Qualitative phase

Of those teachers who completed the primary questionnaire, 50 from across the three service areas, which were further divided into six zones, were asked to participate in semi-structured interviews with the equal probability selection technique. Twenty teachers agreed to an invitation to be interviewed, although two later withdrew. Interviews were conducted according to participants' comfort and preference, in different locations. Due to time and travel constraints, seven interviews had to be performed via Skype. All teachers received an information sheet about the study, and consent forms, as set out in the ethical guidelines. Confidentiality was guaranteed at the start of every interview. The research sample is considered an appropriate reflection of mathematics teachers in lower secondary schools in Turkey, in terms of the strategy whereby the population sample was selected. There were more female than male teachers in the study. Half of the

respondents were between 40 and 50 years old, and over half had 10-20 years of work experience as a teacher.

3.5 Data collection techniques

Attitudes cannot be observed directly; their existence can only be deduced from open responses and indicators from people (Jain, 2014). Therefore, many assessments of attitudes are established on the premise that the attitude of an individual can be evaluated by their views on a subject (Maio et al., 2018). Researchers have created a variety of attitude assessment methods; direct and indirect assessment techniques are prevalent as specific methods for assessing attitude (Maio et al., 2018). Moreover, direct attitude measurements involve researchers paying close attention and questioning the participants directly, to illustrate participants' attitude towards any object (Fazio & Ewoldsen, 2005). As mentioned previously, the advantage of the interview method is that it allows the researcher to ask about participants' behaviours in detail. In contrast, the indirect attitude measurements enable participants to examine distinct elements of a specific field; in general, this sort of assessment is a questionnaire in which participants can respond to certain questions that indirectly reveal the measured attitude (Maio et al., 2018). In this study, the researcher obtained quantitative data by using a questionnaire, and gathered qualitative data with semi-structured interviews. In the following section, these techniques are explained in detail, in terms of their source, structure, development and suitability for the current study.

3.5.1 The questionnaire

The questionnaire method is used extensively to collect survey data, to provide structured quantitative data, and it is often comparatively easy to analyse (Robson & McCartan, 2016). The questionnaire is also regarded as a useful method for obtaining data from many individuals, particularly if they are distributed over a wide area (Ary et al., 2018). The use of a questionnaire in the current study offered many advantages and provided significant research data for relatively low material cost in terms of money and time (Robson & McCartan, 2016). In some ways, surveys are more of a research strategy (i.e., an overall approach to conducting social research) than a tactic or a specialized method. In these terms, a survey is a nonexperimental fixed design that is typically cross-sectional in style (Robson & McCartan, 2016). Nevertheless, many of the concerns associated with conducting a survey are more practical and tactical in nature, such as the detailed layout of the tool to be used (mostly a questionnaire composed almost entirely or fully of multiple-choice questions), the participants to be surveyed, and receiving high response rates (Robson & McCartan, 2016).

The current study investigated the participants' characteristics, education and demographic information to understand how these factors influence their perceptions. For example, age, teaching experience and training may be factors that influence teachers' attitudes. However, race, class, and religion as factors were not included in the study. Firstly, the reason for not examining the race factor is that

all teachers work in public schools. By law, to be able to work as a teacher in public schools, teachers must be citizens of the Republic of Turkey. According to Article 54 of the Constitution, every citizen of the Republic of Turkey is Turkish. Secondly, Sunar (2019) has explained the distinction between the lower middle class, middle class, upper middle class, bourgeois class, and working class in Turkey. Occupations and income distribution are the most fundamental factors in the formation of these class differences (Sunar, 2019). In this context, teachers belong to the same professional group and receive almost exactly the same salary. When this distinction is taken into account, teachers are considered to be in the middle class. Finally, as stated in the literature, a very large part of society is Muslim. It would therefore be statistically difficult to treat religion as a factor.

Another advantage for the current study was the collection of different views, attitudes and opinions of mathematics teachers, concerning their experience at lower secondary schools in Turkey. Furthermore, the collection and analysis of the data also provides basic information about the participants' attitudes and practices towards students with SEN, and how these are reflected in the classroom. In addition, the questionnaire provided an overview of inclusive education in Turkey, and investigated the skills required to effectively educate and help students with SEN in an inclusive way. The assessment is thus used as a suitable method for collecting quantitative data for the current research, and as an essential stage in the interview development for modifying items and creating new ones in the second stage.

In the current research, an existing instrument, the ‘Opinions Relative to the Integration of Students with Disabilities’ (ORI) scale was selected as a starting point to create the new wide-reaching questionnaire. The ORI is a modified version of the Opinion Relative to Mainstreaming (ORM) scale; this was developed by Larrivee and Cook (1979) as part of a comprehensive study that aimed to measure teachers’ attitudes towards students with SEN in mainstream classrooms. Larrivee and Cook (1979) developed the ORI scale to investigate teachers’ attitudes towards students with SEN in mainstream schools; this scale was later renamed ‘Opinions Relative to the Integration of Students with Disabilities’ by Antonak and Larrivee (1995). The survey was subsequently revised by Antonak and Larrivee (1995), with updates to the language: for example, the term ‘handicap’ was changed to ‘disability’, and ‘mainstreaming’ to ‘inclusion’; furthermore, additional support was provided for the survey’s validity. The ORI scale is a research tool which has been used in many previous studies, including Avramidis et al. (2000, in the south-west of England, where the sample comprised 81 primary and secondary teachers); Rakap et al. (2016, the research surveyed 123 pre-service teachers in Turkey).

The ORI has been used as a valid and safe tool in many recent studies that measure teachers’ attitudes towards the inclusion of students with SEN in regular classrooms. The validity of a tool means the extent to which it is capable of measuring what it was designed to evaluate (Rumrill, Cook & Stevenson, 2020). Antonak and Larrivee (1995) tested the validity of ORI by using a hierarchical multi-regression analysis to successfully measure teachers’ attitudes towards students with SEN in regular classrooms.

A revised version of the ORI scale was used to evaluate the attitudes and knowledge of mathematics teachers towards the inclusion of students with SEN in regular lower secondary school classrooms in Turkey. The questionnaire was developed according to the current literature and understanding of the Turkish context. For example, Turkish schools are categorised based on their locations into zones and areas, and the school locations question was added to a modified version of the ORI. In addition, the questionnaire was initially built in English; it was translated and checked by two Turkish lecturers, because mathematics teachers in the Ministry of National Education in Turkey are native Turkish speakers. Furthermore, researchers frequently apply a number of methods to guarantee translation accuracy; a pilot study was used to guarantee translation accuracy in the current research. To guarantee translation accuracy and linking to current literature, sentence structures and the wording of statements were changed. For example, the ORI scale statement was: “The integration of student with disabilities can be beneficial for students without disabilities,” and this was revised to: “Inclusive education is beneficial for students without SEN.” In addition, the ORI scale statements used the term “General-classroom teachers”, but the current research used the term “teachers” because only mathematics teachers participated. Based on recent literature and policies, statements added related to Individualized Education Programmes (IEP) because IEP have an important role in the implication of inclusive education. For example, statement 14 stated that: “I feel I have enough knowledge to create an Individualised Education Programmes (IEP) for each student with special needs or disabilities.”

The questionnaire was divided into five sections. Firstly, the questionnaire asked for the participants' demographic information regarding their educational level and their personal information, including their age, gender, experience, teaching qualifications, education/training in the area of inclusive education, and finally the location of their school. This demographic information is often used in the teachers' attitudes research, especially with the ORI scale (e.g., Alasim & Paul, 2019; Rakap et al., 2016). The participants' demographic information also includes teachers' experience with different types of special needs, such as physical disorders, severe learning difficulties, mild to moderate disability, and emotional or behavioural difficulties. The participants' demographic information provides their contextual background information, which is regarded as significant, since variations in the sample's features could affect the interpretation of the findings regarding Turkish mathematics teachers and such questions were selected from the existing literature. The second section presented 40 statements on teachers' attitudes towards the inclusion of students with SEN, such as 'I am able to implement individualized education programmes in my classroom', or 'I feel I have enough knowledge to create an individualized education programme (IEP) for each student with special needs or disabilities.' The 40 statements were classified into four categories: management of the inclusive classroom, presented in 10 statements; the academic and social importance of inclusive education for children with SEN, presented in six statements; ability to teach students with SEN, presented in 17 statements; and lastly, inclusive settings, presented in seven statements. Moreover, 29 of the questionnaire statements were positive, such as 'Inclusive education is beneficial for

students without SEN', while 11 statements were negative, such as 'I do not have the knowledge and skills required to teach students with SEN.' The original ORI scale does not have statements related to school environment and material, however, existing literature has showed that these variables are important factors for successful inclusive education practices. Statements were added to the existing scale to cover these variables such as statement 12: "Our school has the necessary teaching technologies and materials for special education services."

The tool includes questions which each have five possible response options. The answers were scored as follows: strongly disagree (-2), disagree (-1), neutral (0), agree (1), and strongly agree (2), based on a five-point Likert scale. Likert developed this rating scale in 1932, and it has become one of the most common tools used by researchers to measure attitudes toward a given issue (Batterton & Hale, 2017). Likert scales are used when it is especially important for answers from different participant groups to be directly compared, such as attitudes regarding the suitability of inclusive education for all students, barriers to inclusive education, and necessary modifications.

The answers were determined by reversing the negative items signs (- to + and + to -), then summarising the 40 answers; these were then added to the 80 points each for negative results and for continuous data collection. The total scores were on a scale of 0 to 160, with higher scores showing more favourable attitudes towards inclusion. This score calculation process was proposed by Antonak and Larrivee (1995); the researcher followed their precise recommendations to ensure

that the results were properly interpreted. In addition to showing how certain participants responded more favourably than others, general differences in their opinions on inclusion may also be detected across different groups (Alanazi, 2012). Overall attitudes of mathematics teachers were discovered with the scoring system, and at the same time, the effect of demographic characteristics on attitudes was examined.

3.5.2 Interviews

One of the most popular approaches in qualitative studies is to interview individuals on their perspectives. In the social sciences, especially educational research, interviews are helpful for gaining more knowledge about the experiences of respondents (Robson & McCartan, 2016). Interviews with a particular aim and structure are regarded as a kind of dialogue. The interview is distinct from ordinary conversations, as it involves questioning and listening to gain a profound understanding of a particular field (Robson & McCartan, 2016). In addition, interviews can also be seen as tools to understand the views and perceptions of others about a subject (Ary et al., 2018). Interviews allow the researcher to assess the views of the participant based on their clarifications, terminology, opinions, vocabulary, and emotional observations (Mohajan, 2018). The primary objective of the interview is to acknowledge the views of the respondents to apprehend the significance of their experiences (Ary et al., 2018). Indeed, many qualitative studies use interviews as a technique of information compilation, as this enables

researchers to examine exciting research areas and collect rich information (Suter, 2012).

There are three interview methods: structured, semi-structured, and unstructured (Hall, 2020). To a certain extent, the choice of which kind of interview to conduct relies on the locus of control during the interview (Hall, 2020). Fully structured interviews involve participants in discussions that are based on structured questions (Ary et al., 2018), while unstructured interviews give the interviewer great freedom, after the investigator starts off with narrowly specified topics or reference terms (Robson & McCartan, 2016). Furthermore, semi-structured interviews are described by Kvale and Brinkmann (2009) as interviews for obtaining descriptions of the interviewee's life experience, to interpret the importance of the phenomena described. Such semi-structured interviews provide strength in enabling a thorough exploration of previously defined topics or ideas, while at the same time providing flexibility and the ability to discuss topics raised in the literature review (Hall, 2020). This study method was considered to be appropriate for engaging the study participants, to ensure a relaxed, flexible attitude to a variety of main subject fields.

While semi-structured interviews can provide valuable in-depth information about participants, the limitations of this approach should also be recognized. For example, when participating in semi-structured interviews, the interviewer must listen to the participant's answers while simultaneously formulating questions to help the interactive aspect of the communication (Robson & McCartan, 2016). This requires the researcher to be highly skilled and focused in ensuring that all

questions are asked within a fixed period, and with the required level of depth (Robson & McCartan, 2016). In addition, the researcher must be able to identify how differences in answers arise from real variations between respondents, rather than because of follow-up why and how questions raised when comparing respondents' answers (Bryman, 2016). In this respect, the questioning process must convey 'equivalence of meaning,' instead of strict compliance with the guidelines for the interview (Willig & Rogers, 2017). These approaches support the reliability and validity of the data obtained during the process of interviewing.

Undoubtedly, semi-structured interviews are dependent on validity and reliability: this relies not on standardization, such as using the same words, but on the equivalence of meaning in all questions (Willig & Rogers, 2017). Comparability of answers between participants can be made possible when equivalence of meaning is standardized. Therefore, in interviews, planning is needed to guarantee that the interview questions relate to the studied topic (Bryman, 2016). According to Brinkmann and Kvale (2018), there are seven phases of the interview research procedure: i) thematizing the interview project, ii) designing, iii) interviewing, iv) transcribing, v) analysis, vi) verification, and vii) reporting. Furthermore, for each of these seven elements, a focus on objectivity, fairness and honest reporting must be taken into account if the findings are to be valid. In addition, it is essential that the participants know what kinds of questions will be requested before the interview begins (Brinkmann & Kvale, 2018).

The researcher aims to create the circumstances needed to develop a deep and comprehensive discussion (Robson & McCartan, 2016) through a method that encourages free discussion with interviewees. Thus, the study is designed not only to provide factual data to answer the research questions, but also to investigate the respondents' views and attitudes. A semi-structured interview schedule was therefore created to enable certain important questions relevant to the research questions to be answered, but also to offer the flexibility to ensure that the debates were properly formed (Brinkmann & Kvale, 2018). Semi-structured interviews were regarded as the most effective way of gathering data on known and unknown themes. The semi-structured interview schedule involved warm-up questions, consisting of open-ended questions that allowed rich and in-depth explanations and cooling-down questions (Robson & McCartan, 2016).

The interviews also provided a deep understanding of the participants' opinions, perspectives and conceptualization regarding a specific subject (Brinkmann & Kvale, 2018). The current study investigated these concepts, which seemed to offer a greater opportunity for better understanding of teachers' attitudes towards the inclusion of students with SEN. The researcher also controlled the flow of the interview, as the overall topics had been previously determined based on the literature review. This flexibility enabled the order of questions to be changed to alter the queries according to teachers' views of inclusive education, and to ensure a more natural flow to the interview method. Furthermore, the interview research method also enabled the researcher to produce more reliable data that would help to obtain further clarifications from the teachers.

For the reasons given above, the use of interviews in this study proved to be very useful for characterizing and analysing teachers' views of inclusion in depth; it enabled the investigator to examine any additional variables that could potentially influence the teachers' perceptions (e.g., Dizdarevic et al., 2017; Tabassum et al., 2014). Moreover, in this semi-structured research the interview questions were created to gain knowledge of the attitudes of teachers. A semi-structured interview method allows researchers to ask follow-up questions, based on the responses received from respondents on the same key questions (Brinkmann & Kvale, 2018). The questions were thus created to investigate the knowledge of teachers, how they perceive students with SEN in the regular classroom, how they prepare their class to include students with SEN, and their views on the variables that can contribute to the achievement of inclusive education (see Appendix 1).

The contexts, variables, and nature of the teachers' attitudes towards the inclusion of students with SEN in Turkey should be studied in depth. Hence, the interviews were designed to illuminate the results of the questionnaire, and even to question them. In accordance with the research questions, the interview schedule was intended to place a specific emphasis on preparations, implementation, behavioural care requirements and independence. The interview questions were determined by the inclusive education issues based on existing literature and the results of the questionnaire analysis. An in-depth examination of national and international literature also informed the interview schedules. All interview schedules started with introductory, opening questions, to establish a relationship with the

participant. Afterwards, original, broad questions were asked to set the tone for a controlled conversation (Yin, 2014).

Notably, in terms of building relations with respondents, Braun and Clarke (2012) mentioned the significance of well-designed questions, and the generation of valuable and comprehensive data relevant to the research questions. Therefore, a series of open-ended questions was designed, with due attention paid to the questions' encoding, design and wording, and based on a deep investigation of the existing literature and questionnaire results. Prompts were also included, to encourage respondents to broaden their responses and give detailed information if needed. Finally, the interview schedule ended with a closure question, so the participants could address problems which had not already been addressed (Braun & Clarke, 2012).

The main aspects of teacher interviews and their literary references were themed as:

1. Understanding inclusion: Many different meanings and understandings of inclusion that are to be understood in the context of an approach to issues of a socially diverse environment that are widely dispersed internally, but internationally connected (Armstrong et al., 2011).
2. Training and experience: Several researchers have aimed to enhance understanding of the requirements of children with SEN; this understanding is gained from training that promotes more positive attitudes towards the inclusion of students with SEN (Kang & Martin, 2018).

3. Resources and support: Physical and human support has been demonstrated to be a significant factor for persuading and enabling them to be inclusive in their teaching with the inclusion of students with SEN, and produces positive attitudes (Honório et al., 2020).
4. Barriers to inclusive education: For example, one of the biggest barriers to inclusion is that many teachers do not think they have sufficient knowledge and skills (Sucuoglu et al., 2013).

The duration of interviews ranged from 25 to 45 minutes, depending on the time and scope of the interviewees' engagement. The schedule included 35 open-ended questions, as well as additional questions to evaluate the opinions of participants. The first seven questions were about their background and their approach to schools. Fourteen questions were asked to examine the teachers' opinions regarding inclusive education: of these, seven questions discussed teachers' views on inclusive education, and seven were designed to examine the experience of teachers regarding inclusive settings. The last 14 questions investigated the teachers' attitudes and professional developments towards the inclusion of students with SEN.

3.6 Piloting

Piloting is essential, as a means of highlighting potential problems with the design and methods used in a study (Mikuska, 2017). The piloting method allows a researcher to verify the clarity and accuracy of the research instruments. Thus, to check the adequacy of research tools before the final data gathering, a pilot study was conducted for questionnaires and interview questions. The piloting enabled the researcher to examine weaknesses in the research process, and to recognize and resolve ambiguities in the study instruments. Because some statements in the questionnaires were derived from existing scales, while others were created by the researcher, the standardization of the existing tools was of crucial importance for the target group. The piloting is described in detail below and divided into two parts: the semi-structured interviews and the questionnaire. The sampling, processes and pilot results are explained in each section. First, the processes of questionnaire delivery were evaluated, to identify any research tool weaknesses. The analysis of the results improved the research tools, and a second pilot study for validation followed.

3.6.1 Questionnaire

Piloting gives researchers a broader insight into the importance of the questions, as it opens various windows for reflecting on the original framework of the questions (Cohen et al., 2017). It gives participants an opportunity to think about what each

word means. Piloting is an effort to reduce the risk that questions and phrases might be misunderstood in relation to the purpose of the research. Indeed, circulating the questionnaire without piloting would weaken the rigour and quality of the results. Each word of the questions and responses was examined to make the questionnaire more effective and suitable for the current study. For example, statements were changed to emphasise the key words in the statements by changing the structure of each sentence. The Turkish language allows for changes in emphasis with changes in sentence structure. Thus, piloting is important to ensure that questionnaire questions and statements meet the aims of the research and are suitable and related to the research questions. The pilot study provided useful information and conversations about the purpose of the questionnaire and involved two doctoral students from Turkey. With the results and recommendations of the piloting respondents, the researcher reviewed the questionnaire to improve the clarity, legitimacy and accuracy of the study. The questionnaire needs to lead a discussion with the participant; this can be achieved with a questionnaire that unfolds logically and with a minimum of jumping between apparently unrelated subjects. For this reason, the order of some questions and statements was altered and they were re-grouped in relation to their topics, based on the piloting participants' suggestions. For example, Statements 39 and 40 were related to teachers' communication and collaboration and were re-grouped at the end of the questionnaire.

3.6.2 Interviews

Brough (2018) points out that implementing piloting could improve a tool's accuracy before the real interview phase. In addition, piloting an interview could guide the researcher to examine and detect the tool's problems, and allow the creation of clearer questions (Cohen et al., 2017). Although there are no particular methods recommended for piloting an interview schedule, interview questions need to be tested and modified under certain conditions. Thus, the initial interview schedule was piloted with two lecturers from Turkey. Piloting allowed changes to questions, and to verify whether participants understood the terminology used. In addition, piloting was carried out to identify any issues with the questions in the interview, and to explore the effectiveness of the interview technique. The pilot research assisted the researcher to examine the intelligibility of the interview materials and provided an excellent opportunity to enhance and improve questions based on the responses of the participants. Piloting also allowed the researcher the change the interview schedule, with some questions re-worded, and three questions removed. Some of the interview questions were partially modified to be more open, and the suggested order was subsequently altered, with other questions made more specific. Furthermore, piloting the interview instrument showed that additional questions needed to be added. For example, Question 17 (How do you find out about national educational policies in Turkey?) asked participants about general policies but needed to specifically ask about inclusive education. For this reason, Question 18 (How do you find out about inclusion in national educational policies?) was added to interview questions to gather specific information about inclusive education. To

enable detailed investigation, the piloting participants suggested amending the order of questions, and the researcher followed this advice. The researcher linked the piloting to the interview schedule, to ensure that all areas required to respond to the research questions were covered during the piloting procedures. In addition, the researcher used prompts to enhance and encourage respondents' answers. The researcher checked the duration of the interviews with piloting participants and discovered that they took between 30 to 45 minutes.

3.7 Reliability and validity

Reliability and validity have different meanings in different study strategies and methods. They are key concerns when implementing social science studies using any tools for data collection (Cohen et al., 2017). First, the procedures and research instruments used in addressing research questions need to be high-quality and accurate: this is called 'validity' and it enables the researcher to assess whether the research tool tests what it is meant to assess, and whether it is practical and accurate. As a result, the quality of the research tools will be reflected in the value of the research results (Yona, 2020). 'Reliability' means whether a questionnaire or any other data collection method produces the same result if it is used again in a similar approach and circumstances (Bandalos, 2018). For instance, when conducting a questionnaire with a specific set of individuals, the questionnaire should generate similar outcomes if re-tested on the same set of individuals at a different time. Validity means the extent to which the tool measures what should be

measured (Bandalos, 2018). However, research cannot be 100% valid; therefore, validity should not be considered as an absolute state, but as a matter of degrees (Mohajan, 2017). Researchers emphasize the importance of the current research approach by providing a broader, more balanced image of the phenomenon, to understand the richness and complexity of human attitudes (Bryman, 2016; Cohen et al., 2017). In addition, mixed methods are especially beneficial in the triangulation of data sources through both qualitative and quantitative research methods (Kahwati & Kane, 2018).

A revised version of the Opinion Relative to Integration of Students with Disabilities (ORI) was used as a part of the questionnaire in the current research; validity and reliability were examined and corroborated during the development of the original questionnaire (Antonak & Livneh, 1988; Larrivee & Cook, 1979). The preliminary questionnaire was prepared in English; the first English version of the questionnaire was then forwarded in Turkey to a certified interpreter, and two Turkish lecturers in the field also checked the translation of the questionnaire. The questionnaire in the English edition was regarded as being essential to this phase. The researcher assisted in finalising the questionnaire with the help of the piloting participants, all of whom had expertise in education research, especially regarding inclusive education. Pilot research was performed prior to the primary research to determine how understandable the questions were, and to collect data to improve the quality and effectiveness of the primary research.

Anatonak and Larrivee (1995) determined the ORI's reliability, reporting a Cronbach's alpha value of 0.88 and a Spearman-Brown adjusted split-half reliability estimate of 0.82. Cronbach's alpha is the average of all conceivable split-half coefficients obtained by dividing the scale items in various ways. Cronbach's alpha is a value between 0 and 1, and values higher than 0.7 suggest more internal consistency (Shrestha, 2021). A test's dependability refers to its capacity to provide consistently high scores (Rumrill, Cook & Stevenson, 2020). Other researchers who have employed the ORI have also reported good reliability scores. For instance, in research in Saudi Arabia using the Arabic translation of ORI, Alquraini (2011) reported a Cronbach's alpha coefficient of 0.84. Cronbach's alpha was determined for the data in the current study – the total survey score was 0.89, indicating a good degree of internal consistency.

In the current research, the interviews employed the following measures to improve their validity and reliability. As described earlier, the interviews were conducted with participants who are academics in Turkey. This step offered useful feedback regarding clarification of the questions, and the interpretation of the participants. In addition, this phase helped to focus the questions and eliminate possible sources of ambiguity, thus making the tool more valid and feasible (Brown, 2018). Validation of the respondents was also provided at this stage, through directly contacting them and providing transcripts of their answers to verify that the results from the interview data were consistent with the respondents' opinions. This procedure is necessary to ensure that the results' validity is promoted by reducing the possibility of the interview data being misinterpreted.

3.8 Quantitative data analysis

In the first phase of the analysis, the data obtained from the completed questionnaire underwent a quantitative analysis. This phase was considered appropriate for a descriptive statistical analysis which is numeric in nature. The data were analysed with the Statistical Package for the Social Sciences version 25 (SPSS) data editing and analysis software. Prior to the analysis, data cleaning and screening was performed. The data were frequently analysed and interpreted with graphic styles of frequencies, percentages and crosstabulations. After data gathering, a five-point Likert ranking scale was used to code the measured responses, with -2 representing the least positive opinion and +2 the most positive. To handle all items identically, some statements in the questionnaire had to be reversed, because 13 of the questionnaire statements were positive, while 12 were negative. For the demographic data, ‘Yes’ was coded as ‘1’, while ‘No’ was coded as ‘2’. For missing values such as an unanswered statement or an answer with more than one reply, the data were coded into SPSS as ‘99’ during the data coding process. Following the initial coding, the questionnaire data were verified to detect errors and to ensure that the data were correctly entered. This was achieved by producing frequency charts for all statements and inspecting the results in the table. Frequency tables were provided for the data from all respondents, and the percentages for each variable category were generated.

Mean scores and standard deviation were measured for each part of the questionnaire, using the same technique as original questionnaire analysis (ORI) (e.g., Avramidis et al., 2000; Bakkaloglu et al., 2019; Mezquita-Hoyos et al., 2018). A significant number of studies that have dealt with teachers' attitudes towards inclusion, including the present research, have stated their results in the form of means or percentages (e.g., Jamsai, 2019; Rakap et al., 2017). In these studies, if the results were just above the scale's midpoint, the positive attitude would probably be reflected in the mean score. As such, the mean values in the Likert scale are inherently difficult to interpret (Nemeto & Beglar, 2013). In a -2 to +2 Likert scale, the mathematical mean is 0. This qualitatively reflects a 'neutral opinion' when used to assess the attitudes of mathematics teachers towards the inclusion of students with SEN. Moreover, a range of mean scores can take this into account to understand teachers' attitudes either positively or negatively. Consequently, in view of the scaling spectrum (-2 to +2), the researcher has selected the range of -2 to -0.5 (below 40%) for the average rating as showing the negative attitudes of teachers towards the inclusion of students with SEN; whereas the range of 0.5 to 2 (percentages above 70%) was selected as expressing positive teachers' attitudes towards the inclusion of students with SEN. If the value was between -0.5 and 0.5 (40%–70%), the results were considered to be neutral.

In the analysis of quantitative data, Chapter 4, the participants' demographic information is presented. Then, descriptive statistics on responses to the questionnaire are reported, item by item. Next, an independent sample t-test and one-way ANOVA were performed to present how factors generally influence mathematics teachers'

attitudes towards the inclusion of children with special educational needs in Turkish lower secondary schools. The independent-samples t-test examines the means of two unrelated groups on the same continuous dependent variable (Kumar, 2019). The one-way analysis of variance (ANOVA) is used to determine whether there are any statistically significant differences between the means of three or more independent (unrelated) groups (Mishra et al., 2019). Variations between subscales are next presented by performing independent sample t-test and one-way ANOVA. The assumption with ANOVA is that there should be normal distribution in data, but it can be used if there is a violation of normality (Rumrill, Cook & Stevenson, 2020). Therefore, ANOVA is used although there is no normal distribution in variables. Also, a post-hoc analysis Tukey significant difference test (HSD) is performed to see the differences between variables when there was a statistically significant difference between variables. A HSD test is used to confirm where the differences occur between variables (Rumrill, Cook & Stevenson, 2020). Finally, the summary of the key findings is presented.

3.9 Qualitative data analysis

The qualitative analysis was conducted on data collected from the interviews. This information was gathered to supplement the quantitative data, and to add richness, depth and detail to it. There are a range of qualitative methods and strategies available for research, and several ways of extracting themes (Vaismoradi et al., 2016). To generate a more accurate data analysis, it is first imperative to transcribe the interviews. In this way, the researcher can ensure that the answers given by the

interviewees will not be lost, because they have been recorded. Although listening to and transcribing the voice recordings is time-consuming, transcriptions allow the researcher to review every part of the interview (Robson & McCartan, 2016). To analyse the interviews, full transcriptions were completed and translated into English. It should be noted that translation involves a shift in medium, which increases problems with the precision, trustworthiness and analysis of data (Gibbs, 2018).

In the current research, a thematic analysis was conducted to analyse interview data. This method was considered to be more suitable than other qualitative research techniques, as the researcher intended to produce a surface-level, descriptive image of those interviewees' views, rather than interpreting them. Thematic analysis is a highly adaptable method that can be tailored to the specific demands of several research projects, offering a thorough yet complicated explanation of data (Braun & Clarke, 2006; King, 2004). Because theme analysis does not need the same level of theoretical and technical expertise as other qualitative techniques (e.g. grounded theory), it is a more approachable method of analysis, especially for those just beginning their research careers (Braun & Clarke, 2006). Braun and Clarke (2006) and King (2004) suggested that thematic analysis is an effective technique for exploring the views of diverse study participants, identifying parallels and contrasts, and producing unexpected findings. Thematic analysis is especially beneficial for summarising significant characteristics of a huge data collection, since it requires the researcher to adopt a systematic approach to data management, resulting in a more ordered final report (King, 2004). Thematic

analysis is used for reporting themes, identifying and analysing them from the data (Braun & Clarke, 2006), and providing details about the interviewees, such as their experiences in life (Robson & McCartan, 2016). In addition, thematic analysis was deemed an especially suitable technique for the current research, as it had the benefit of permitting an analytical theoretical flexibility based on both the data and literature-based theory.

Before starting data collection, a range of decisions was taken. The study described in this thesis had the aim of identifying, coding and analysing themes to represent the content of the entire data set. The researcher prepared the data using both approaches. However, the theoretical and deductive evaluation of themes greatly influences the results. For instance, an analysis suggests that the themes are classified by linking them to previous studies on this subject. This is a data coding method, which attempts to match the themes that have been conceived by the existing literature. Qualitative research, on the other hand, must be flexible enough to identify new classifications of meaning, as was the objective of the current study. Therefore, the thematic analysis carried out here identified inductive codes in the early phases, and connections with theory were recognized as themes arose.

In the current study, Braun and Clarke's (2006) approach was used, and the thematic analysis included the following six steps:

i. Familiarization with the data occurred through reading, rereading, and the establishment of connections between the data and the study

questions. Early thoughts were recorded to assist in comprehending the data and identifying important issues and themes.

ii. Using the NVivo programme, initial codes were produced systemically throughout the data set, and notes were digitally recorded at this point.

iii. The codes were divided into possible themes and sub-themes using NVivo. For example, 'Preparation and Experience' was identified as one of the themes, while 'Training', 'Collaboration' and 'Classroom Experiences' were sub-themes.

Teacher-related factors	Example
Preparation and experience	
Training	Training at the university and in-service training were about how our perspective should be in general and why inclusive education is important… (Teacher1).
Collaboration	Teamwork is very important in order to be successful in inclusive education. many teachers can do this when they do their best and work together… (Teacher15).

iv. Additional data analysis, including the identification of numerous clusters for selected quotes, to confirm the accuracy and consistency of themes and sub-themes. Additionally, at this time, the coding density for various clusters and data sets was determined.

v. Continuous theme examination to ensure that all recorded data was compatible with the coding dimensions prior to assigning themes names.

vi. It was possible to change the themes during the development of the outcomes to provide more specific definitions and classifications. The last stage enabled the study to generate a report that included a compelling sample selection that was relevant to the research questions and an examination of the literature.

3.10 Ethical Considerations

Several ethical considerations had to be taken into account before the research could be approved by the Ethics Committee of the Institute of Education, University College London. The research methods used were interviews and questionnaires with mathematics teachers in Turkey. Before the research, consent and information sheets were provided for participants. Providing the information sheet would assist respondents in comprehending the purposes of the current study and questions. The respondents were able to omit questions they did not want to respond to throughout this phase. In addition, the information sheets and consent forms stated that participants had the right to withdraw from the research at any time, without giving any reason and without consequence. The interviews with teachers would be conducted individually. From the research, collected data which were recorded with participants' consent would be used in the research, and a summary of collected data would be provided for participants.

With respect to the advantages and rights of respondents, the data was secured carefully and stored in secure storage and was also encrypted. The data were kept on password-protected equipment, preserving the participants' anonymity in the report, with secure confidentiality. A special code was allocated to each participant, and all the research data and audio recordings from interviews were stored under this special code. All audio records were destroyed after the initial transcription, to protect participants' anonymity. All school names and respondents' personal data were anonymized. The current study data was provided to the researcher's supervisors and other examination staffs at the UCL Institute of Education, but no other people had access to the information given by participants. Throughout the research, participants were protected from harm, and the anonymized data collected were used as valuable materials to contribute towards the overall research.

3.11 Summary

This section has dealt with the methodological perspective of investigating mathematics teachers' attitudes towards the inclusion of students with SEN in Turkey. In this section, the ontological and epistemological issues were discussed. Moreover, based on the nature of the study questions, the researcher also clarified the justifications for applying the mixed-method strategy. The section also detailed the techniques for gathering data, selecting samples, and analysing the data. In addition, the processes of quantitative and qualitative data analysis were also

outlined. The measures adopted to enhance the validity and reliability of the study, at both the qualitative and the quantitative stages, were then provided, in relation to the preparation, performance and evaluation of the research tools. Finally, the ethical considerations were carefully described.

Chapter 4: Analysis of Quantitative Data

4.1 Introduction

The purpose of this study is to describe and examine mathematics teachers' attitudes towards the inclusion of children with special educational needs in Turkish lower secondary schools. The research questions are as follows:

1. What are the attitudes of mathematics teachers in Turkish lower secondary schools towards the inclusion of children with special educational needs in those schools?
2. What factors influence these teachers' attitudes towards the inclusion of children with special educational needs in Turkish lower secondary schools?

The questionnaire contained the participants' demographic information and the extended ORI survey (40 statements that determine mathematics teachers' attitudes towards the inclusion of students with SEN on a 5-point Likert scale). The demographic information included the independent variables of the present research that may affect the teachers' attitudes. These were the teacher's gender, age, years of teaching experience, qualifications, school location, training at university (any training received on inclusion concepts at university), training on in-service courses (any training received on inclusion during in-service courses), experience of teaching students with SEN and the type of special educational needs experienced, having a friend with SEN and having a family member with SEN.

4.2 Participants' demographic information

There were 262 mathematics teachers who participated in this study. Table 4 presents an overview of teachers' demographic characteristics, which indicates that 160 participants (61.1%) were female, and 102 participants (38.9%) were male. Most of the participants in the current study were teachers whose age ranged from 27 to 31 years (35.9%). The youngest teachers were 23 years old, and the oldest was 57. With regards to location, 73 teachers were from rural middle secondary schools, 78 teachers were from semi-urban middle secondary schools and 111 teachers were from urban middle secondary schools.

Table 4: Demographic information of mathematics teachers who participated in this study

Background variable	Groups	Frequency (N = 262)	Percentage
Gender	Female	160	61.1
	Male	102	38.9
Age	22-26	67	25.6
	27-31	94	35.9
	32-36	59	22.5
	36-41	26	9.9
	41+	16	6.1
Location	Rural	73	27.9
	Semi-urban	78	29.8
	Urban	111	42.4

Table 5 shows the data related to teachers' qualifications; years of teaching experience, university training on inclusive education; in-service training on inclusive education; experience/no experience of teaching students with SEN; having/not having a friend with SEN or disability and having/not having a family member with SEN or disability. Two-hundred-and eighteen (83.2%) held bachelor's degrees, and 44 (16.8%) held master's degrees at the time of data collection. No participant held a doctorate.

Teachers were asked about their years of teaching experience. Teaching experience ranged between 1 to 30 years, shown in Table 5 grouped in six duration-bands.

Table 5: Teaching background information

Background variable	Groups	Frequency	Percentage
Qualification	Bachelor's degree	218	83.2
	Master's degree	44	16.8
Years of teaching experience	Less than 2 years	34	13.0
	2-5 years	85	32.4
	6-10 years	72	27.5
	11-15 years	42	16.0
	16-20 years	23	8.8
	More than 20 years	6	2.3
Experience of teaching student with SEN	Yes	200	76.3
	No	62	23.7

Background variable	Groups	Frequency	Percentage
Training on inclusive education at the university	Yes	101	38.5
	No	161	61.5
Training on inclusive education during in-service training	Yes	99	37.8
	No	163	62.2
Having a friend with SEN or disability	Yes	35	13.4
	No	227	86.6
Having a family member with SEN or disability	Yes	40	15.3
	No	222	84.7

Table 5 also illustrates that 101 (38.5%) mathematics teachers studied a module or unit on ‘inclusive education’ at university, whereas 161 (61.5%) did not. In addition, 99 (37.8%) participants received training related to inclusive education during in-service training, and 163 (62.2%) participants did not. Most participants (227, 86.6%) did not have any friends with SEN or disability, and 35 (13.4%) did. Lastly, only 40 (15.3%) mathematics teachers had a family member with SEN or disability, whereas 222 (84.7%) did not.

Cross-tabulation tests were conducted to find out more about teachers’ demographic characteristics. The results showed that 157 (59.9%) had received training related to ‘inclusive education’.

Figure 1: Number of teachers who received training in inclusive education at university, according to age group

N = 262

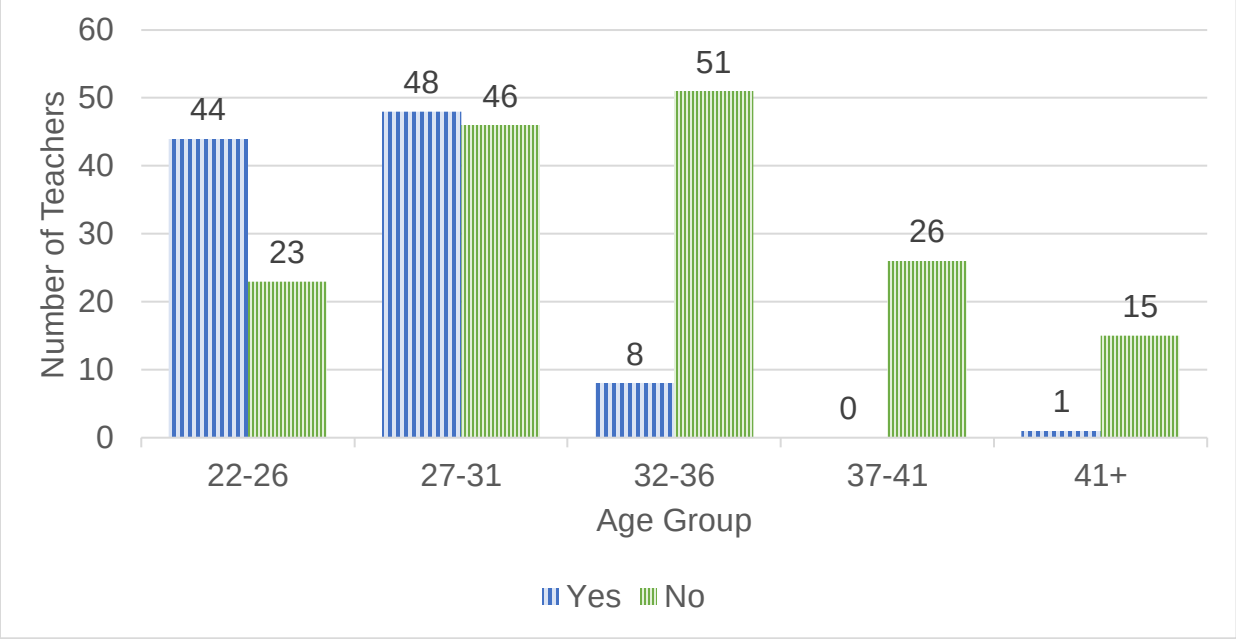


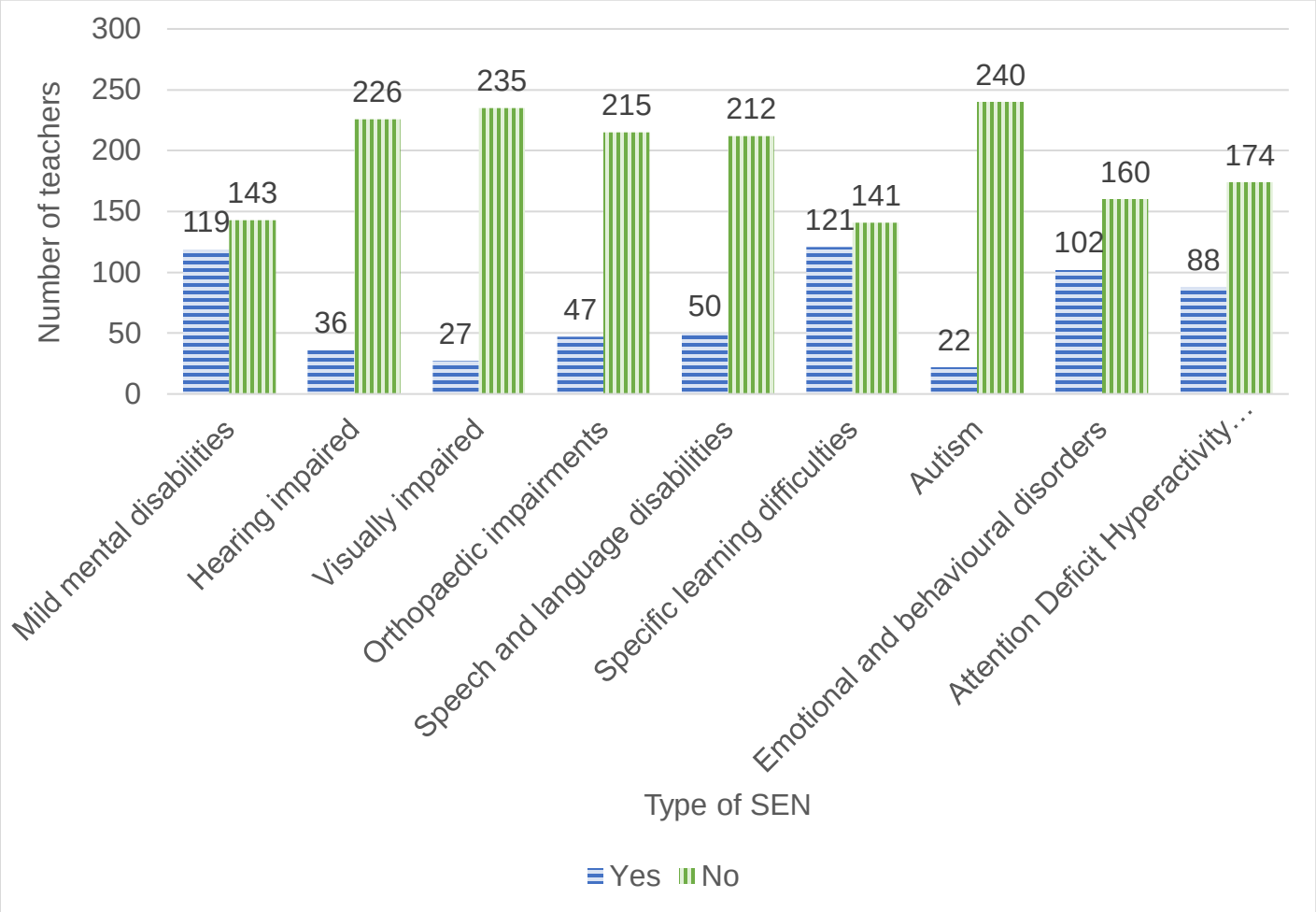
Figure 1 presents the number of participants who studied a module or unit related to ‘inclusive education’ at university, or not, according to participant age group. No participants in the age range 37 to 41 years had studied any module or unit related to ‘inclusive education’ at university. Moreover, only one participant over 41 years old had done so. In contrast, 15 participants did not study any module or unit related to ‘inclusive education’ at the university.

Teachers were next asked about their experience of teaching students with each type of SEN. It can be seen from Figure 2 that between 34% and 46% of participants

had experience of teaching at least one student with mild mental disabilities, specific learning difficulties, emotional and behavioural disorders, or attention deficit hyperactivity disorder (ADHD). However, far fewer had taught children with the other named SEN or disabilities.

Figure 2: Number of teachers who had worked with children with a named SEN or disability

N = 262



There was no significant difference between the mean age of female (M = 29.81, SD = 5.93) and male (M = 32.77, SD = 5.72) teachers. In addition, no relationship was

found between the genders of the teachers and their locations, and both genders showed a similar distribution of locations. One of the main reasons for this is that the assignment system of teachers is based on examinations and scoring. Teachers are assigned to schools according to their scores, regardless of their gender. Moreover, teachers with low scores in the first years of teaching work in rural areas, gaining additional points in the following years, generally leaving the rural areas and starting to work in semi-urban and urban areas. When the sample was examined, the experience of teachers working in rural areas (M = 6.33, SD = 5.31) was lower than teachers working in semi-urban (M = 8.92, SD = 6.17) and urban (M = 8.05, SD = 4.99) areas.

4.3 Descriptive statistics on the revised version of the ORI

A revised version of the ORI scale was used to evaluate the overall mathematics teachers' attitudes towards the inclusion of children with special educational needs in Turkish lower secondary schools. The 40 ORI items were scored as follows: strongly disagree (-2), disagree (-1), neither agree nor disagree (0), agree (1), and strongly agree (2), based on a five-point Likert scale. The overall answers to the questionnaire data are indicated in Table 6.

Table 6: The number and proportion (%) of teachers responding in each category for each item

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
(1) Students with SEN should be educated in a mainstream school.	35 (13.4%)	92 (35.1%)	63 (24.0%)	52 (19.8%)	20 (7.6%)
(2) Inclusive education is not beneficial for Students with SEN.	42 (16.0%)	77 (29.4%)	43 (16.4%)	70 (26.7%)	30 (11.5%)
(3) Inclusive education is beneficial for Students without SEN.	10 (3.8%)	38 (14.5%)	49 (18.7%)	117 (44.7%)	48 (18.3%)
(4) I do not support the policy of inclusion no matter how much extra support the teacher is given in the class.	48 (18.3%)	68 (26.0%)	53 (20.2%)	64 (24.4%)	29 (11.1%)
(5) Students who need training in self-help skills and activities of daily living should not be in mainstream classes.	15 (5.7%)	31 (11.8%)	43 (16.4%)	101 (38.5%)	72 (27.5%)
(6) Students who cannot control their behaviour and so disrupt activities should not be in mainstream classes.	6 (2.3%)	29 (11.1%)	41 (15.6%)	107 (40.8%)	79 (30.2%)
(7) A teacher, if given appropriate resources, could teach the vast majority of children with additional support needs or disabilities.	12 (4.6%)	38 (14.5%)	55 (21.0%)	109 (41.6%)	48 (18.3%)
(8) I believe I am able to teach math skills to student with SEN in mainstream classes.	47 (17.9%)	85 (32.4%)	50 (19.1%)	62 (23.7%)	18 (6.9%)

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
(9) I believe most students with SEN are able to learn necessary math skills.	13 (5.0%)	50 (19.1%)	38 (14.5%)	120 (45.8%)	41 (15.6%)
(10) The physical conditions of the school and the classroom should be adjusted according to the needs of the student with SEN.	4 (1.5%)	5 (1.9%)	11 (4.2%)	121 (46.2%)	121 (46.2%)
(11) I can arrange the physical conditions of my class to facilitate the learning of my students and increase their access.	12 (4.6%)	32 (12.2%)	62 (23.7%)	113 (43.1%)	43 (16.4%)
(12) Our school has the necessary teaching technologies and materials for special education services.	63 (24.0%)	102 (38.9%)	44 (16.8%)	34 (13.0%)	19 (7.3%)
(13) My school will have difficulty in accommodating student with SEN because of overcrowded classes.	31 (11.8%)	58 (22.1%)	48 (18.3%)	61 (23.3%)	64 (24.4%)
(14) I feel I have enough knowledge to create an Individualized Education Programmes (IEP) for each student with special needs or disabilities.	58 (22.1%)	102 (38.9%)	45 (17.2%)	41 (15.6%)	16 (6.1%)
(15) I have spent time to prepare and organize the Individualized Education Programmes (IEP) specifically to meet the educational needs of the student with SEN.	69 (26.3%)	70 (26.7%)	46 (17.6%)	48 (18.3%)	29 (11.1%)

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
(16) I am able to implement Individualized education programmes in my classroom.	58 (22.1%)	118 (45.0%)	47 (17.9%)	26 (9.9%)	13 (5.0%)
(17) I have enough training to deal with almost any special educational needs.	59 (22.5%)	140 (53.4%)	39 (14.9%)	21 (8.0%)	3 (1.1%)
(18) I feel that my teacher-training programme was preparing me adequately for working with all students irrespective of SEN.	76 (29.0%)	116 (44.3%)	30 (11.5%)	29 (11.1%)	11 (4.2%)
(19) The daily or weekly formative assignments that are given to students to assess the class should be adapted for students with SEN.	8 (3.1%)	22 (8.4%)	26 (9.9%)	131 (50.0%)	75 (28.6%)
(20) I have the knowledge and skills to adapt the daily or weekly formative assignments for students with SEN.	39 (14.9%)	67 (25.6%)	78 (29.8%)	60 (22.9%)	18 (6.9%)
(21) I can make an assessment to determine the level of the student in all developmental areas that I think is meaningfully different from his peers.	34 (13.0%)	84 (32.1%)	71 (27.1%)	53 (20.2%)	20 (7.6%)
(22) My practice and experience are adequate for inclusive education.	42 (16.0%)	105 (40.1%)	70 (26.7%)	33 (12.6%)	12 (4.6%)
(23) I do not have knowledge and skills required to teach students with SEN.	14 (5.3%)	47 (17.9%)	30 (11.5%)	140 (53.4%)	31 (11.8%)

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
(24) It is my job, as a teacher, to provide alternative materials for students who have additional support needs or disabilities (e.g., printed sheets of work from the whiteboard).	18 (6.9%)	35 (13.4%)	55 (21.0%)	102 (38.9%)	52 (19.8%)
(25) I have information about the areas in which my pupils with special education needs in my class are inadequate with their interests, abilities and competencies.	30 (11.5%)	28 (10.7%)	101 (38.5%)	81 (30.9%)	22 (8.4%)
(26) The teacher should usually attempt to ensure that all the children in the class, irrespective of levels of difficulty or ability, are able to participate in the class as much as is possible.	10 (3.8%)	15 (5.7%)	33 (12.6%)	129 (49.2%)	75 (28.6%)
(27) A teacher, if given appropriate training, could teach the vast majority of children with additional support needs or disabilities.	30 (11.5%)	58 (22.1%)	67 (25.6%)	74 (28.2%)	33 (12.6%)
(28) I believe I am able to motivate student with SEN in mainstream classes.	29 (11.1%)	50 (19.1%)	72 (27.5%)	85 (32.4%)	26 (9.9%)
(29) I believe I am able to organize classroom activities for student with SEN.	24 (9.2%)	54 (20.6%)	76 (29.0%)	82 (31.3%)	26 (9.9%)

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
(30) The inclusion of children with SEN may affect the classroom learning environment negatively.	13 (5.0%)	47 (17.9%)	64 (24.4%)	67 (25.6%)	71 (27.1%)
(31) I do not want to have students with SEN in my class as the success rate of my class will decrease.	76 (29.0%)	68 (26.0%)	47 (17.9%)	40 (15.3%)	31 (11.8%)
(32) Student peers will reject students with SEN.	35 (13.4%)	79 (30.2%)	57 (21.8%)	52 (19.8%)	39 (14.9%)
(33) The presence of students with additional support needs or disabilities in my mainstream class only has a minimal effect upon my implementation of the standard curriculum.	34 (13.0%)	68 (26.0%)	66 (25.2%)	70 (26.7%)	24 (9.2%)
(34) Academic achievement of students without SEN will be adversely affected during inclusive education.	45 (17.2%)	62 (23.7%)	61 (23.3%)	64 (24.4%)	30 (11.5%)
(35) It will be difficult to give equal attention to all students in an inclusive classroom.	11 (4.2%)	18 (6.9%)	42 (16.0%)	97 (37.0%)	94 (35.9%)
(36) The motivation of the other students is adversely affected by students with SEN.	35 (13.4%)	65 (24.8%)	54 (20.6%)	72 (27.5%)	36 (13.7%)
(37) I have enough information about special education instructional materials and teaching needs.	23 (8.8%)	68 (26.0%)	116 (44.3%)	46 (17.6%)	9 (3.4%)

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
(38) I have the skills to ensure that all children in my class can participate in classroom activities as much as possible, regardless of their level of difficulty or ability.	12 (4.6%)	47 (17.9%)	92 (35.1%)	88 (33.6%)	23 (8.8%)
(39) I am able to communicate and collaborate with other staff (e.g., special needs teachers, principal, school counsellor).	16 (6.1%)	35 (13.4%)	80 (30.5%)	110 (42.0%)	21 (8.0%)
(40) I am able to communicate and collaborate with parents of student with SEN.	16 (6.1%)	29 (11.1%)	77 (29.4%)	118 (45.0%)	22 (8.4%)

The participants selected the highest levels of agreement on statements 10 (M = 1.39, SD = 0.78) and 26 (M = 0.93, SD = 0.99). Hence, the teachers showed a largely positive attitude that *"the physical conditions of the school and the classroom should be adjusted according to the needs of the student with SEN"* (item 10) and *"the teacher should usually attempt to ensure that all the children in the class, irrespective of levels of difficulty or ability, are able to participate in the class as much as is possible"* (item 26). On the other hand, the participants indicated the highest levels of agreement on item 35 (M = 0.94, SD = 1.08) and item 6 (M = 0.85, SD = 1.04) relating to negatively worded statements, which suggests a negative attitude that *"It will be difficult to give equal attention to all students in an inclusive classroom"* (item 35) and *"students who*

cannot control their behaviour and so disrupt activities should not be in mainstream classes" (item 6).

The values were determined by reversing the scores on negatively worded items, then summing the 40 answers; these were then added to the 80 points for the total score of each participant. The total scores were on a scale of 0 to 160, with higher scores showing more favourable attitudes towards inclusion. Scores of 80 or higher suggested positive attitudes towards the inclusion of children with SEN, and scores of less than 80 reflected negative attitudes. The overall mean for teachers' total final scores was 79.23, which suggested a slightly negative attitude towards the inclusion of children with SEN in Turkish lower secondary schools.

4.4 Exploration of the factors influencing teachers' attitudes

4.4.1 Are there differences between the attitudes of female versus male teachers?

The null hypothesis was that there would be no statistically significant differences in the attitudes of teachers based on their gender. An independent samples t-test was used to compare the means and distributions of the total score for two independent groups (gender). Table 4 shows that males (N= 102) had a lower mean (M= 78.82, SD= 21.06) than females (N= 160) (M=80.76, SD=19.66). Variances were equal, since Levene's Test for Equality of Variances was not significant, and so the 'equal variances assumed' t and p-values were obtained. The t-test detected no significant difference between the two groups (t (260) = 1.538, p = 0.125), and so the null hypothesis was accepted.

Table 7: Independent samples t-test for the difference in the teachers' attitudes based on gender

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	t	df	Sig. (2-tailed)
Equal variances assumed	.438	.509	1.538	260	.125
Equal variances not assumed			1.515	204.368	.131

4.4.2 Are there age-based differences in the teachers' attitudes?

The null hypothesis was that there would be no statistically age-based differences in the teachers' attitudes. A comparison of the means and distributions of the total score was made for five age groups. A one-way ANOVA was conducted to compare these groups. There was a significant effect of teachers' age group on teachers' overall attitude towards the inclusion of children with SEN in Turkish lower secondary schools [F(4, 257) = 7.218, p = 0.000].

Table 8: A one-way ANOVA for the differences in the teachers' overall attitudes based age groups.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	12606.499	4	3151.625	7.218	.000
Within Groups	112213.837	257	436.630		
Total	124820.336	261			

Post hoc comparisons using the Tukey HSD test indicated that the mean score for the age group 22-26 (M = 88.04, SD = 23.21) was higher than the other age groups

32-36, 37-41 and 41+. However, the age group 22-26 (M = 88.04, SD = 23.21) did not significantly differ from the age group 32-36 (M = 70.66, SD = 17.68). As a result, there was a significant difference between age group 22-26 and other age groups regarding teachers' overall attitude towards the inclusion of children with SEN in Turkish lower secondary schools.

4.4.3 Are there location-based differences in the teachers' attitudes?

The null hypothesis was that there would be no statistically significant differences in the attitudes of teachers based on their location. A one-way ANOVA was conducted to compare the effect of teachers' location (rural, semi-urban and urban) on teachers' overall attitudes towards the inclusion of children with SEN in Turkish lower secondary schools. There was a significant effect of teachers' location on teachers' overall attitude towards the inclusion of children with SEN in Turkish lower secondary schools [F(2, 259) = 4.749, p = 0.009].

Table 9: A one-way ANOVA for the differences in the teachers' overall attitudes based on location

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.415.236	2	2.207.618	4.749	.009
Within Groups	120.405.100	259	464.885		
Total	124.820.336	261			

The post hoc analysis Tukey HSD test showed that there was a statistically significant difference between rural location group (M = 84.86, SD = 22.74) and the other two location groups (semi-urban and urban). However, the semi-urban location group (M = 75.04, SD = 19.02) did not significantly differ from the urban location group (M = 76.31, SD = 22.43). The mean score for the rural location (M = 84.86, SD = 22.74) was higher than the other two location groups (semi-urban and urban). As a result, the null hypothesis was rejected as there was significant difference between the rural location group and the two other location groups (semi-urban and urban) regarding teachers' overall attitude towards the inclusion of children with SEN in Turkish lower secondary schools.

4.4.4 Are there qualifications-based differences in the teachers' attitudes?

The null hypothesis was that there would be no statistically significant differences in the attitudes of teachers based on their qualifications. An independent samples t-test was conducted to compare overall scores of teachers' attitudes in two independent teachers' qualification groups (bachelor's degree and master's degree). There was no significant difference in the overall scores for bachelor's (M= 78.35, SD=21.52) or master's degree group (M= 78.14, SD=23.80). Variances were equal, since Levene's Test for Equality of Variances was not significant, and so the 'equal variances assumed' t and p-values were obtained. Since the t-test results detected no significant difference between the two groups (t (260)= 0.59, p = 0.953), the null hypothesis was accepted. Consequently,

it was determined that there was no significant difference between overall attitudes of teachers who held bachelor's or master's degrees.

Table 10: Independent samples t-test for the difference in teachers' attitudes based on qualification

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	t	df	Sig. (2-tailed)
Equal variances assumed	.323	.571	.059	260	.953
Equal variances not assumed			.055	58.045	.956

4.4.5 Are there differences in the teachers' attitudes based on years of teaching experience?

The null hypothesis was that there would be no statistically significant differences in the attitudes of teachers based on their years of teaching experience. A one-way ANOVA was conducted to compare the effect of years of teaching experience (less than 2 years, 2-5 years, 6-10 years, 11-15 years, 16-20 years, and more than 20 years) on teachers' overall attitudes towards the inclusion of children with SEN in Turkish lower secondary

schools. There was a significant effect of teachers' years of teaching experience on teachers' overall attitude [F(5, 256) = 3.257, p = 0.007]. The post hoc analysis Tukey HSD test showed that there were statistically significant differences in the teachers' overall attitudes between teachers with less than 2 years' teaching experience and other teachers. The mean score for teachers with less than 2 years' teaching experience (M = 86.50, SD = 22.42) was higher than others. As a result, the null hypothesis was rejected and there were statistically significant differences in the attitudes of teachers based on their years of teaching experience.

Table 11: A one-way ANOVA for the differences in the teachers' overall attitudes-based years of teaching experience

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.466.409	5	1.493.282	3.257	.007
Within Groups	117.353.927	256	458.414		
Total	124.820.336	261			

4.4.6 Are there differences in the teachers' attitudes based on their experience of teaching students with SEN?

The null hypothesis was that there would be no statistically significant differences in the attitudes of teachers based on their experience of teaching students with SEN. A comparison of the means of the distributions of the total score was desired for two independent groups (whether they had experience of teaching a student with SEN or

not). An independent samples t-test was carried out. Teachers who had experience of teaching a student with SEN had a higher mean (M= 82.49, SD= 21.60) than teachers who had no such experience (M=64.85, SD=16.82). The results of the independent samples t-test are shown in Table 12. The Levene's Test for Equality of Variances was significant (F = 6.012 and Sig = 0.015), the t and p-values of the equal variances not assumed were used (t(128.994)= 6.714, p= 0.000). As a result, it was determined that the null hypothesis was rejected: there was a significant difference between the attitudes of teachers who had teaching experience with SEN and teachers who had none.

Table 12: Independent samples t-test for the difference in the teachers' attitudes based on the experience of teaching students with SEN

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	t	df	Sig. (2-tailed)
Equal variances assumed	6.012	.015	5.894	260	.000
Equal variances not assumed			6.714	128.994	.000

Furthermore, a comparison of the means of the distributions of the total score was desired for two independent groups based on the type of SEN, where teachers had experience of teaching students with each type of SEN. The results of the independent samples t-test are shown in Table 13. The results show that there was a significant difference between the attitudes of teachers who had experience of teaching students

with mild mental disabilities (t(231.651)= 3.727, p= 0.000), students with orthopaedic impairments (t(260)= 2.152, p= 0.032) and students with ADHD (t(260)= 2.276, p= 0.024).

Table 13: Independent samples t-test for the difference in the teachers' attitudes based on experience of teaching student with each type of SEN

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	t	df	Sig. (2-tailed)
Mild mental disabilities	4.347	.038	3.785	260	.000
			3.727	231.651	.000
Hearing impaired	.077	.782	.654	260	.514
			.688	48.742	.495
Visually impaired	2.152	.144	.599	260	.550
			.500	29.915	.620
Orthopaedic impairments	.005	.942	2.152	260	.032
			2.256	71.246	.027
	1.582	.210	.139	260	.890

Speech and language disabilities			.129	68.621	.897
Specific learning difficulties	1.123	.290	1.736	260	.084
			1.717	239.265	.087
Autism	.246	.620	-.101	260	.920
			-.087	23.775	.932
Emotional and behavioural disorders	.114	.735	-.266	260	.791
			-.268	222.267	.789
Attention Deficit Hyperactivity Disorder (ADHD)	.168	.682	2.276	260	.024
			2.351	190.757	.020

4.4.7 Are there differences in the teachers' attitudes based on the training they have received on inclusive education?

The null hypothesis was that there would be no statistically significant differences in the attitudes of teachers based on their training. An independent-samples t-test was conducted to compare overall scores of teachers' attitudes in two independent groups (teachers who had prior training on inclusive education and teachers who had none). There was a significant difference in the overall scores for teachers who had prior training on inclusive education and teachers who had none. Teachers with prior training had a higher mean (M= 84.22, SD=23.06) than teachers without prior training (M= 69.49, SD=16.46). The Levene's Test for Equality of Variances was significant (F = 8.099 and Sig = 0.005), the t and p-values of the equal variances not assumed were used (t (258.873)= 6.030, p = 0.000). These results suggest that the null hypothesis was

rejected and there was a significant difference between overall attitudes of teachers who had prior training on inclusive education and teachers who had none.

Table 14: Independent samples t-test for the difference in teachers' attitudes based on the training received on inclusive education

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	t	df	Sig. (2-tailed)
Equal variances assumed	8.099	.005	5.651	260	.000
Equal variances not assumed			6.030	258.873	.000

4.4.8 Are there differences in the teachers' attitudes based on whether they a module or unit on 'inclusive education' at university?

The null hypothesis was that there would be no statistically significant differences in the attitudes of teachers based on whether teachers studied a module or unit on 'inclusive education' at university. An independent-samples t-test was conducted to compare overall scores of teachers' attitudes in two independent groups (teachers who studied a module or unit on 'inclusive education' at university and teachers who did not). There was a significant difference in the overall scores for teachers who studied a module or unit on 'inclusive education' at university and teachers who did not. Those who studied 'inclusive education' had higher mean (M= 88.92, SD= 24.50) than teachers who did not (M= 71.66, SD= 17.012). The Levene's Test for Equality of Variances was significant (F

= 14.091 and Sig = 0.000), the t and p-values of the equal variances not assumed were used (t (160.473)= 6.205, p = 0.000). As a results, the null hypothesis was rejected, there was a significant difference between overall attitudes of teachers who studied a module or unit on ‘inclusive education’ at the university and those who did not.

Table 15: Independent samples t-test for the difference in teachers’ attitudes based on studying a module or unit on ‘inclusive education’ at university

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	t	df	Sig. (2-tailed)
Equal variances assumed	14.091	.000	6.725	260	.000
Equal variances not assumed			6.205	160.473	.000

4.4.9 Are there differences in the teachers’ attitudes based on whether teachers received any training related to inclusive education during in-service training?

The null hypothesis was that there would be no statistically significant differences in the attitudes of teachers based on whether teachers received any training related to inclusive education during in-service training. An independent samples t-test was conducted to compare overall scores of teachers’ attitudes in two independent groups (teachers who received training related to inclusive education during in-service training and teachers who did not). There was a significant difference in the overall scores for teachers who received training related to inclusive education during in-service training

and teachers who did not. Teachers who received training had a higher mean (M= 83.40, SD= 21.46) than teachers who did not (M= 75.22, SD= 21.59). Variances were equal, since Levene's Test for Equality of Variances was not significant, and so the 'equal variances assumed' t and p-values were obtained. The t-test detected no significant difference between the two groups (t (260)= 2.981, p = 0.003). These results suggest that there was a significant difference between overall attitudes of teachers who received training related to inclusive education during in-service training and teachers who did not. As a result, the null hypothesis was rejected.

Table 16: Independent samples t-test for the difference in teachers' attitudes based on training related to inclusive education during in-service training

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	t	df	Sig. (2-tailed)
Equal variances assumed	.013	.911	2.981	260	.003
Equal variances not assumed			2.985	207.977	.003

4.4.10 Are there differences between the attitudes of teachers who had a friend with SEN or disability and teachers who did not?

The null hypothesis was that there would be no statistically significant differences between the attitudes of teachers who had a friend with SEN or disability and teachers who did not. An independent-samples t-test was conducted to compare overall scores of teachers' attitudes in two independent groups (teachers who had a friend with SEN or disability and teachers who did not). The mean score for teachers who had a friend with SEN or disability (M= 80.51, SD= 20.42) was higher than the mean score for teachers who did not have (M= 77.97, SD= 22.11). Variances were equal, since Levene's Test for Equality of Variances was not significant, and so the 'equal variances assumed' t and p-values were obtained. The t-test detected no significant difference between the two groups (t (260)= 0.639, p = 0.523). These results suggest that no significant differences were found between overall attitudes of teachers who had a friend with SEN or disability and teachers who did not, and the null hypothesis was accepted.

Table 17: Independent samples t-test for the difference in the teachers' attitudes based on having a friend with SEN or disability

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	t	df	Sig. (2-tailed)
Equal variances assumed	.013	.910	.639	260	.523

Equal variances not assumed	.677	47.161	.502

4.4.11 Are there differences between the attitudes of teachers who had a family member with SEN or disability and teachers who did not?

The null hypothesis was that there would be no statistically significant differences between the attitudes of teachers who had a family member with SEN or disability and teachers who did not. An independent-samples t-test was conducted to compare overall scores of teachers' attitudes in two independent groups (teachers who had a family member with SEN or disability and teachers who did not). The mean score for teachers who had a family member with SEN or disability (M= 93.53, SD= 22.85) was higher than teachers who did not (M= 75.57, SD= 20.57). Variances were equal, since Levene's Test for Equality of Variances was not significant, and so the 'equal variances assumed' t and p-values were obtained. The t-test detected significant difference between the two groups (t (260)= 4.994, p = 0.000). These results suggest that the difference between overall attitudes of teachers who had a family member with SEN or disability and teachers who did not was significant, and the null hypothesis was rejected.

Table 18: Independent samples t-test for the difference in the teachers' attitudes based on having a family member with SEN or disability

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	t	df	Sig. (2-tailed)
Equal variances assumed	.012	.913	4.994	260	.000

Equal variances not assumed	4.642	51.034	.000

4.4.12 Are there differences between the attitudes of teachers based on the intersection of gender, age, years of teaching experience, and location?

The null hypothesis was that there would be no statistically significant differences in the attitudes of teachers based on the intersection of gender, age, years of teaching experience, and location. A Wald Chi-Square test was conducted to compare the effects of the intersection of gender, age, years of teaching experience, and location on teachers' overall attitudes towards the inclusion of children with SEN in Turkish lower secondary schools. The relation between these variables was significant, X^2 (1, N = 262) = 7.85, p = .005. The mean score for male teachers aged 22-26 with less than 2 years' teaching experience in rural areas (M = 115.50, SD = 13.00) was higher than the other groups. As a result, the null hypothesis was rejected and there were statistically significant differences in the attitudes of teachers based on the intersection of gender, age, years of teaching experience, and location.

4.5 Variations between subscales

The 40 statements are classified into four subscales and the total scores were on a scale of 0 to 160, with higher scores showing more favourable attitudes towards inclusion – this score calculation process was proposed by Antonak and Larrivee (1995). Inclusive settings management (M= 87.21, SD= 19.98), presented in 10 statements; the academic and social importance of inclusive education for students with

SEN (M= 94.04, SD= 26.99), presented in 6 statements; ability to teach students with SEN (M= 72.78, SD= 25.20), presented in 17 statements; and lastly, benefits of inclusion (M= 71.58, SD= 29.81), presented in 7 statements.

Table 19: Distribution of teachers' attitudes based on their scores on the subscales

Overall attitude	Mean	SD
Inclusive settings management	87.21	19.98
Academic and social importance of inclusive education	94.04	26.99
Ability to teach students with SEN	72.78	25.20
Benefits of inclusion	71.58	29.81

In the following section, the independent sample t-test was performed to test the differences between the variables. The independent variables for t-test are gender, qualification, experience of teaching students with SEN, prior training on inclusive education, studying a module or unit related to inclusive education at university, training related to inclusion education during in-service training, having a friend with SEN or disability, and having a family member with SEN). Next, three one-way ANOVA were performed to discover the differences in the four subscales between groups in terms of age, location and teaching experience.

4.5.1 Independent sample t-test to compare subscales scores for female and male teachers

Table 20: Independent samples t-test for difference in teachers' attitudes based on gender

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	t	df	Sig. (2-tailed)
Inclusive settings management	.577	.448	1.777	260	.077
			1.752	205.132	.081
Academic and social importance of inclusive education	.360	.549	1.598	260	.111
			1.605	218.547	.110
Ability to teach students with SEN	2.612	.107	.272	260	.786
			.266	199.982	.791
Benefits of inclusion	.126	.723	2.145	260	.033
			2.137	212.520	.034

An independent sample t-test was conducted to compare the inclusive settings management scores for female and male teachers. The mean score of inclusive settings management for female teachers was (M=88.95, SD= 19.39), higher than male teachers (M=84.47, SD= 20.67). The results of the independent samples t-test are shown in Table 20. It was determined that there was no significant difference between

male and female teachers in terms of their inclusive settings management scores (t (260)= 1.777, p = 0.077).

Next, the academic and social importance of inclusive education scores for male and female teachers were compared using an independent sample t-test. The mean score of the academic and social importance of inclusive education for male teachers was (M=90.72, SD= 26.57), lower than female teachers (M=96.17, SD= 27.13). No significant difference between female and male teachers was evident in terms of the academic and social importance of inclusive education scores (t (260)= 1.598, p = 0.111).

An independent sample t-test was used to analyse the relationship between male and female teachers' ability to teach students with SEN scores. The mean score of ability to teach students with SEN for female teachers was (M=73.12, SD= 19.39), higher than males (M=72.25, SD= 26.72). The table above illustrates the results of the independent samples t-test. There was no significant difference between male and female teachers in terms of their ability to teach students with SEN scores (t (260)= 0.272, p = 0.786).

Finally, an independent sample t-test was used to compare the benefits of inclusion with SEN scores for male and female teachers. The mean score for female teachers was (M=74.71, SD= 29.41), higher than male teachers (M=66.67, SD= 29.92). As Table 20 shows, there was a significant difference between male and female teachers in terms of their benefits of inclusion scores (t (260)= 2.145, p = 0.033).

4.5.2 Independent sample t-test to compare subscales scores for teachers' qualifications

Table 21: Independent sample t-test for the difference in teachers' attitudes based on qualifications

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	t	df	Sig. (2-tailed)
Inclusive settings management	1.586	.209	-1.150	260	.251
			-1.079	58.226	.285
Academic and social importance of inclusive education	.012	.913	1.584	260	.114
			1.625	63.168	.109
Ability to teach students with SEN	.090	.764	-.756	260	.450
			-.775	63.163	.441
Benefits of inclusion	.800	.372	.417	260	.677
			.386	57.567	.701

An independent sample t-test was conducted to compare the inclusive settings management scores for two independent teachers' qualification groups (bachelor's degree and master's degree). The mean score for the bachelor's degree group (M=86.57, SD= 19.63) was lower than the master's degree group (M=90.36, SD= 21.59) in terms of inclusive settings management scores. The results of the independent samples t-test are shown in Table 21. It was determined that there was no significant difference between the bachelor's degree group and the master's degree group in terms of their inclusive settings management scores (t (260)= -1.150, p = 0.251).

Next, the academic and social importance of inclusive education scores for the bachelor's degree group and the master's degree group were compared using an independent sample t-test. The mean score for the bachelor's degree group (M=95.23, SD= 27.08) was higher than the master's degree group (M=88.18, SD= 26.07) in the academic and social importance of inclusive education scores. No significant difference between the bachelor's degree group and the master's degree group was evident in terms of their academic and social importance of inclusive education scores (t (260)= 1.584, p = 0.114).

An independent sample t-test was used to analyse the relationship between the bachelor's degree group and the master's degree group in terms of their ability to teach students with SEN scores. The mean score for the bachelor's degree group (M=72.25, SD= 25.37) was lower than the master's degree group (M=75.40, SD= 24.43). The table above illustrates the results of the independent samples t-test. There was no significant

difference between the bachelor's degree group and the master's degree group in terms of their ability to teach students with SEN scores (t (260)= -0.756, p = 0.450).

Finally, an independent sample t-test was used to compare the benefits of inclusion with SEN scores for the bachelor's degree group and the master's degree group. The mean score for the bachelor's degree group (M=71.93, SD= 29.23) was higher than the master's degree group 69.87 (SD= 32.83). As Table 21 shows, there was no significant difference between the bachelor's degree group and the master's degree group in terms of their benefits of inclusion scores (t (260)= 0.417, p = 0.677).

4.5.3 Independent sample t-test to compare subscales scores for teachers who had experience of teaching a student with SEN and teachers who had no experience

Table 22: Independent samples t-test for the difference in teachers' attitudes based on experience of teaching students with SEN

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	t	df	Sig. (2-tailed)
Inclusive settings management	.019	.890	6.505	260	.000
			6.810	109.715	.000

	Levene's Test for Equality of Variances		t-test for Equality of Means		
Academic and social importance of inclusive education	.687	.408	5.097	260	.000
			5.446	113.808	.000
Ability to teach students with SEN	9.309	.003	5.004	260	.000
			5.928	140.481	.000
Benefits of inclusion	5.458	.020	2.959	260	.003
			3.338	126.411	.001

The academic and social importance of inclusive education scores for teachers who had an experience of teaching a student with SEN and teachers who had no experience were compared using an independent sample t-test. The mean score for teachers who had experience of teaching a student with SEN was (M=98.57, SD= 26.49), higher than teachers who had no experience (M=79.46, SD= 23.35). A significant difference between teachers who had experience of teaching a student with SEN and teachers who had no experience was evident in terms of their academic and social importance of inclusive education scores (t (260)= 5.097, p = 0.000).

An independent sample t-test was used to analyse the relationship between teachers who had experience of teaching a student with SEN and teachers who had no experience in terms of their ability to teach students with SEN scores. The mean score

for teachers who had experience of teaching a student with SEN was (M=76.93, SD= 25.60), higher than teachers who had no experience (M=59.39, SD= 18.42). The table above illustrates the results of the independent samples t-test. There was a significant difference between teachers who had experience of teaching a student with SEN and teachers who had no experience in terms of their ability to teach students with SEN scores (t (140.481)= 5.928, p= 0.000).

Finally, an independent sample t-test was used to compare the benefits of inclusion with SEN scores for teachers who had experience of teaching a student with SEN and teachers who had no experience. The mean score for teachers who had experience of teaching a student with SEN was (M=74.57, SD= 30.74) higher than teachers who had no experience (M=61.94, SD= 24.40). As Table 22 shows, there was a significant difference between teachers who had experience of teaching a student with SEN and teachers who had no experience in terms of their benefits of inclusion scores (t (126.411)= 3.338, p = 0.001).

4.5.4 Independent sample t-test to compare subscales scores for teachers who had prior training on inclusive education and teachers who had no prior training

Table 23: Independent samples t-test for the difference in teachers' attitudes based on prior training on inclusive education

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	t	df	Sig. (2-tailed)
Inclusive settings management	.147	.701	3.864	260	.000
			3.817	213.597	.000
Academic and social importance of inclusive education	2.478	.117	4.284	260	.000
			4.222	211.820	.000
Ability to teach students with SEN	19.122	.000	6.808	260	.000
			7.296	259.550	.000
Benefits of inclusion	9.832	.002	3.799	260	.000
			3.985	253.587	.000

An independent sample t-test was conducted to compare the inclusive settings management scores for teachers who had prior training on inclusive education and teachers who had no prior training. The mean score for teachers who had prior training

on inclusive education was (M=91.01, SD= 18.98), higher than teachers who had no prior training (M=81.52, SD= 20.18). The results of the independent samples t-test are shown in Table 23. It was determined that there was a significant difference between teachers who had prior training on inclusion and teachers who had no prior training in terms of their inclusive settings management scores (t (260)= 3.864, p = 0.000).

Next, the academic and social importance of inclusive education scores for teachers who had prior training on inclusion and teachers who had no prior training on inclusion were compared using an independent sample t-test. The mean score for teachers who had prior training on inclusion was (M=99.70, SD= 25.36), higher than teachers who had no prior training (M=85.59, SD= 27.27). A significant difference between teachers who had prior training on inclusion and teachers who had no prior training was evident in terms of their academic and social importance of inclusive education scores (t (260)= 4.284, p = 0.000).

An independent sample t-test was used to analyse the relationship between teachers who had prior training on inclusion and teachers who had no prior training on inclusion in terms of their ability to teach students with SEN scores. The mean score for teachers who had prior training on inclusion was (M=80.78, SD= 26.10), higher than teachers who had no prior training (M=60.82, SD= 18.18). The table above illustrates the results of the independent samples t-test. There was a significant difference between teachers who had prior training on inclusion and teachers who had no prior training in terms of their ability to teach students with SEN scores (t (259.550)= 7.296, p= 0.000).

Finally, an independent sample t-test was used to compare the benefits of inclusion with SEN scores for teachers who had prior training on inclusion and teachers who had no prior training. The mean score for teachers who had prior training on inclusion was (M=77.16, SD= 31.63), higher than teachers who had no prior training (M=63.24, SD= 24.75). As Table 23 shows, there was a significant difference between teachers who had prior training on inclusion and teachers who had no prior training in terms of their benefits of inclusion scores (t (253.587)= 3.985, p = 0.000).

4.5.5 Independent sample t-test to compare subscales scores for teachers who studied a module or unit on 'inclusive education' at university and teachers who did not

Table 24: Independent samples t-test for the difference in teachers' attitudes based on studying a module or unit on 'inclusive education' at university

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	t	df	Sig. (2-tailed)
Inclusive settings management	.281	.596	4.561	260	.000
			4.517	205.755	.000
Academic and social importance of inclusive education	3.199	.075	3.329	260	.001
			3.405	227.980	.001
Ability to teach students with SEN	16.660	.000	8.219	260	.000
			7.635	164.412	.000
Benefits of inclusion	18.077	.000	5.200	260	.000
			4.853	167.027	.000

An independent sample t-test was conducted to compare the inclusive settings management scores for teachers who studied a module or unit on 'inclusive education'

at university and teachers who did not. The mean score for teachers who studied a module or unit on ‘inclusive education’ at university was (M=94.06, SD= 19.76), higher than teachers who did not (M=82.91, SD= 18.94). The results of the independent samples t-test are shown in Table 24. It was determined that there was a significant difference between teachers who studied a module or unit on ‘inclusive education’ at university and teachers who did not study in terms of their inclusive settings management scores (t (260)= 4.561, p = 0.000).

Next, the academic and social importance of inclusive education scores for teachers who studied a module or unit on ‘inclusive education’ at university and teachers who did not were compared using an independent sample t-test. The mean score for teachers who studied a module or unit on ‘inclusive education’ at university was (M=100.92, SD= 24.87), higher than teachers who did not (M=89.73, SD= 27.45). A significant difference between teachers who studied a module or unit on ‘inclusive education’ at university and teachers who did not was evident in terms of their academic and social importance of inclusive education scores (t (260)= 3.329, p = 0.000).

An independent sample t-test was used to analyse the relationship between teachers who studied a module or unit on ‘inclusive education’ at university and teachers who did not in terms of their ability to teach students with SEN scores. The mean score for teachers who studied a module or unit on ‘inclusive education’ at university was (M=87.20, SD= 26.84) and teachers who did not was (M=63.73, SD= 19.28). The table above illustrates the results of the independent samples t-test. There was a significant difference between teachers who studied a module or unit on ‘inclusive

education' at university and teachers who did not in terms of their ability to teach students with SEN scores (t (164.412)= 7.635, p= 0.000).

Finally, an independent sample t-test was used to compare the benefits of inclusion with SEN scores for teachers who studied a module or unit on 'inclusive education' at university and teachers who did not. The mean score for teachers who studied a module or unit on 'inclusive education' at university (M=83.11, SD= 33.60) was higher than teachers who did not (M=64.35, SD= 24.65). As Table 24 shows, there was a significant difference between teachers who studied a module or unit on 'inclusive education' at university and teachers who did not in terms of their benefits of inclusion scores (t (167.027)= 4.853, p = 0.000).

4.5.6 Independent sample t-test to compare subscales scores for teachers who received training related to inclusive education during in-service training and teachers who did not

Table 25: Independent samples t-test for the difference in teachers' attitudes based on training related to inclusive education during in-service training

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	t	df	Sig. (2-tailed)
Inclusive settings management	.101	.751	1.474	260	.142

	Levene's Test for Equality of Variances		t-test for Equality of Means		
			1.497	217.443	.136
Academic and social importance of inclusive education	1.107	.294	2.395	260	.017
			2.417	213.049	.016
Ability to teach students with SEN	5.837	.016	3.663	260	.000
			3.511	179.945	.001
Benefits of inclusion	.014	.906	.362	260	.717
			.365	211.421	.716

An independent sample t-test was conducted to compare the inclusive settings management scores for teachers who received training related to inclusive education during in-service training and teachers who did not receive training. The mean score for teachers who received training during in-service training was (M=89.54, SD= 19.13), higher than teachers who did not (M=85.79, SD= 20.41). The results of the independent samples t-test are shown in Table 25. It was determined that there was no significant difference between teachers who received training related to inclusive education during in-service training and teachers who did not in terms of their inclusive settings management scores (t (260)= 1.474, p = 0.142).

Next, the academic and social importance of inclusive education scores for teachers who received training related to inclusive education during in-service training and teachers who did not were compared using an independent sample t-test. The mean score for teachers who received training during in-service training was (M=99.12, SD= 26.13), higher than teachers who did not (M=90.96, SD= 27.12). A significant difference between teachers who received training related to inclusive education during in-service training and teachers who did not was evident in terms of the academic and social importance of inclusive education scores (t (260)= 2.395, p = 0.017).

An independent sample t-test was used to analyse the relationship between teachers who received training related to inclusive education during in-service training and teachers who did not in terms of their ability to teach students with SEN scores. The mean score for teachers who received training during in-service training was (M=79.93, SD= 27.25), higher than teachers who did not (M=68.44, SD= 22.88). The table above illustrates the results of the independent samples t-test. There was a significant difference between teachers who received training related to inclusive education during in-service training and teachers who did not in terms of their ability to teach students with SEN scores (t (179.945)= 3.511, p= 0.001).

Finally, an independent sample t-test was used to compare the benefits of inclusion with SEN scores for teachers who received training related to inclusive education during in-service training and teachers who did not. The mean score for teachers who received training during in-service training was (M=72.44, SD= 29.35), higher than teachers who did not (M=71.06, SD= 30.16). As Table 25 shows, there was

no significant difference between teachers who received training related to inclusive education during in-service training and teachers who did not in terms of their benefits of inclusion scores (t (260)= 0.362, p = 0.717).

4.5.7 Independent sample t-test to compare subscales scores for teachers who had a friend with SEN or disability and teachers who did not

Table 26: Independent samples t-test for the difference in the teachers' attitudes based on having a friend with SEN or disability

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	t	df	Sig. (2-tailed)
Inclusive settings management	.809	.369	.543	260	.588
			.628	51.023	.533
Academic and social importance of inclusive education	1.313	.253	-.840	260	.402
			-.927	48.783	.359
Ability to teach students with SEN	3.440	.065	1.093	260	.276
			.983	42.232	.331
Benefits of inclusion	2.203	.139	-.502	260	.616
			-.549	48.433	.586

An independent sample t-test was conducted to compare the inclusive settings management scores for teachers who had a friend with SEN or disability and teachers who did not. The mean score for teachers who had a friend with SEN or disability was (M=88.91, SD= 16.75), higher than teachers who did not (M=86.94, SD= 20.45). The results of the independent samples t-test are shown in Table 26. It was determined that there was no significant difference between teachers who had a friend with SEN or disability and teachers who did not in terms of their inclusive settings management scores (t (260)= 0.543, p = 0.588).

Next, the academic and social importance of inclusive education scores for teachers who had a friend with SEN or disability and teachers who did not were compared using an independent sample t-test. The mean score for teachers who had a friend with SEN or disability was (M=90.48, SD= 24.00), lower than teachers who did not (M=94.60, SD= 27.43). A significant difference between teachers who had a friend with SEN or disability and teachers who did not was evident in terms of their academic and social importance of inclusive education scores (t (260)= -0.840, p = 0.402).

An independent sample t-test was used to analyse the relationship between teachers who had a friend with SEN or disability and teachers who did not in terms of their ability to teach students with SEN scores. The mean score for teachers who had a friend with SEN or disability was (M=77.11, SD= 28.47), higher than teachers who did not (M=72.11, SD= 24.65). The table above illustrates the results of the independent samples t-test. There was a significant difference between teachers who had a friend

with SEN or disability and teachers who did not in terms of their ability to teach students with SEN scores (t (260)= 1.093, p= 0.276).

Finally, an independent sample t-test was used to compare the benefits of inclusion with SEN scores for teachers who had a friend with SEN or disability and teachers who did not. The mean score for teachers who had a friend with SEN or disability was (M=69.22, SD= 26.79), lower than teachers who did not (M=71.94, SD= 30.29). As Table 26 shows, there was no significant difference between teachers who had a friend with SEN or disability and teachers who did not in terms of their benefits of inclusion scores (t (260)= -0.502, p = 0.616).

4.5.8 Independent sample t-test to compare subscales scores for teachers who had a family member with SEN or disability and teachers who did not

Table 27: Independent samples t-test for the difference in teachers' attitudes based on having a family member with SEN or disability

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	t	df	Sig. (2-tailed)
Inclusive settings management	.216	.643	5.921	260	.000
			6.091	55.356	.000

	Levene's Test for Equality of Variances		t-test for Equality of Means		
Academic and social importance of inclusive education	.005	.943	1.821	260	.070
			1.807	53.664	.076
Ability to teach students with SEN	.534	.466	5.663	260	.000
			6.031	57.190	.000
Benefits of inclusion	.133	.715	3.495	260	.001
			3.736	57.408	.000

An independent sample t-test was conducted to compare the inclusive settings management scores for teachers who had a family member with SEN or disability and teachers who did not. The mean score for teachers who had a family member with SEN or disability (M=103.40, SD= 18.15) was higher than teachers who did not (M=84.29, SD= 18.90). The results of the independent samples t-test are shown in Table 27. It was determined that there was a significant difference between teachers who had a family member with SEN or disability and teachers who did not in terms of their inclusive settings management scores (t (260)= 5.921, p = 0.000).

Next, the academic and social importance of inclusive education scores for teachers who had a family member with SEN or disability and teachers who did not were compared using an independent sample t-test. The mean score for teachers who

had a family member with SEN or disability (M=101.17, SD= 27.13) was higher than teachers who did not (M=92.76, SD= 26.83). No significant difference between teachers who had a family member with SEN or disability and teachers who did not was evident in terms of their academic and social importance of inclusive education scores (t (260)= 1.821, p = 0.070).

An independent sample t-test was used to analyse the relationship between teachers who had a family member with SEN or disability and teachers who did not in terms of their ability to teach students with SEN scores. The mean score for teachers who had a family member with SEN or disability was (M=92.41, SD= 22.03) was higher than teachers who did not (M=69.24, SD= 24.12). The table above illustrates the results of the independent samples t-test. There was a significant difference between teachers who had a family member with SEN or disability and teachers who did not in terms of their ability to teach students with SEN scores (t (260)= 5.663, p= 0.000).

Finally, an independent sample t-test was used to compare the benefits of inclusion with SEN scores for teachers who had a family member with SEN or disability and teachers who did not. The mean score for teachers who had a family member with SEN or disability (M=86.43, SD= 26.87) was higher than teachers who did not (M=68.91, SD= 29.58). As Table 27 shows, there was a significant difference between teachers who had a family member with SEN or disability and teachers who did not in terms of their benefits of inclusion scores (t (260)= 3.495, p = 0.001).

4.5.9 Differences between teachers' ages across four subscales scores

Table 28: Differences between teachers' ages across four subscales

		Sum of Squares	df	Mean Square	F	Sig.
Inclusive settings management	Between Groups	4.737.197	4	1.184.299	3.063	.017
	Within Groups	98.199.761	254	386.613		
	Total	102.936.958	258			
Academic and social importance of inclusive education	Between Groups	11.891.528	4	2.972.882	4.317	.002
	Within Groups	174.932.324	254	688.710		
	Total	186.823.852	258			
Ability to teach students with SEN	Between Groups	13.562.882	4	3.390.720	5.691	.000
	Within Groups	151.338.119	254	595.819		
	Total	164.901.001	258			
Benefits of inclusion	Between Groups	31.257.295	4	7.814.324	10.008	.000
	Within Groups	198.318.183	254	780.780		
	Total	229.575.479	258			

A one-way ANOVA was conducted to compare the effect of teachers' ages on their scores for each subscale. Table 28 shows that there was a significant difference among the teachers' ages in relation to their inclusive settings management scores ($F(4,254)= 3.063$, $p= 0.017$). Post hoc comparisons using the Tukey HSD test indicated that the mean score for the age group 22-26 ($M = 92.78$, $SD = 22.22$) was higher than the age group 32-36 ($M= 82.03$, $SD= 20.82$).

A one-way ANOVA revealed that there was a significant difference among the teachers' ages in terms of their academic and social importance of inclusive education scores ($F(4,254)= 4.317$, $p= 0.002$). Post hoc comparisons using the Tukey HSD test indicated that the mean score for the age group 22-26 ($M = 102.39$, $SD = 24.33$) was higher than the age group 32-36 ($M= 87.80$, $SD= 28.96$) and the age group 41+ ($M= 81.67$, $SD= 32.52$).

Next, a significant difference was found among the teachers' ages in terms of their ability to teach students with SEN scores ($F(4,254)= 5.691$, $p= 0.000$). Post hoc comparisons using the Tukey HSD test indicated that the mean score for the age group 22-26 ($M = 81.16$, $SD = 26.72$) was higher than the age group 32-36 ($M= 64.96$, $SD= 25.54$) and the age group 37-41 ($M= 62.35$, $SD= 17.37$) in terms of their ability to teach students with SEN scores. In addition, the mean score for the age group 32-36 ($M= 64.96$, $SD= 25.54$) was lower the age group 27-31 ($M= 76.33$, $SD= 24.23$).

Finally, the one-way ANOVA results, as shown in Table 28, indicate that there was a significant difference among the teachers' ages in terms of their benefits of inclusion scores ($F(4,254)= 10.008$, $p= 0.000$). Post hoc comparisons using the Tukey HSD test indicated that the mean score for the age group 22-26 ($M = 83.84$, $SD = 32.10$) was higher than the age group 32-36 ($M= 54.53$, $SD= 21.62$) and the age group 41+ ($M= 62.14$, $SD= 28.37$) in terms of their benefits of inclusion scores. In addition, the mean score for the age group 32-36 ($M= 54.53$, $SD= 21.62$) was lower than the age group 27-31 ($M= 76.23$, $SD= 29.88$).

4.5.10 Differences between teachers' locations across four subscales scores

Table 29: Differences between teachers' locations across four subscales

		Sum of Squares	df	Mean Square	F	Sig.
Inclusive settings management	Between Groups	1.748.051	2	874.025	2.211	.112
	Within Groups	101.188.907	256	395.269		
	Total	102.936.958	258			
Academic and social importance of inclusive education	Between Groups	549.653	2	274.826	.378	.686
	Within Groups	186.274.200	256	727.634		
	Total	186.823.852	258			
Ability to teach students with SEN	Between Groups	4.477.449	2	2.238.725	3.573	.029
	Within Groups	160.423.551	256	626.654		
	Total	164.901.001	258			
Benefits of inclusion	Between Groups	5.060.465	2	2.530.232	2.885	.058
	Within Groups	224.515.014	256	877.012		
	Total	229.575.479	258			

A one-way ANOVA was conducted to compare the effect of teachers' locations on their scores for each subscale. Table 29 shows that there was no significant difference among the teachers' locations in relation to their inclusive settings management scores ($F(2,256)= 2.211$, $p= 0.112$). Another one-way ANOVA revealed that there was no significant difference among the teachers' locations in terms of the academic and social importance of inclusive education scores ($F(2,256)= 0.378$, $p= 0.686$).

Next, a significant difference was found among the teachers' locations in terms of their ability to teach students with SEN scores ($F(2,256)= 3.573$, $p= 0.029$). Post hoc

comparisons using the Tukey HSD test indicated that the mean score for teachers working in rural areas (M = 78.87, SD = 28.88) was higher teachers working in semi-urban areas (M= 68.05, SD= 21.84). Finally, one-way ANOVA results indicate that there was no significant difference among the teachers' locations in terms of their benefits of inclusion scores (F(2,256)= 2.885, p= 0.058).

4.5.11 Differences between years of experience across four subscales scores

Table 30: Differences between years of experience across four subscales

		Sum of Squares	df	Mean Square	F	Sig.
Inclusive settings management	Between Groups	3.251.861	5	650.372	1.651	.147
	Within Groups	99.685.096	253	394.012		
	Total	102.936.958	258			
Academic and social importance of inclusive education	Between Groups	8.990.651	5	1.798.130	2.558	.028
	Within Groups	177.833.202	253	702.898		
	Total	186.823.852	258			
Ability to teach students with SEN	Between Groups	10.144.882	5	2.028.976	3.317	.006
	Within Groups	154.756.119	253	611.684		
	Total	164.901.001	258			
Benefits of inclusion	Between Groups	17.008.354	5	3.401.671	4.049	.001
	Within Groups	212.567.124	253	840.186		
	Total	229.575.479	258			

A one-way ANOVA was conducted to compare the effect of years of teaching experience on scores for each subscale. Table 30 shows that there was no significant difference among years of experience in relation to inclusive settings management scores ($F(5,253)= 1.651$, $p= 0.147$).

A one-way ANOVA revealed that there was a significant difference among years of experience in terms of the academic and social importance of inclusive education scores ($F(5,253)= 2.558$, $p= 0.028$). Post hoc comparisons using the Tukey HSD test indicated that the mean score for teachers with less than two years of teaching experience ($M = 101.37$, $SD = 25.57$) was higher than teachers with more than 20 years of teaching experience ($M= 64.44$, $SD= 27.22$). A significant difference was found among years of experience in terms of ability to teach students with SEN scores ($F(5,253)= 3.317$, $p= 0.006$).

Finally, the one-way ANOVA results indicate that there was a significant difference among the years of experience in terms of their benefits of inclusion scores ($F(5,253)= 4.049$, $p= 0.001$). Post hoc comparisons using the Tukey HSD test indicated that the mean score for teachers with less than two years of teaching experience ($M = 88.40$, $SD = 30.73$) was higher than teachers with six to ten years' experience ($M= 67.69$, $SD= 31.63$). In addition, the mean score for teachers with less than two years of teaching experience ($M = 88.40$, $SD = 30.73$) was higher than teachers with 11-15 years ($M= 61.77$, $SD= 20.32$) in terms of their benefits of inclusion scores.

4.6 Summary of key findings

The quantitative findings of this study have been presented in this chapter. The results show that mathematics teachers had a slightly negative attitude towards the inclusion of children with SEN in Turkish lower secondary schools. While the teachers demonstrated positive attitudes towards subscales of academic and social importance of inclusive education and inclusive settings management, they showed negative attitudes related to their confidence in their ability to teach students with SEN and the benefits of inclusion.

In addition, the results indicated that age, location and years of teaching experience had significant differences and affected the teachers' attitudes. Teachers who had prior experience of teaching students with SEN held more positive attitudes than teachers who had no experience. Teachers who had a family member with SEN or disability found that it also affected their attitudes towards the inclusion of children with SEN. Teachers who had a family member with SEN or disability showed more positive attitudes than teachers who did not.

Moreover, with regards to prior training that teachers had received about inclusive education, training received at university and during in-service training affected the teachers' attitudes. Teachers who had received training on inclusive education (whether during in-service training or at university) had positive attitudes towards the inclusion of children with SEN. Other variables, including gender, qualifications and having a friend with SEN or disability, did not affect teachers' attitudes towards the inclusion of children with SEN. In the next chapter, a complementary analysis of qualitative data is presented.

Chapter 5: Analysis of Qualitative Data

5.1 Introduction

This chapter provides a qualitative analysis teachers' attitudes in Turkish lower secondary schools towards the inclusion of children with special educational needs in those schools. As detailed in the methodology chapter, thematic analysis was used to analyse the interview data. Themes and sub-themes were formed in the course of thematic analysis, where each participant's data in the presented study was analysed individually; next, views were assembled to create outlines of participants' views for each theme and sub-theme.

As stated in the methodology chapter, this study used a mixed-methods approach, which means that both quantitative and qualitative data were collected. Sequential mixed approaches were used to collect quantitative data first and then to obtain a better grasp of the concerns raised by the questionnaire. Therefore, researchers might use a quantitative study to generate additional hypotheses that can be developed through qualitative research (Corbin & Straus, 2014). The first stage in data analysis was to statistically analyse surveys to investigate mathematics teachers' attitudes towards inclusion of students with SEN and the participants' characteristics, education and demographic information, to understand how these influence might their attitudes. The second stage was to analyse interview data using thematic analysis. This study's analyses were produced by two different sources of data (survey and semi-structured interviews) and are interpreted in the following discussion chapter. Using different types of data presents a more detailed view of teachers' attitudes towards

inclusion of students with SEN; the semi-structured interviews were more detailed and provided in-depth information.

The data were coded using the NVivo 12 programme, with the initial categories serving as the principal nodes. The researcher coded the data for each item and produced sub-nodes where relevant sub-themes began to emerge from the data. As was the case with the interviews, all interview data were recorded verbatim. The researcher also used thematic analysis to help organise the enormous quantity of qualitative material included in the interview transcriptions. The initial part included becoming familiar with the interview data. Taking notes on primary ideas about the data throughout the transcribing process helped in making sense of the data and identifying major problems and themes. A further examination and re-examination of the interviews was conducted to generate a full picture of its content (Froggatt, 2001). Thus, the data were transcribed and then read and re-read. In the second step, with the study objectives in mind, the researcher began thematic coding, which grouped all of the data from each mathematics teacher's interview into broad categories (nodes). Then the researcher subdivided the major categories. The third step included the discovery of topics. The researcher organised codes into probable topics and acquired all data pertinent to each potential subject throughout this procedure. This procedure included systematic coding of any data characteristics of relevance throughout the whole data collection. The researcher was able to highlight relevant remarks and arrange them in the appropriate sub-categories using NVivo. According to Kvale and Brinkmann (2009), this organisation technique facilitated the processing of the data while also facilitating the detection and comparison of distinct patterns. The fourth step was evaluating

themes, in which the researcher compared each theme to the coded extracts and the whole data set to create a thematic map of the analysis in this section. The fifth step was identifying and naming the themes, during which time was spent refining the intricacies of each subject to provide precise definitions and names. Finally, the sixth step included writing the report, which involved selecting interesting excerpts related to the study topics and conducting a literature evaluation.

Findings in this chapter are listed in terms of four key themes:

- Positive and negative attitudes expressed towards the inclusion of students with SEN.
- Teacher-related factors.
- Environment-related factors.
- Student-related factors.

Participants first completed the questionnaire, and their demographic information is presented in Table 31 to gain a better understanding of their backgrounds. The participants were coded in the analyses as Teacher1, Teacher2, ... and Teacher18.

Table 31: Demographic information of participants

	Gender	Age Group	Teaching Experience	Location	University Training	In-service Training
Teacher1	Male	32-36	11-15 years	Urban	Yes	Yes
Teacher2	Female	27-31	2-5 years	Rural	Yes	No
Teacher3	Male	41+	Over 20 years	Semi-urban	No	Yes
Teacher4	Female	32-36	11-15 years	Urban	Yes	Yes
Teacher5	Male	27-31	2-5 years	Urban	No	No
Teacher6	Female	41+	16-20 years	Semi-urban	No	Yes
Teacher7	Male	37-41	16-20 years	Urban	No	No
Teacher8	Male	27-31	2-5 years	Urban	No	No
Teacher9	Female	27-31	6-10 years	Urban	No	No
Teacher10	Female	27-31	6-10 years	Urban	No	No
Teacher11	Male	32-36	11-15 years	Semi-urban	No	Yes
Teacher12	Female	27-31	6-10 years	Urban	Yes	No
Teacher13	Female	27-31	2-5 years	Rural	Yes	No
Teacher14	Male	32-36	11-15 years	Semi-urban	No	No
Teacher15	Male	27-31	6-10 years	Semi-urban	No	No
Teacher16	Female	32-36	6-10 years	Urban	No	Yes
Teacher17	Female	41+	16-20 years	Rural	No	Yes
Teacher18	Male	41+	Over 20 years	Rural	No	No

5.2 Attitudes towards inclusion of children with SEN

As argued in the literature review, teachers' attitudes towards the inclusion of students with SEN is a vital factor in inclusive practices. The positive attitude of a teacher is likely to be one of the prerequisites for their successful inclusive practices. There were many opportunities for participants to reveal their opinions during the interviews, and an analysis of these opinions follows.

5.2.1 Positive attitudes

On the question of what the participants thought of inclusive education, one-third of participants (6 out of 18) expressed some broadly positive attitudes towards inclusion. This theme included comments on the effectiveness of inclusion and its role in providing an opportunity to meet the needs of children with SEN. They also expressed some benefits of inclusion in the context of academic achievement, social interaction, and guaranteeing children's educational rights. These participants believed that children with SEN could best continue their learning through inclusive education. This is exemplified in the comments made by Teacher4, Teacher12 and Teacher15:

> Inclusion is very important for children with SEN and is the best choice to offer them in today's circumstances. Inclusion is a right that has a significant impact on children with SEN and an educational process that is necessary for their self-development. Inclusion helps children to prevent isolation and not feel different

> from others in society. Inclusion provides awareness and development for everyone, not just children with SEN (Teacher4).
>
> I think inclusive education is vital for children with SEN. It is an indisputable fact that the benefits of this education are for every individual. Including children with SEN in ordinary schools, if the necessary conditions are met, is a very important step in their lives. Inclusive education will ensure that children feel the same as others and equally with others. It is now a known fact that inclusive education has been very successful for many students with SEN. All we need to do is to meet the needs of the children, taking into account all aspects (Teacher12).
>
> Inclusive education is an educational as well as a social project that enables disabled individuals to live like a normal individual in society. With this educational and social project, the participation and acceptance of the peer group at school reduce the child's sense of dependent life, has the opportunity to develop a sense of self-confidence, and provides learning with their peers with "normal" development (Teacher15).

Teacher2 and Teacher11 agreed with the basic principles of inclusive education. Teacher11, for example, considered the current inclusive education policy to be an important but insufficient step towards securing the rights of children with SEN in education. However, the lack of support services and the lack of implementation of the current policy was emphasised. Teacher2 said:

> I believe children with special needs are active members of our society. We must do everything we can for them. Understanding and responding to their needs in a sufficiently inclusive environment requires major change and effort. Although current regulations and policies seem to offer a better future for these children, they are still insufficient. Under the current circumstances, efficient, inclusive practices are difficult. Policies should be implemented correctly, and necessary support should be given (Teacher2).

5.2.2 Negative attitudes

The majority of the participants, however, tended to have negative attitudes towards the inclusion of students with SEN: 12 of the 18 participants did not support an inclusive education policy or practice. These participants' comments were associated with negative statements about inclusion, for example:

> I disagree with inclusive education policy. While it makes sense in theory, it does not work in practice. I believe that when many factors come together, inclusive education should be reconsidered (Teacher7).

> With inclusive education, children have the right to receive an education with their peers without exclusion, but no education can be given to them in existing classes. These children should study only in special education institutions (Teacher9).

Three participants stated that their current inclusive practices did not match the realities in the classroom. Teachers believed that it is not logical to include all children with SEN in ordinary classrooms. As an example of this view, the following comments were made:

> I think inclusive education is a very problematic practice. It is impossible for me to implement it due to the current education conditions. Nevertheless, I find it positive that these students continue their interactive education at the same school, while also being supported in resource rooms. Otherwise, class-level work cannot go beyond a challenging process for both parties. For this reason, I do not agree much with inclusive practices (Teacher1).

> My colleagues have the same problems with children with SEN in their class while they continue their education. While dealing with the current curriculum is difficult, it is impossible for us to pay special attention to these students in the classroom. I find it more appropriate for these students to be in separate classes with special education. I believe that this will make more sense if inclusive education is only about socialising regardless of the current practice. I think they could join art classes or music classes but not mathematics (Teacher13).

Moreover, participants in this theme believed that inclusive practices are not in line with the needs of children with SEN. They found such practices problematic because they were not able to cope with the increasing number of children in their classrooms. They stated that although there is a limit to the number of students according to regulations, class sizes are still very crowded. Some of the teachers' views on this issue are as follows:

> I believe I have to keep the concentration and control in the classroom under control for the efficiency of the lesson. I am not able to do it because of my class size. Based on my experience, children with SEN often distract the attention and concentration of the whole classroom. In the poor conditions of the classroom, I find it difficult to follow the normal curriculum and to meet the needs of those children. Considering the class size and school facilities, I can say that many schools in my city are not suitable for inclusive education, so it is almost impossible to continue inclusive practices in these circumstances (Teacher8).

> In a problematic school system, inclusive education ends up in failure even though it is difficult to continue normal practices. Class sizes and crowded school environment does not meet student needs; I can add many other factors which are unable to apply inclusive education in normal school settings. For this reason, I can say I disagree with the idea of inclusive education (Teacher3).

5.3 Teacher-related factors

Participants shared their views on teacher-related factors affecting the attitudes of teachers towards the inclusion of students with SEN. Analysis of responses towards teacher-related factors identified four sub-themes: preparation and experience; belief in inclusive education; teaching strategies; and extra attention.

Table 32: Teacher-related factors affecting attitudes and teachers' examples

Teacher-related factors		Example
Preparation and experience		
	Training	Training at the university and in-service training were about how our perspective should be in general and why inclusive education is important… (Teacher1).
	Collaboration	Teamwork is very important in order to be successful in inclusive education. many teachers can do this when they do their best and work together… (Teacher15).
	Classroom experiences	I think that the experience I had in the first years affected me very much. It was very difficult for me to help students with SEN under limited resources. It was challenging for me to start working as a teacher with having three students with SEN in the same classroom… (Teacher9).
Belief in inclusive education		It is impossible not to see the benefits of inclusion; it creates awareness for students without SEN and teachers... (Teacher4).
	Personal commitment	I have always tried to find ways to help these children and will continue to work. I am constantly in contact with the school administration… (Teacher12).

Teacher-related factors		Example
Teaching strategies		I think group activities is an effective teaching strategy for children with SEN. Considering the class size… (Teacher6).
	Individualised education programmes	In a course at the university, it was explained that IEPs should be created for each student… (Teacher5).
	Classroom management	Inclusive education is very nice in terms of the idea, but students with SEN cannot learn in mainstream classroom settings because students with SEN make noise or exhibit a behaviour that is normal for them… (Teacher3).
	Planning and preparing lessons	My student had no physical problems, just his speaking and understanding was a bit troublesome, so I did not make much change in the normal layout of the classroom… (Teacher12).
	Adapting materials	I believe that it will not be fair to assign the same assignments to students without SEN and students with SEN. I adapt all assignments… (Teacher12).
Extra attention		These children need to be taken care of in the classroom as time and environment allow… (Teacher15).

5.3.1 Preparation and experience

In this section, preparation and experience is presented with three sub-themes – training, collaboration and classroom experiences – that were identified as affecting teachers' attitudes towards inclusion.

5.3.1.1 Training

Adequate training is the crucial step in the development of teachers' positive attitudes, as they must be able to manage variations in the inclusive classroom. Participants highlighted that their skills and abilities were inadequate to educate children with SEN in their classrooms. This sub-theme contains teachers' thoughts on the importance of training or courses they should take before implementing inclusive education. Teachers' negative statements indicated that the reason for the inadequacy of their skills and abilities was lack of suitable training. They explained their difficulties and their unwillingness to teach students with SEN without having the necessary training, for instance:

> Although I constantly talked with the special education teacher about my students with SEN, I was not very helpful to students. Our university education was very insufficient in terms of how to work with those individuals with SEN. All my fellow teachers talked about the same problem and stated that they could not be beneficial to students. We did not have any training in inclusive education at university, and we are seeing the problems of this now. Teachers need to have sufficient training on inclusive education to be helpful to students with SEN;

> otherwise, I do not see any benefit of inclusive education for those students (Teacher6).

> Like many of my friends at our school, I do not know much about inclusion. I do not know how to help these students in my classroom. The biggest reason for this was that the education we received at university did not include inclusive education implications. I thought this deficiency would be filled with in-service training, but the in-service training provided did not meet this in terms of both quality and knowledge. Senior teacher attended in-service training courses as a lecturer, but they have no idea about inclusive education (Teacher9).

Among the participants, those who had previously been trained in inclusive education believed that the training programmes they received were generally based on theory and were far from the educational reality. They believed that they should receive practical rather than theoretical training, and that this affected their inclusive practices negatively. They commented that they do not learn how to teach students with SEN, meet their needs and approach them.

> The training I received at university only told the reason why inclusive education is required, which is mentioned in theory books. It included the official procedures we had to make for students and the laws and regulations regarding inclusive education. I have not received any training on how to teach these children in class or how to approach them. I did not even have a clue about the types of SEN, I had not learned how to meet each student's needs. I felt too much stress

> because of my lack of knowledge and skills in this subject, especially in the first years of my teaching (Teacher12).

> Training at the university and in-service training were about how our perspective should be in general and why inclusive education is important. I have never received any training on what kind of education I should give and what the students need. I did not have much of an idea about how I should approach the students' specific needs (Teacher1).

5.3.1.2 Collaboration

The inclusive environment requires all members to work collaboratively in fulfilling their allotted duties with a sense of responsibility. Teachers believe that inclusive practices will be more successful, and teachers easily overcome problems when they work together.

> Teamwork is very important in order to be successful in inclusive education. Many teachers can do this when they do their best and work together. By organising regular meetings at our school, we consider how we can be beneficial to these children with SEN. We overcame many problems which we encountered during the implementation of inclusion (Teacher15).

Interviewees recognised the need for collaboration for successful inclusive practices. However, teachers had concerns about collaboration with others, such as:

> I needed someone to advise me on how to plan or deal with certain children in my class. Special education teachers and the school counsellor are supposed to help me in this regard, but I take on all the responsibilities related to my implementation of inclusive education. When I try to get information about it, special education teachers and the school counsellor always say that they cannot help, because they are busy. The counsellor and special education teacher in our school are also working in other schools due to inadequate provision in the region, so I do not complain too much (Teacher14).

> I believe one of the most important factors of inclusive education is collaboration. Unfortunately, it cannot be said that we have successful cooperation in my school. Teachers, like students, escape from the school immediately when the class bell rings. It is difficult to find people who want to spend extra time for students and provide better practices. This discouraged me from working with other teachers so that students could study in a better environment (Teacher5).

The responsibilities of teachers are determined by laws and regulations, which stipulate that teachers should work together in inclusive education. Teacher2 commented that teachers do not fulfil their legal roles and duties, and successful collaboration would occur if teachers did so.

> In fact, it would be very easy to create a successful collaborative environment. The duties of each teacher and other individuals involved in the inclusive education process are clearly defined by laws and regulations. I believe that if every individual fulfilled their duties, we would have a very good education

process without any problems. However, they consider that they have accomplished their duties only by signing documents (Teacher2).

5.3.1.3 Classroom experiences

Classroom experiences have a role in shaping a teacher's attitudes towards inclusion of students with SEN. This sub-theme is about teachers' experience of having children with SEN in their classroom. Teachers' experiences of working with children with SEN can change their perspectives towards the inclusion of students with SEN. It can also play a role in overcoming problems during the implementation of inclusive practices.

I believe that working with SEN students has both positive and negative sides. When I just started working as a teacher, I was hesitant to work with them, but over time I feel more competent. I think I have gained a lot of experience and developed my abilities by working with those children with SEN. Working with any type of SEN is now easier for me. I feel that I have a better understanding of students' needs now. I am now aware of the problems that I may encounter during the lesson, and since I have encountered these problems before, I am able to solve them more easily (Teacher12).

I think that the experience I had in the first years affected me very much. It was very difficult for me to help students with SEN under limited resources. It was challenging for me to start working as a teacher with having three students with SEN in the same classroom. I had no idea how to work with these students in

> that time. I did not know what to do. Last year, I changed my school, and other mathematics teacher took care of students with SEN. He had more experience working in inclusive classroom settings than I had. In addition, I still do not feel confident to work with those students (Teacher9).

5.3.2 Belief in inclusive education

As indicated in the literature review, the benefits of inclusive education are numerous for students both with and without SEN. Teachers' views on the benefits of inclusive education were included in this sub-theme. The participants emphasised that they are aware of individual differences, and that each child with or without SEN learns differently. They commented that inclusive education is beneficial for every individual involved, including teachers and children with or without SEN.

> It is impossible not to see the benefits of inclusion; it creates awareness for students without SEN and teachers. This awareness will provide us with the opportunity for the foundation of a better society. It will benefit us to build a society where people can understand each other better, with improved social skills (Teacher4).

> It will benefit the whole class in terms of friendships and peer role models for academic, social and behaviour skills. Students will understand each other better, and their respect for different individuals will increase. The benefits of inclusive education in terms of social development are obvious. Even if there is

> no measurable academic gain for some students, it will be very beneficial in terms of social skills (Teacher15).

Besides teachers who thought inclusive education was beneficial, some teachers were against it. Among the participants, there were those who defended the view that inclusive education only causes problems and harms both students with and without SEN.

> Inclusive education only caused problems in my classroom. Teaching in the classroom was disrupted, and there were constant problems among the students. Instead of creating awareness, students started to act more exclusively. I am having a hard time dealing with these problems (Teacher9).

> Inclusive education is nothing more than leaving students with SEN alone with bullying in an uncontrolled environment. Of course, this kind of approach will result in negative results without arranging the environment and providing the necessary awareness. Starting inclusive practices without any preparation is completely problematic (Teacher17).

5.3.2.1 Personal commitment

In this sub-theme, teachers expressed their personal commitment to children with SEN and the implications of inclusion. Teachers are committed to their work and to doing their best so that each student can reach their maximum potential and achieve the

required set of competencies for full participation in society. Personal commitment is about the inner strength of a teacher as well as their own willingness and motivation to accept children with SEN and empathise with them. Teachers' opinions about personal commitment are as follows:

> I have always tried to find ways to help these children and will continue to work. I am constantly in contact with the school administration and the district national education directorate and do my best for these children. It does not matter about spending extra time and effort as long as I can give something to these kids. I will do my best for the students by covering the expenses myself if necessary. I think if we want to achieve something, we must do more (Teacher12).

> The most effective learning and teaching method in inclusive education and any other form of education is the teacher’s love and respect for the teaching profession. If teachers are committed to their profession, both learning and teaching can be successful (Teacher15).

> Theoretically, teachers should spend their time out of class preparing for these lessons. Thus, teachers can prepare for the lesson by preparing the necessary materials. Again, it is necessary to spend time to keep up communication with parents. But this is acknowledged only in theory. We cannot take on the full workload required. Because teachers are human beings, they also have their own families and other duties to do. To be fully committed, you need to have no family and just concentrate on teaching (Teacher8).

5.3.3 Teaching strategies

Inclusive teaching strategies promote an overall inclusive learning environment in which students feel equally valued. This sub-theme is about the different teaching strategies adopted by teachers to meet the needs of children with SEN and create a better inclusive learning environment. Participants indicated that group activities are an important teaching strategy to ensure the participation of students with SEN and also play a role in the development of social skills.

> I think group activities is an effective teaching strategy for children with SEN. Considering the class size, I found this method to be the most effective. Group activities create a classroom environment that ensures the active participation of students with SEN. By working with their peers, they can both improve their social skills and learn from them (Teacher6).

> I placed the SEN student in my class closest to me. In this way, I can both control and help him when I find the opportunity. Although not very often, I manage group activities and ensure the participation of student with SEN in my classes. I also keep the student with SEN motivated for the lesson by presenting the special activities I have prepared before. I find the use of reinforcers very useful. I ask the student questions which the student already knows the answer, after the answer, applaud the student in the classroom. This makes the student very happy and motivated (Teacher11).

Moreover, teachers revealed that they did not have enough knowledge about teaching strategies and techniques, and they were underequipped for teaching students with SEN in the classroom. Teachers also stated that they should have positive attitudes towards inclusion and trust themselves and their students in order for the applied strategies to be successful.

> I feel inexperienced in many aspects. Unfortunately, I do not know much about teaching strategies and methods. I continue my mathematics education in the classroom using the current teacher's guide, but I am not using a particular strategy or method for special students. Ministry needs to inform teachers more about effective teaching methods and prepare guidelines (Teacher9).

> I believe that for the teaching strategies used in the classroom to be successful, the teacher must be committed. He must help students with special needs without giving up and find the best strategy for them. Some students do not learn and focus on the lesson in some methods, but I believe there is the right strategy for every student. I believe the strategy will be successful if teachers have positive attitudes towards them, trust them and ourselves (Teacher17).

5.3.3.1 Individualised education programmes (IEPs)

Teachers are responsible for planning, implementing, and monitoring individualised education programmes (IEPs) to help students with SEN. The IEPs detail the aims set for the students with SEN for each school term, and any additional support to help them

achieve those aims. In this sub-theme, participants explained how they created IEPs and the difficulties they faced. Participants stated that they used exactly the same individualised education programmes for students with similar types of SEN, which should be created for each student with SEN regarding their needs. Teachers are supposed to receive help from a counsellor teacher and RAM (Counselling Research Centre). One teacher stated that he could not get support from anyone. The teachers explained that they did not see themselves as competent in this matter and did not fully understand the subject.

> In a course at university, it was explained that IEPs should be created for each student. However, they did not teach us how to do it. In general, I did not receive any training to prepare an IEP. No checklist or guide was provided on this matter. I download the IEPs prepared according to the types of SEN from the Internet; I do not find it useful, but I have to do it because of the regulations (Teacher5).

> I think creating an IEP for each of my students with SEN requires special education and is a long process. Honestly, I have not received any training related to IEPs so far, and I do think it will help to create an IEP if I get some training. I prefer to use the same document every year rather than evaluate the students one by one and create IEPs (Teacher15).

> I prepared IEPs, but I prepared them by researching and looking at old plans. I do not think I am adequate in this regard. I would like to express that I have difficulties in helping students with SEN and planning their learning programmes since I did not receive training on this subject at university (Teacher16).

5.3.3.2 Classroom management

The inclusion of children with SEN in mainstream classrooms provides an opportunity for teachers to acknowledge classroom management strategies and applications. This sub-theme refers to how teachers manage an inclusive classroom. In addition, classroom management can be associated with teachers' attitudes towards children with SEN. Participants were concerned with the management of the inclusive classroom, the noise level and behavioural problems that would interrupt the lesson.

> Inclusive education is very nice in terms of the idea, but students with SEN cannot learn in mainstream classroom settings because students with SEN make noise or exhibit a behaviour that is normal for them but perceived differently by other students, as a result of this behaviour, students with SEN get bad reactions from other students. This can sometimes reach a level of sarcasm that will break their hearts. I am having difficulty controlling all these situations during the lesson (Teacher3).

> I think managing the classroom is the most important factor for a successful education. The biggest challenge is managing many children in a large class size and also having a student with SEN. Especially students with behavioural problems, if teachers cannot control these behavioural problems, it will be difficult to deal with lesson-related issues. I read books on classroom management in order to better manage my classes. I can say that having these students with

> SEN help me to improve myself and learn classroom management strategies and manage the class more successfully (Teacher17).

5.3.3.3 Planning and preparing lessons

Lesson planning is an important way to prepare for the inclusion of all students. When the opinions of the teachers about the preparation for inclusive education were sought, it was determined that more than half of the participants did not make any preparations and planning or that they only prepared the officially required documents related to inclusive education. On the other hand, teachers who were making preparations for inclusive education stated the following:

> When I found out that there is a child with behavioural problems in my class, I researched the needs of this student. I examined the documents filled in about the child. I talked to the necessary institutions to provide the best inclusive practices. I completed the preliminary preparations for the lessons including the individualised education programmes. Afterwards, I tried to be ready for this student by preparing additional adapted materials as much as possible (Teacher4).

> My student had no physical problems, just his speaking and understanding was a bit troublesome, so I did not make much change in the normal layout of the classroom. I used an individualised education programme to support and track him in the classroom (Teacher12).

Furthermore, teachers stated that while making preparation for inclusive practices, preparing students without SEN for inclusive education is also an important factor. They provide an opportunity for students to better understand students with SEN by delivering awareness classes.

> Having students with SEN in the inclusive classroom might be very tiring for a teacher. There is a concern to provide learning opportunities to both the student with SEN and students without SEN in the right direction they need. One of the most important steps in dealing with this concern, albeit partially, is to prepare other students for inclusive practices. With this in mind, before a student with SEN comes to the classroom, I introduce the student with SEN and the potential physical and behavioural differences in a language that other students can understand. I inform them that they have responsibilities in this direction and what they can do (Teacher15).

Another activity that teachers do while preparing students without SEN for inclusion practices is drama. Teachers stated that they prepared various scenarios containing the characteristics of a student with SEN and that they performed drama activities to help children animate and empathize with these scenarios.

> Before a student with SEN arrives, it is very important to break the prejudices of other children and improve their understanding of students with SEN. The most effective way to achieve this situation is through drama. During the drama activities, children act out scenarios that do not reveal the student with SEN too

> much but contain certain characteristics. I help children to empathize with the evaluations I make at the end of the drama (Teacher17).

5.3.3.4 Adapting materials

Children learn and develop in different ways. Teachers understand this and apply different teaching methods, materials and plans in the classroom. Teachers need to adapt materials that meet the needs of the children with SEN. In this sub-theme, participants shared their views on how they adapt the necessary materials, including homework and assignments for the education of children with SEN.

> I believe that it will not be fair to assign the same assignments to students without SEN and students with SEN. I adapt all assignments and homework in line with the student's needs and their current knowledge. The most crucial factor is to be able to understand the needs of students and adapt materials for them. I also prepare additional materials and activities which I used during my class for children with SEN (Teacher12).

> I did not graduate from education faculties with the necessary qualifications. We need to provide appropriate methods and techniques for students with special needs using adapted materials. Although I do not have enough knowledge, I adapt all necessary materials these students need. I think students are more successful with these adapted materials. They understand the lessons better and participate more. I plan and prepare materials which I will use in the activities.

> The school has already provided materials related to teaching mathematics. However, if the materials are not suitable for the level of the student, I have adapted materials in a way that students with SEN can understand (Teacher4).

On the other hand, some participants did not adapt materials and assignments. They indicated that adapting materials takes too much time – time which teachers do not have. They also said that using more than one material in the classroom would cause confusion and also create problems among students.

> The fact is that it is tough to help students with SEN in a mainstream classroom during a lesson. Giving different homework and different papers to the students with SEN in the classroom will show the student that they are different from their friends; giving different homework may cause it to be said by others, ‘why is this student given easy homework’ in class. I think this discrimination will harm the child more than good (Teacher8).

> Using more than one material while teaching in the classroom will be confusing for the student and also difficult for me. While I cannot find time to prepare for the lesson in normal time, it will be a waste of time for me to prepare a different material and present it in the lesson (Teacher18).

5.3.4 Extra attention

Students with SEN require extra attention during lessons. This sub-theme includes teachers' views on the importance of extra attention for children with SEN. They pointed out how important it is to devote more time to children with SEN to show sympathy to them and to better understand and meet their needs. Although the teachers mentioned that they are very busy due to their other workloads, they stated that extra attention should be paid to children with SEN.

> I believe every student is special. I think we should take time and pay more attention to each student, with or without SEN. Some teachers pay extra attention to students with SEN, while others ignore them. I think we should spend time with these students and do our best for them. The more time we spend with them, the more we can understand them and the more sufficient it is for them (Teacher11).

> These children need to be taken care of in the classroom as time and environment allow. I believe it is inappropriate for a teacher to completely exclude these students and place them aside. We should not separate them from other students and include them in the lessons by giving them extra attention (Teacher15).

Instead, other participants said that it is impossible to give extra attention to children with SEN because they believe that they would lose control of the classroom by giving

special attention to these students. They also expressed that the current length of the lessons (30 minutes each) made it difficult to give extra attention to children with SEN.

> If there is a student with SEN in the classroom, I think one teacher is insufficient because it takes a long time to teach the same maths skills to some students with SEN. While I concentrate my time on teaching a student to gain an achievement, other students are waiting for an explanation about their questions. Naturally, giving 10-15 minutes to a student among 30 people negatively affects the flow of the lesson and the management of the class (Teacher6).

> Considering the total duration of the lesson, the length of productive time is only about 20 minutes. I do not think I have enough time in the classroom to give extra attention to any student, with or without SEN. Class sizes should be reduced, or the length of lessons should be extended (Teacher10).

5.4 Environment-related factors

Participants have indicated the organisational factors which are affecting attitudes of teachers towards the inclusion of a student with SEN during the interviews. Analysis of teachers' answers towards the organisational factors has designated to 5 sub-themes: school administration and school ethos, class size, resource rooms, facilities and infrastructures, and identification of SEN.

Table 33: Environment-related factors and teachers' examples

Environment-related factors		Example
School administration and School ethos		School administrations have a great impact on inclusive education. The school administration supports this education if it is conscious enough… (Teacher2).
	Inclusive education policy and regulations	I think the biggest problem with the current inclusive education policy is that no teachers were included in the preparation process of the policy… (Teacher17).
Class Size		Class size is a huge problem in almost every school in the big city. Since this was not a problem in small districts and villages… (Teacher1).
Resource rooms		Instead, I believe that it would be more beneficial for students with SEN to have a special education teacher at each school and to attend the classes in resource rooms… (Teacher7).
Facilities and infrastructures		I do not think that facilities and infrastructures of the school are meet the need of students with SEN. Individuals with physical disabilities have problems in accessing school… (Teacher11).
Identification of SEN		I do not know what additional process they follow in counselling and research centres. The identification tests are very old, not modern tests, needs to be improved… (Teacher11).

5.4.1 School administration and school ethos

In a typical school, where inclusive education is practised successfully, school administration and teachers collaborate and create an inclusive environment in their schools. In this sub-theme, the participants claimed that their efforts with inclusive education changed according to the support of their school administration. They believed that they are more willing and successful when they get enough support from their school administration.

> I think I am successful in school when I get necessary support and help. I have worked at many schools before. The work and support of the school administration positively affected my teaching practices. In my opinion, the help of the school administration and the help of other teachers have a great effect on the success of inclusive education (Teacher1).

> School administrations have a great impact on inclusive education. The school administration supports this education if it is conscious enough. It prepares the physical social environment of the school in the best way for these children. We even organize seminars to raise the awareness of other parents about inclusive education at the school where I work (Teacher2).

However, other participants stated that the negative attitude of the school administration had a bad effect on them. They stated that the school administration did not support inclusive education and even negatively affected the implications of inclusive education.

> School administration in my school does not lean towards inclusion. In fact, they do not want to accept students with SEN. Despite all my efforts I cannot find support. This is also demotivating me. They prevent me from activities I want to do for these children. As a result, I believe inclusive practices are negatively affected by the school administration (Teacher17).

> After my disagreements with the school administration, I gave up my efforts at inclusive education… I focused on the students' exam results as they wanted. They only want to achieve better exam results compared to other schools (Teacher16).

In addition, Teacher4 indicated that the lack of support from school administrators motivated some teachers more to succeed in the inclusion of children with SEN. Although the negative attitude of the school administration was challenging for them, they wanted to prove it to them by being successful in their duties despite these difficulties.

> Unfortunately, the current school management does not have positive attitudes towards the inclusion of students with SEN. All they care about is exam scores. In fact, these negative attitudes motivate me more, I want to show them that we can be successful both in exam scores and inclusive practices (Teacher4).

5.4.1.1 Inclusive education policy and regulations

Special education services regulation includes provisions for the execution of education and training services to be offered to individuals with special education needs. Participants stated that children with SEN had problems in their access to mainstream education and in the process of inclusive education due to the problems caused by the law and regulation.

> Many teachers like me disagree with current inclusive policy; current policies are not based on applicable facts. Theoretically, they are wonderfully presented, but when it comes to practice, it does not work. For example, schools do not comply with the class size rules, so then why do these policies exist? (Teacher14)

> I think the biggest problem with the current inclusive education policy is that no teachers were included in the preparation process of the policy. Bureaucrats and rule makers prepare these regulations among themselves and do not take the opinion of any teacher; the result is a regulation that is impossible to implement (Teacher17).

> I believe the regulations are prepared perfectly. They were arranged in the best way possible, with every care. But the institutions that prepare this for implementation do not want it to be implemented. It is almost impossible for both schools and teachers to offer these opportunities to children with SEN. For this reason, more applicable policies should be prepared and implemented under the control of institutions (Teacher8).

5.4.2 Class size

The Special Education Services Regulation is taken into account when arranging class sizes through full-time inclusion and other inclusive education services. If there is one student with SEN in the classroom, the maximum class size should be 35. If there are two students with SEN, the maximum class size should be 25. In this sub-theme, participants highlighted that they could not help students with SEN in their classes due to the large class size. They also provided more details on the implementation of IEPs in the classroom. In general, some teachers do not teach students with SEN individually and do not practice IEPs in the classroom because class sizes made this difficult.

> Class size is a huge problem in almost every school in the big city. Since this was not a problem in small districts and villages, I could spare time for students with SEN, but I could not help the students with SEN because of the class size in the school in Istanbul. Class sizes must be reduced for inclusive education to be successful (Teacher1).

> My class size prevents me from helping students with SEN. My class size is very large, so I am having problems even following my regular curriculum. For this reason, it is very difficult for me to pay special attention to students and use the materials I have prepared for them. The class size was over 40 students, I could not take care of student with SEN enough. If the class size and classroom

> environment are ideal, I think the inclusive practices will be more beneficial (Teacher5).

5.4.3 Resource rooms

'Resource rooms' are created to provide the necessary support for children with learning difficulties outside of their regular classroom. In resource rooms, the special education teacher and the subject teacher work together to provide the necessary support for these children. All participants agreed that resource rooms are crucial for implementing inclusive education. The only difference of opinion on this issue was that some participants thought students should only attend resource rooms.

> I find the lessons I teach in resource rooms very successful. In the resource rooms, I can take care of students with SEN individually and meet the needs of students. The support to be given to students with special needs in resource rooms should be connected to the lessons given to students without SEN in the classrooms or to make up for the student's deficiency regarding the lessons. If there is a huge gap between the lesson a student receives in the regular classroom and the resource rooms, I think the student does not need to attend the regular classroom. The link between both lessons must be well established (Teacher2).

> Instead, I believe that it would be more beneficial for students with SEN to have a special education teacher at each school and to attend the classes in resource

rooms, not in a regular classroom all the time. Students with SEN should join a class in a regular classroom for one day a week or seven hours a week, not all the time. In this way, students with SEN will be successful in their lessons and develop social skills (Teacher7).

I observe that the lessons which are an hour per week in the resource rooms with those students are more beneficial than any time spent in regular classroom, and there is progress in the students' academic achievements. I cannot teach those students with SEN in my classroom because training the curriculum in the regular classroom, preparing students for exams, etc. It takes all my attention and time. With resource rooms, I can focus better on the education of children with SEN. I believe that resource rooms lessons are more beneficial for children with SEN. (Teacher13).

5.4.4 Facilities and infrastructure

Facilities and infrastructure both play an essential part in helping students with SEN in inclusive school settings because they provide accessibility. Facilities and infrastructure provided by the school should meet the needs of students. In this sub-theme, participants indicated that modern school buildings that meet the needs of students are needed for successful inclusive education. Participants were critical that many schools do not take into account the needs of students with SEN and suggested that school

administrations should organize facilities and infrastructure in the school according to the needs of students with SEN.

> I do not think that facilities and infrastructure of the school meet the needs of students with SEN. Individuals with physical disabilities have problems in accessing school. There is no reverse room and I give one-to-one lessons to these students in the teachers' room. The school administration should eliminate these physical deficiencies, but they constantly talk about the budget problem (Teacher11).

> Physical, social and psychological environments should be adapted to the educational purpose and the situation of the children with SEN in order to ensure the best inclusive practices and to achieve the desired results. There was a student in my class who had difficulty walking due to physical disability. His classroom was upstairs, so we were taking the student upstairs with the help of his friends and teachers. I could not get any results even though I made a request for the establishment of an elevator (Teacher17).

The teachers stated that they made some arrangements in the learning environments during the preparation phase of inclusive practices. The type of SEN is an important guide in setting the environment and teachers fulfil two elements in the preparation of the environment: providing a safe environment for children with SEN; and providing tools and material support. The teachers interviewed highlighted that it is very important to make safe the environment, especially with types of disabilities related to vision, orthopaedic impairment, and ADHD.

> When starting inclusive practices, I first get comprehensive information about the type of SEN. In light of this information, what kind of arrangements can I make in the classroom and how can I make the classroom more secure? As a result of my research on the question, I am trying to set the necessary environment for each student with SEN. The type of SEN gives me information about how I should provide providing a safe environment and material support for those students with SEN (Teacher4).

5.4.5 Identification of SEN

The needs of a child must be identified correctly if the child has special educational needs. The identification of SEN is built into the overall procedure of monitoring the process and development of children with SEN. Participants explained the problems and mistakes experienced in the identification of students who require SEN support in mainstream schools. It was stated by teachers that the problems experienced in the identification process were caused by counselling and research centres (RAM). Participants claimed that counselling and research centres use old, standardized tests and do not have enough information in the process of identification. In addition, they also stated that teachers' opinions were not taken into account in the identification process; as a result, the needs of the students were determined incorrectly and incompletely.

> When I examine the student's file, they are very different from the students in the classroom. I think the student's needs are identified wrong. Although I reported this matter, I cannot get a response from the counselling and research centres. While these determinations are made for students who do not have special educational needs, on the contrary, students who have special educational needs are not diagnosed as having SEN. My and other teachers' opinions are not taken into account in any way during the process of identification (Teacher9).

> I do not know what additional process they follow in counselling and research centres. The identification tests are very old, not modern tests; they need to be improved. Under pressure from families, they decide whether students have SEN or not. Some of the families do not want their children to be tested or identified as having SEN because they feel ashamed even though they should not. Some families want their children to be identified as students who need special education in order to receive financial support. The process of identification students whether need or do not need special education is not carried out independently and successfully (Teacher11).

The mistake made in the identification causes the inclusive education process to fail. Teacher2 noted how the wrong identification made in the student's file had negative effects on the planning and preparation of inclusive education for the student with SEN, including IEPs.

> An error in the identification of the student's SEN affects the whole process. I see the biggest problem of this in the IEPs, which I prepared for the student with SEN

at the beginning of the academic year. Since I do not know the student completely, IEPs were prepared with the existing data, but IEPs became useless in any way because existing identifications and all information for the student were wrong. In order to provide a better inclusive practices, these mistakes made at the beginning of the process need to be corrected (Teacher2).

5.5 Student-related factors

During the interviews, the participants revealed student-related factors that influence teachers' attitudes towards the inclusion of students with SEN. The analysis of teachers' responses to these factors was determined according to five sub-themes: academic outcomes, social interactions and the types of SEN, parents' involvement, and parents of children with SEN.

Table 34: Student-related factors and teachers' examples

Student-related factors	Example
Academic outcomes of inclusive education	I believe types of SEN is effective factor in their academic outcomes. Compared to other students, students with SEN have difficulty understanding maths. (…) (Teacher11).
Social interactions	The principles of inclusion are aimed at improving social interaction between children with and without special educational needs… (Teacher11).

Student-related factors	Example
Types of SEN	There is no need to send a child with physical disabilities to a resource rooms (…) child with behavioural problems, we face difficulties in classroom control … (Teacher5).
Parents' involvement	One of the biggest problems I encountered during the inclusive education implications was the parents of other students… (Teacher10).
Parents of children with SEN	Parents can be the problem in the inclusive practices. When we provide alternative education for their children or refer them to certain institutions… (Teacher7).

5.5.1 Academic outcomes of inclusive education

Inclusive education has the potential to improve students' academic outcomes. Students with SEN have the opportunity to participate in school activities by being together with their peers in inclusive environments so that it can contribute to students' academic outcomes. In this sub-theme, participants expressed how academic outcomes of students depend on their types of SEN. In addition, participants expressed that students with SEN should receive education in a special education institution to achieve good academic outcomes.

> I believe types of SEN is an effective factor in their academic outcomes. Compared to other students, students with SEN have difficulty understanding maths… The student in my class had trouble concentrating so he did not focus on my class. Under these circumstances, the academic performance of this student was poor. He could not improve his math skills regardless of the exam results. There was nothing I could do for him. Of course, since he is a student with SEN, we have to try to help him at the maximum level (Teacher11).

> Too bad in math, student with SEN barely recognizes numbers. She recognizes words but has difficulty reading. There is no improvement in science and social studies. In order for this child to gain skills in lessons, she needs to receive extra lessons in special education institutions. Under the current circumstances, we cannot help her. She does not improve her maths skills in the classroom except for social skills (Teacher15).

Furthermore, participants stated that teachers' attitudes towards the inclusion of students with SEN had an effect on students' academic outcomes. The negative attitude of teachers harms not only students with SEN, but all students in inclusive settings.

> I think that teachers' attitudes towards students with SEN is a major factor in students' success and academic outcomes. Success comes naturally when the teacher’s attitudes towards inclusion is positive. But if the attitudes are negative, it can affect the whole class. This must be the main reason that if

inclusive education negatively affects classroom success. Teachers should review their own attitudes and increase overall success (Teacher4).

It is claimed by many teachers that inclusive education reduces the success of all students in inclusive settings. When the progress of the students is examined, I agree with this depending on the class size and number of students with SEN in a same classroom. However, I believe that students' academic outcomes rely on the teachers where the number of students with SEN is one in the classroom. Inclusive education contributes not only to students with SEN but also to the understanding of differences and special efforts in the classroom, it will help the development of other students (Teacher11).

5.5.2 Social interactions

One of the significant outcomes of inclusive education is developing social interaction between children with and without SEN. However, participants' responses to current inclusive practices were associated with some concerns about social interaction. For example, Teacher5 expressed that students with behavioural problems have a negative social impact in the classroom during inclusive practices.

The principles of inclusion are aimed at improving social interaction between children with and without special educational needs. Nevertheless, for most teachers, this is very difficult to achieve. Children without SEN can put

> pressure on our children with SEN, and our children with SEN can respond aggressively. This situation will be a lifelong trauma for our students with SEN, which will be heart-breaking for all of us. Unfortunately, this situation often happens for students with behavioural problems. The negative behaviours of the student weaken his social communication with other students (Teacher11).

> Students with SEN are often excluded and bullied by other students. During my class, students with SEN constantly demand one-to-one attention and relevance. For example, the student has communication problems with other students due to his behavioural problems. I especially focus on students with behavioural problems. Otherwise, they distract other students (Teacher3).

Teacher17 mentioned that inclusive practices improve the social skills of students with SEN, but the most significant challenge was bullying in the classroom during class. In addition, Teacher6 reported that students with SEN are often rejected and bullied by students without SEN.

> I believe the main benefit of inclusive education is helping students with SEN to improve their social skills. The biggest challenge for inclusive education implications is other students, not a student with SEN. Some students without SEN do not understand their differences and bully students with SEN. They do not respect each other; they are more problematic than students with SEN (Teacher17).

> I frequently use group activities to improve students' social skills. The biggest problem when using group activities is that students without SEN refuse working and bully students with SEN. Students sometimes insult and exclude other students who failed during the activity. I am doing my best to prevent this because I do not want to hurt students' feelings when I try to improve their social skills. (Teacher6).

5.5.3 Types of SEN

Students' types of special educational needs affect teachers' attitudes. Teachers suggested that teaching children with physical disabilities is much easier than teaching children with behavioural problems because they do not feel confident in controlling children with behavioural problems in the classroom.

> If the child can learn lessons like their peers, I do not think they need to get any special education. I do not usually give extra lessons to these students in resource rooms. There is no need to send a child with physical disabilities to a resource room or special education institutions for mathematics education. However, when it comes to the child with behavioural problems, we face difficulties in classroom control, especially when we have 40 children. So, it depends on the types of SEN and classroom conditions (Teacher5).

> The types of SEN should be the main factor in decision making for students' participation in regular education. When the decision is made regardless of

> the student's needs, it means failure for everyone. Teachers might feel more comfortable teaching some type of SEN based on their past experience and knowledge. For example, I have no problem teaching students with physical disabilities, but students with behavioural problems or learning difficulties can be very challenging for teachers (Teacher16).

In addition, Teacher3 stated that it is meaningless for students with learning disabilities to be in the classroom when they cannot adapt to the classroom. Teacher10 claimed that some types of SEN students could not learn mathematics with their normal peers, so their participation in classes was unnecessary.

> I do not agree with the inclusion of some types of SEN. First, I believe that we have to look at the types of SEN when we make a decision about students' attendance. If the child can understand the lesson even a little bit and does not disturb the lesson, it is fine. I mean, I am fine for slow learners or students with physical disabilities but if the child disturbs the control of the lesson and does not understand the lesson, it is meaningless for the student to be in the classroom (Teacher3).

> Some students with SEN, specifically students with learning difficulties, do not understand anything from the lessons. I think it is harmful and unnecessary for them to be in the classroom for these lessons. I believe it is best to take these children in the mainstream classroom for easy subjects like art or music (Teacher10).

5.5.4 Parents' involvement

Involving parents and the community is an essential principle of any form of education. It is even more critical in the case of inclusive education, which is much broader than formal education. In this sub-theme, the participants indicated that every community member, especially the families of other children, should have awareness and sensitivity for children with SEN. Participants expressed that they had problems with parents who were not aware of the importance of inclusive education and that parents opposed inclusive education for various reasons. Therefore, they suggested that raising the awareness of parents can help reduce discrimination against children with SEN.

> One of the biggest problems I encountered during inclusive education integration was the parents of other students. Many parents oppose inclusive education, thinking that their children's education will be disrupted. They even make a formal request for the child with SEN to change class. Although we explained the situation to these parents, we could not raise awareness, they have a lack of empathy. I think that the Ministry should work harder to raise awareness of the society on this issue. Teachers cannot be expected to solve every problem (Teacher10).

> I could not focus on solving the problems of inclusive practices in the classroom rather than frequently dealing with parents of other students. Many

> parents are against inclusive education, they are making a request not to provide inclusive education, they are only worrying that their children's academic success will decline. They have no sense of empathy and only think of their own children. However, we have to work together for the success of each student (Teacher15).

5.5.5 Parents of children with SEN

The significance and power of working with parents of students with SEN is widely accepted. Where a setting identifies a student as having special educational needs, they need to work in collaboration with parents to establish the help needed by the student. In this sub-theme, participants stated that parents of children with SEN have to be involved in the process of inclusive education in all steps. Teachers feel more effective and positive when they get support from parents and work with them. On the other hand, participants also mentioned that inclusive education is inefficient when they do not get support from parents.

> Parents can be the problem in the inclusive practices. When we provide alternative education for their children or refer them to certain institutions, parents do not want an extra workload. They deny opportunities for their children to get a better education. They are not supportive (Teacher7).

> Everything goes better when families are supportive and positive. The child with SEN is more successful if parents take care of their children and play

> their role in the inclusive setting. However, if the family does not do what is required, it becomes a problem. For example, when I gave additional activities for children to do at home, the family said they could not do it, they had many other things to do, they cannot help their children all the time (Teacher11).

Moreover, teachers reported that parents of children with SEN do not accept that their children have SEN. Even if parents accept that their children have SEN, they have high expectations from the teacher, which causes stress for the teacher.

> Families do not want to accept the special needs of their children. Even in normal interview processes, when I state the situations regarding requirement of additional support of student, they use expressions such as no need for such a thing, or they do not see any problem with their son or daughter. In some families, it is the opposite. Just to get financial support from the government, parents claimed that their child have a special educational need, but they do not (Teacher13).

> The parents of the student with SEN act like the teacher has a wand in his hand. When the child attends school for a few days, the attitude they show is that they will be able to achieve and do everything. They have really high expectation that makes me nervous. Seeing that their children show poor performance, parents think that the teacher failed (Teacher18).

5.6 Summary

The analysis showed that two-thirds of the participating teachers in Turkish lower secondary schools have negative attitudes towards the inclusion of children with special educational needs in those schools. This result reflects their comments, which included statements that were less positive towards inclusion of students with SEN. Overall, they criticized the current inclusive policy for its inability to provide an adequate inclusive environment and support for children with SEN, and also for the inability of organizational factors to provide additional support to teachers. On the other hand, a third of the participants believed that inclusive practice is a very important right and a necessary form of service for the community to help children with SEN. While emphasising training and skills, teachers indicated that their skills and abilities were inadequate to educate children with SEN in their classroom because they did not have necessary training on inclusive education.

Teacher-related themes were presented under 4 main headings. When these themes were examined, the role of teachers in successful inclusive education implementation was first discussed. The teachers stated what their roles should be and the problems that they encountered. For example, the participants discussed the use of teaching strategies and implications of individualised education programmes. They emphasised that they did not have sufficient knowledge and education related to teaching strategies and individualised education programmes. The result of this emphasis was also linked to another sub-theme: training.

Next, organization-related factors that affect teacher attitudes towards inclusion of students with SEN were discussed. While examining organization-related factors in inclusive practices, the problems experienced in identifying the student's SEN, which is at the very beginning of the process, were stated. Factors affecting inclusive education towards the school environment were evaluated by the participants. For example, emphasis was placed on resource rooms, which were inadequate in many schools. While this emphasis was made, criticisms were directed to the school administration, which should provide these rooms to teachers. Since all factors are interrelated, teachers' strategies for how to use these rooms were also presented in this sub-theme.

Finally, the student-related factors identified by participants were analysed. The importance of inclusive education in the development of the academic and social skills of students were discussed. The participants highlighted that the current inclusive education is problematic in the development of these abilities. In addition, the participants felt more comfortable and showed more positive attitudes towards students depending on specific type of SEN. The analysis shows that the type of SEN is an important factor which affects teachers' attitudes towards inclusion of students with SEN.

The next chapter moves on to discuss the qualitative and quantitative analysis of teachers' attitudes towards inclusion of students with SEN in light of existing literature and the data presented in Chapters 4 and 5.

Chapter 6: Discussion

This chapter discusses the relevance of the previous chapters' major results and how they connect to the existing literature in the field. The aim of the current study was to investigate the attitudes of teachers in Turkish lower secondary schools towards the inclusion of children with SEN in those schools. The data collection technique involved mixed-method to determine the overall attitude of mathematics teachers to this issue and the variables that influence teachers' attitudes regarding the implementation of inclusive education in Turkey. The questionnaire was completed by 262 respondents, and 18 interviews were performed.

This chapter is split into two major parts that will answer the research questions of the study. The results are discussed in light of the theoretical framework, which is the attitude model and Bandura's social cognitive theory (including self-efficacy). These theories continue to be valuable in bridging the psychological and social dimensions of the relationships that seemed to affect teachers' attitudes towards inclusion. Firstly, the general attitudes of mathematics teachers towards inclusion is discussed. Secondly, the factors that impacted these attitudes are explored.

6.1 Overall attitudes of teachers in Turkish lower secondary schools towards inclusion

The findings of this study indicate that, overall, mathematics teachers in Turkish lower secondary schools have negative attitudes towards the inclusion of students with SEN

in those schools. However, they have a positive tendency to adopt inclusion, indicating that they are more willing to employ inclusive education practices, but they believe that they lack the necessary knowledge and abilities to achieve this end. Teachers' negative attitudes in this research may be explained by or connected to the Turkish educational system, which seems to have shifted relatively quickly to a more inclusive approach to students with SEN. This prompt implementation of new rules seems to have created some issues in terms of creating competences or training and willingness to work in this subject. It is suggested that as teachers develop the depth of specialised knowledge necessary to conduct inclusion practices, they could develop more positive attitudes towards inclusion (Avramidis & Kalyva, 2007; Deniz & Coban, 2019; Saloviita, 2020a).

In addition to the current study, previous research performed in Turkey into the attitudes of teachers towards inclusion of students with SEN has revealed widespread support for the concept. Nonetheless, teachers recognised several challenges to implementing inclusive educational practices. Additionally, these studies – and reiterated in the current study – demonstrated that attitudes of teachers towards inclusion in Turkey were intensely influenced by their experience and understanding of the actual needs of students with SEN, the severity and nature of these children's special needs and disabilities, and the nature of the facilities set up for these children.

These results reflect those of Ozer et al. (2013) who also found that teachers generally had negative attitudes towards the inclusion of students with SEN in regular schools. Ozer et al. (2013) recognised that the negative attitudes of teachers occurred because inclusive education was still in its infancy in Turkey and teachers lacked

expertise of how to educate students with SEN in mainstream schools. On the contrary, the results of the current study indicate a change in teachers' attitudes towards the inclusion of students with SEN, one that is not always negative. This transformation is vital in the short term because teacher views and attitudes are critical to the effectiveness of inclusive education. Therefore, the negative attitudes of teachers towards inclusion in the current study may result in some improvement and a greater awareness of inclusion in Turkey.

The results of this study into attitudes towards inclusion are consistent with previous research (Avramidis & Norwich, 2002; De Boer et al., 2011; Kurth & Forber-Pratt, 2017; Shin et al., 2019). Some researchers found support for the concept of inclusion, while many others found neutral or negative outcomes linked with certain contextual variables. For example, in the UK, one study indicated that, although most teachers promoted inclusive education, they only practiced it with reservations (Beacham & Rouse, 2012; Hodkinson, 2005). In comparison, De Boer et al., (2011) conducted a review of 26 studies published between 1999 and 2008 in a variety of nations; similar to the current research outcomes, their data indicated that most teachers had negative attitudes regarding inclusive education.

The extent to which inclusion is effective is primarily determined by the attitudes of teachers and their motivation to accept and engage students with SEN meaningfully in their classes (Avramidis & Norwich, 2002). Nonetheless, the findings of the current study on the variables influencing teachers' attitudes exposes contradictory evidence; mathematics teachers believe that actions are needed to enhance positive attitudes

towards inclusion but assert that it can only be achieved through additional help, training, and resources being dispersed equitably. These aspects must be carefully considered in order to expedite and strengthen successful adoption of inclusion practices in Turkey. It is clear that there is a need to address the debates on inclusion with a more nuanced practice around the complicated understanding of the interplay of school-related aspects such as management, pedagogy, facilities, in-service training and teacher education. This will be examined in further depth under the study's implications.

6.1.2 Teachers' awareness of inclusion and inclusion policies

The results of the study indicate that the majority of mathematics teachers support children with SEN having the right to be educated. They believed, however, that only students with SEN who are capable of integrating into a mainstream classroom environment had a right to inclusion. Teachers claimed that inclusion can do more damage than good to students with SEN and other students' educational development if inclusion of students with SEN is early and unprepared. Teachers' perspectives in Turkey have shown a growing knowledge of and attitudes towards inclusion. Teachers consider inclusion a two-pronged strategy that prioritises both the right of students with SEN to be educated and the efficacy of their education in a proper educational setting. The above perspective conveys a point made in the House of Commons Report on UK Special Education (2006), which states that the term "inclusion" has a wide range of

interpretations, ranging from ardent advocates who view inclusion as a human rights matter to those who view inclusion policies as the source of whole SEN issues.

Moreover, the results of the current study indicate that mathematics teachers attribute the setting of inclusion practices to a mixture of external and internal variables; the external variables apply in relation to environment-related variables (e.g., inadequate materials, a lack of collaboration between teachers and school administration); the internal variables relate entirely to students' individual needs. Cole (2006) noted that in inclusive settings, models of special educational needs must emphasise what students are able to achieve and what teachers need to do to ensure students attain such outcomes in the inclusive environment. An additional noteworthy component of the current results is that mathematics teachers demonstrated varying degrees of inclusive education understanding. As will be explored in the next section, factors such as gender and age values enabled certain teachers to participate in behaviours unrelated to their attitude and influenced their assessment of inclusive practices.

6.1.3 Inclusive education practices in Turkey

The results in the current study highlighted many challenges about what might be defined as Turkey's current state of inclusive educational practices. To begin with, a small number of preparations were created in terms of both human and physical resources to meet the diverse requirements of students in mainstream classes. Most

teachers believed that establishing inclusive practices would need significant changes to the school environment to accommodate students' needs. Second, the majority of teachers in this research stated that they had very little, if any, training in teaching students with SEN. Teachers also reported that educating children with SEN involves a different set of abilities than teaching 'typically developed' students. Thirdly, several participants reported that some students with SEN are socially isolated and have difficulty making friends at school; they are likely to face discrimination and, often, bullying from others. A few interviewees did report that favourable social and academic results were described in inclusive setting. In this respect, the research indicates that there is worry regarding the impact of inclusion on specific groups of students with SEN if schools do not offer access to them (Avramidis, 2001).

Consequently, these findings could provide support to the concept of inclusive education in Turkey being seen as a process of 'integration' rather than 'inclusion'. This is especially apparent in the emphasis participating teachers put on the topic of physical and human resources, which were viewed as a prerequisite for including students with SEN in mainstream classrooms. The literature review explored the notion of 'integration' and 'inclusion'. For example, Dixon (2005) defined how integration entails allocating a student to a mainstream classroom and expecting them to adapt, whereas inclusion allocates the student to a mainstream classroom and initiates a method of personal and organisational transformation that enables them to fully engage. In the UK, the House of Commons Report on Special Education (2006) made a distinction between inclusion and integration, which referred to the concept of incorporating students with SEN into a more regular educational framework. Later, the concept evolved to include all children,

to represent the view that education should be completely inclusive of all children, not only those with SEN.

6.2 Factors influencing teachers' attitudes towards inclusion

Teachers' attitudes are critical for effective inclusive practices and investigating the factors that influence them is important because gaining a greater knowledge of the underlying causes of teachers' attitudes is a key first step towards altering teachers' attitudes (Alnahdi et al., 2019; Saloviita, 2020a). As stated in the literature review Avramidis (2001) has divided the factors affecting teacher attitudes into three categories – teacher-related; educational environment-related; and child-related – which are discussed in the following sections.

6.2.1 Teacher-related variables

6.2.1.1 Training and experience

The results of the current study indicate that teachers who have received training in inclusive education have a more positive attitude towards inclusion of students with SEN than teachers who have not received training. The study has examined training in two categories: in-service training; and training during university. Similar findings were found in both categories, and regardless of the type of training, the inclusive education

training received had a positive effect on teachers' attitudes towards inclusion of students with SEN.

On the other hand, the interview findings show that teacher education programmes were not intended to fit the requirements of schools; both pre-service and in-service training courses were theoretical and lacked empirical advice. For example, interviewees expressed concerns about courses that emphasised conventional teaching approaches but were not clearly tied to SEN and inclusion performance. This represents what Florian (2008) refers to as ‘inclusive pedagogy’, which needs to be complemented by a variety of teaching styles to meet the various SEN of students. Inclusive pedagogy is critical for every single teacher, since good educational practices may be used with any student, rather than focusing only on one set of students (Florian, 2008).

Several international studies (e.g., Beacham & Rouse, 2012; Kurniawati et al., 2017; Monje, 2017; Vaz et al., 2015) have highlighted the need for additional training to foster positive teachers’ attitudes and 'real' behaviours for inclusion. Further research has revealed that teachers require training to be able to practise their beliefs concerning knowledge and learning (Maggioni & Parkinson, 2008; Makoelle, 2014). Similarly, participants in the current research discussed the role of training in developing positive attitudes towards inclusion. The results in the current study are in line with those of previous studies that reported the association of negative attitude with teachers’ training. Teachers who hold negative attitudes towards inclusion reported that they received insufficient training and resources to help their students overcome academic barriers, thus insufficient education results in a negative attitude. Additionally,

quantitative data analysis shows that both pre-service and in-service training influence attitudes of teachers towards the inclusion of students with SEN; teachers who received any type of training in the field of special education expressed considerably more positive attitudes. This conclusion highlights the critical significance of training in the development of positive attitudes towards inclusion of students with SEN.

The impact of teacher training on teachers' attitudes confirms the importance placed on it by some educational policies. For example, the Ministry of National Education in Turkey (MEB, 2020) stated in its annual Education Strategies evaluation that it attaches great importance to the development of teachers. Within the scope of the changing roles of teachers, knowledge, skills and attitudes are also differentiated. The Ministry also encourages teachers to study for master's and doctoral degrees. However, it was found that teacher qualifications had no effect on teacher attitudes. There was no difference in the attitudes of teachers holding bachelor's degrees and those who held master's degree found in the current study. A possible explanation for this might be that the master's education received by most of the teachers involved the science of mathematics, which had no effect on their knowledge of inclusive education. In-service training and university teacher training programmes play an important role for teachers in adapting to this change. Nonetheless, the results of the current research and others, reached different conclusions. For example, according to Sahin and Sahin (2017), the current generation of teachers in Turkey at all levels of education is gradually seen as lacking the necessary abilities and expertise to teach in educational contexts. Additionally, the results of the current study show that mathematics teacher training for inclusive practices and the needs of students are quite limited. The majority

of mathematics teachers in Turkey increased their knowledge of inclusion and the needs of students through their own practical experiences.

Classroom experiences play a role in shaping teacher attitudes towards the inclusion of students with SEN. The questionnaire results in the current study demonstrate that mathematics teachers who had the experience of teaching students with SEN held more positive attitudes towards the inclusion of students with SEN than teachers who had no experience. In addition, mathematics teachers who had the experience of teaching students with SEN registered higher scores in all four subscales of the questionnaire than teachers who had no experience. This finding was also reported by Landis (2019), who suggested that teachers' lack of experience of teaching children with SEN resulted in negative attitudes towards inclusion. However, this finding is contrary to previous research by Ozer et al. (2013) in Turkey, which suggested that having experience of teaching students with SEN has no effect on teacher's attitudes towards inclusion. A possible explanation for this might be that the study by Ozer et al. (2013) only focused on students with intellectual disability and not other types of SEN.

One unanticipated finding was that having a friend with SEN has no effect on teachers' attitudes. Teachers who have a friend with SEN held more positive attitudes towards inclusion in terms of their academic and social importance of inclusive education and their ability to teach students with SEN, while there were no differences on other subscales. On the other hand, teachers who had relatives with SEN had more positive attitudes than teachers without these connections. Teachers who had relatives with SEN had higher scores in all categories except the subscale of academic and

social importance of inclusive education. Only a few publications exist that have addressed the positive relationship between attitudes toward inclusive education and having a family member or friend with a disability (Block, 1995; Al-Ahmadi, 2009; Bhatnagar & Das, 2014). However, these studies examined both factors (having friends with SEN and having family members with SEN) together, but these factors were examined separately in the current study.

The interview findings indicate that teachers' experiences of working with children with SEN changed their perspectives on inclusive education. It also reported that those experiences play a role in overcoming the problems that are experienced during inclusive practices. Teachers usually reflect on their previous experiences while teaching. These results are likely to be related to the increase of teachers' self-efficacy based on their previous experiences. Previous experience classified as mastery experiences significantly contribute to self-efficacy (Mulholland & Wallace, 2001) and self-efficacy has a beneficial effect on attitudes (Savolainen et al., 2020).

Results indicate that the influence of existing training and experience on teachers' attitudes towards inclusion has been effective at fostering a positive change in teachers' attitudes towards inclusion. However, increased teacher training does not necessarily result in a transformation in teachers' attitudes (Saloviita, 2020a). Rather than more training, it has already been established that promoting collaboration between teachers and other staff helps to improve teachers' positive attitudes (Chiner & Cardona, 2013; Ahmmed et al., 2014).

The inclusive setting needs all members to work collaboratively and with a feeling of responsibility to carry out assigned responsibilities. The current study found that the majority of participants (50%) agreed/strongly agreed with the statement that they were able to communicate and collaborate with other staff, while 19.5% disagreed/strongly disagreed. In addition, in all cases, the participants reported that collaboration is an important factor in successful and effective inclusion practices. These results corroborate the ideas of Buli-Holmberg and Jeyaprathaban (2016), who suggested that general and special education teachers must collaborate to help children with SEN and to create an effective inclusive environment and fulfil students' SEN needs. On the other hand, some interviewees highlighted that the difficulties they had in collaborating with other teachers. For example, teachers and special education teachers should prepare IEP for each student with SEN in cooperation, but as Teacher14 reported, successful collaboration may not occur due to the workload or unwillingness of other teachers.

Any form of training has an impact on mathematics teachers' attitudes towards inclusion of students with SEN. Teachers who have had training on special needs have a more positive attitude towards inclusion of students with SEN. While teachers' classroom experiences had a significant impact on their attitudes, many teachers also emphasized the importance of collaboration. Surprisingly, it was found that the attitudes of teachers who had friends with SEN were not different from those without friends with SEN. Lastly, teachers who have relatives with SEN showed a more positive attitudes towards inclusion than other teachers. In the next section, findings on teaching strategies will be discussed in relation to the existing literature.

6.2.1.2 Teaching strategies

In addition to training, teachers reported that they lack knowledge of teaching strategies and techniques, which has a negative effect on their attitudes and classroom practices. The qualitative results showed that teachers do not have the necessary knowledge of special teaching methods due to their inadequate training and do not make a special effort to fulfil the needs of students with SEN in the classroom. For instance, one participant expressed inadequacy in the education of students with special needs, especially in relation to teaching strategies and methods. Interviewees stated that the Ministry should inform teachers more about effective teaching methods and prepare guidelines to address this lack of knowledge.

These results accord with Melekoglu's study (2014), which indicating that the current model of teacher training fails to meet the requirements of the Turkish education system and this inadequacy of teacher training negatively affects inclusion practices in the classroom. In this context, all teachers in inclusive classrooms must be fully trained in best practice for special education and should be supported as required (Ozturk, 2019). The results of the qualitative analysis in the current study also show that teachers need training to understand their role in the classroom and to increase their understanding of current teaching strategies, as well as techniques for taking their training into practise. These results agree with other studies which showed that teachers with negative attitudes towards inclusion tend to have inadequate teaching

strategies and weak pedagogical techniques (Avramidis & Norwich, 2002), resulting in underperformance by students with SEN (Forlin et al., 2009).

Training is therefore crucial for the development of a positive attitude among teachers, enabling them to manage the demands of an inclusive classroom. The findings of the present study reveal that inclusion of students with SEN in mainstream classrooms provides an opportunity for teachers to adopt classroom management strategies and practices. Successful classroom management is positively associated with teachers' attitudes towards children with SEN, as stated by the teachers who participated in the interviews. The participants were concerned with the management of a successful inclusive classroom, which is linked to the noise level of the classroom and the behavioural problems that might interrupt a lesson. In addition, evidence from the current study suggests that teachers' classroom management skills increased through teaching students with SEN in an inclusive education environment. These results seem to be consistent with other research which found that it is possible to improve the attitudes of teachers by direct experience with inclusive education (Rose, 2010), which has the potential to enhance both attitudes and skills (Pijl et al., 1997).

Another key finding was that lesson preparation and planning, which has an important place in mainstream educational practices, also plays an important role in inclusive education. Teachers were asked about their preparation for inclusive education – more than half of the participants did not carry out any preparation and planning or only prepared the officially requested documents regarding inclusive education. Teachers prepare materials for students with SEN as part of lesson

preparation; they need to adapt exam questions and classroom activities. The current study findings showed that 78.6% of questionnaire respondents agreed/strongly agreed that the daily or weekly formative assignments that are given to students for assessment should be adapted for students with SEN (statement 19). However, only 29.8% confirmed that they had the necessary knowledge and skills to adapt these formative assignments for students with SEN. In addition, 58.7% of participants agreed/strongly agreed that teachers should provide alternative materials for students who have additional support needs or disabilities (statement 24) but only 21% believed that they had enough information about special education instructional materials and teaching needs (statement 37). These results show that although teachers are aware of their role in preparing for lessons in an inclusive environment, they do not have the essential knowledge and abilities to make these preparations.

One of the most important stages of special education is to prepare an individualised education programme (IEP) for each student (Vuran & Gursel, 2015). Teachers are responsible for developing, implementing, and monitoring IEPs for children with SEN. In the current study, mathematics teachers discussed the issues associated with developing IEPs and the process through which they developed them. Evidence from the current study suggests that mathematics teachers did not consider themselves qualified in this area. While 21.7% of the questionnaire participants reported that they had sufficient knowledge about preparing an IEP, 61% said that they did not. A possible explanation for this may be the lack of adequate training in the field of inclusive education. Additionally, while around half of respondents did not take the time to prepare an IEP, only a third reported that they spent time preparing an IEP. Similar

results were previously reported in the study of Gulec-Aslan (2020), which concluded that one of the biggest problems of special education is that mathematics teachers do not have enough knowledge and abilities to prepare a programme that meets the educational needs of students. Moreover, the qualitative results in the current study support the finding that teachers do not have the knowledge to create IEPs. In the interviews, participants reported that they employed exactly the same IEPs for students with SEN, when they should be personalized for each student with SEN based on their unique requirements. This outcome may be explained by the other result in the current study which was that mathematics teachers did not consider themselves qualified in this area, were unfamiliar with the topic and were unable to get assistance from the counsellor teacher and Counselling Research Centre.

There is a clear critical need for interventions that may influence teacher training and existing inclusive educational practices in such a way that all teachers are properly educated to fulfil the needs of students. However, in-service training can only effect significant positive changes in teachers' attitudes and behaviours when it is planned and designed for inclusive education, professionally supervised, and delivered continuously – short-term courses or theoretical training have been shown to deliver 'insufficiently' skilled teachers (Avramidis & Kalyva, 2007; AlShahrani, 2014; Martinez, 2003). Due to insufficient training, teachers experience difficulties in their classroom practices and educational strategies. These negative experiences are reflected negatively on teachers' attitudes. In the next section, the effect of mathematics teachers' ages on their attitudes towards inclusion will be discussed.

6.2.1.3 Age

A teacher's age and their years of teaching experience have been identified as influencing their ability to change their attitudes towards the inclusion of students with SEN. The current study confirms that a teacher's age is associated with their attitudes towards inclusion of students with SEN. Younger mathematics teachers in Turkey were seen to hold more positive attitudes towards inclusion, with older and more experienced teachers having negative attitudes towards inclusion. This result also accords with earlier studies, which showed that age was an influential factor, with younger and less experienced teachers having a more positive attitude towards inclusion compared to older and more experienced teachers (Avramidis, Bayliss & Burden, 2000; Bhatnagar & Das, 2014; Dukmak, 2013; Kuroda et al., 2017; Opoku et al., 2021). The current study included four subscales on the questionnaire: inclusive settings management, the academic and social importance of inclusive education for students with SEN, ability to teach students with SEN, and benefits of inclusion. Younger and less experienced teachers (the age group 22-26) had the higher score in all four subscales than aged teachers. While there was no significant difference between the other age groups, only the teachers in the age group 32-36 had a more positive attitude than the age group 27-31 about their ability to teach students with SEN.

The results of the current study reflect those of Boyle, Topping and Jindal-Snape (2013) who also found that teachers were more negative towards inclusion after their first year of teaching, and once this attitude was reached, it remained stable across the

subsequent years of experience. A possible explanation for this might be that attitudes of teachers who have only theoretical education at university could be changed after their first year of experience. After teachers' first year of experience, inclusive education being considered as a challenge or resulting in additional effort by teachers, they are put under pressure to adapt new approaches and to deal with unfamiliar students' needs in inclusive settings (Saloviita, 2020b).

The finding of the current study is contrary to previous studies which suggested that teachers with average teaching experience tend to have more positive attitudes towards inclusion than those with less (or no) experience (e.g., De Boer et al., 2011; Khochen & Radford, 2012; Prakash, 2012; Saloviita & Takala, 2010). These findings are likely to be connected to an increase in teachers' self-efficacy after several years of classroom experience. The experience of teaching students who need special education may help teachers develop more confidence in their abilities to educate all students, therefore overcoming any issues that may have arisen during inclusive practices (Unianu, 2012). However, these findings cannot be extrapolated to all teachers because sometimes teachers cannot solve the problems they experience, and this negative experience may cause negative attitudes in the future. The reason the current study differs from previous findings may be down to the difference in the experiences of participants.

However, when compared to studies conducted in Turkey, the findings of the current study do not support previous research from the country. It has been suggested that there was no correlation between teachers' attitudes and ages in Turkey (Rakap &

Kaczmarek, 2010). However, Rakap and Kaczmarek's study (2010) also demonstrated that the most positive attitudes tended to be among teachers who had between one and four years of teaching experience and this result partially supports the findings of the present study. Palavan et al. (2018) found the lowest scores were found among younger teachers with the least teaching experience and older teachers with the greatest length of experience, while the highest scores were found among younger teachers with the least teaching experience in the current study. A possible explanation for these differences may be that the study by Palavan et al. (2018) was limited to local surveys in just one city. In the current study, with samples from every region of Turkey, it was found that young teachers had a more positive attitude than older teachers.

In conclusion, the results of the current investigation show that the age of mathematics teachers is one of the factors affecting their attitudes towards inclusion of students with SEN. Younger teachers have more positive attitudes towards inclusion than older teachers. There is a positive correlation between the ages of teachers and their years of working experience, each having a similar effect on teachers' attitudes towards inclusion in the current study. In the next section, the effect of teachers' gender on their attitudes will be discussed.

6.2.1.4 Gender

Regardless of their age, education and experience, it was found that the gender of the mathematics teachers had no effect on their attitudes towards the inclusion of children

with SEN in Turkish lower secondary schools. In other words, the findings of the current study show that there is no significant difference between the attitudes of male and female teachers. However, when examining teachers' attitudes on four subscales, female teachers had a higher score on the "benefit of inclusion" subscale. No differences were found in other subscales, with both female and male mathematics teachers had similar scores on the subscales of inclusive settings management, the academic and social importance of inclusive education for students with SEN, and ability to teach students with SEN. In this context, female teachers believe more in the benefits of inclusive education than male teachers.

Gender has been examined as a factor in many studies, but the results have differed. The results of the current study are in line with those of previous studies that reported no relationship between teachers' gender and their attitudes towards inclusion of children with SEN (e.g., Avramidis et al., 2000; Logan & Wimer, 2013; Leonard & Smyth, 2020). On the other hand, the outcome of the current study is contrary to that of other studies (e.g., Alasim & Paul, 2019; Saloviita, 2019) which found that male teachers tend to hold more negative attitudes than female teachers towards the inclusion of students with SEN while. These results are likely to be related to male teachers being less patient with students with SEN than their female counterparts (Butakor et al., 2020; Vaz et al., 2015). However, several studies have demonstrated that male teachers held more positive attitudes towards inclusion than their female colleagues (e.g., Alquraini, 2011; Ahmmed et al., 2014; Bhatnagar & Das, 2014; Dorji et al., 2021).

The findings of existing studies on teacher attitudes towards inclusion of students with SEN in Turkey differed from the findings in the current study. It has been found in previous studies conducted in Turkey that the gender of teachers influences their attitudes towards inclusion. For example, female teachers in Turkey were found to express more negative attitudes towards the inclusion of students with SEN than their male peers (Rakap & Kaczmarek, 2010). In contrast, Palavan et al. (2018) concluded that female teachers held more positive attitudes towards inclusion than male teachers. As a result, the present study differs from previous studies conducted in Turkey, suggesting that gender has no effect on mathematics teachers' attitudes towards inclusion of students with SEN.

6.2.2 Educational environment-related variables

Several reports have shown an association between educational environment-related variables and teachers' attitudes towards inclusion. Many concerns were identified in relation to competitiveness at school, limited resources and support services, a lack of infrastructure, financial restrictions, class sizes, the inadequate training of teachers, and the need to deal with differing degrees of disability and ability (Bhatnagar & Das, 2014; Malinen, 2013). Environmental variables influencing teachers' attitudes towards the inclusion of students with SEN frequently revolve around the availability or provision of human (student services workers, special teachers, and speech therapists) and physical (teaching materials, IT resources, a restructured physical environment) support services (Makoelle & Somerton, 2021).

6.2.2.1 School administration and school ethos

In the existing literature, school administration and ethos have been found to affect teachers' attitudes towards inclusion of students with SEN. The current study has also shown that school administration is another important factor affecting mathematics teachers' attitudes towards inclusion of students with SEN and their inclusion practices. The interviewees reported that their efforts at inclusive practices changed consistent with the support of their school administration. Some interviewees argued that they were more successful and willing when they get necessary support from the school administration. These results agree with Larrivee and Cook's (1979) findings which showed teachers who have adequate administration support have more positive attitudes towards inclusion than teachers who do not support. In the current study, mathematics teachers stated that they were more willing to accommodate students with SEN in their classrooms when they were provided with adequate and appropriate administrative support. This finding was also reported by Avramidis and Norwich (2002).

However, a few participants stated that the negative attitude of the school administration had also negatively affect them. One interviewee said: "*School administration in my school does not lean towards inclusion. In fact, they do not want to accept students with SEN […] They prevent me from activities I want to do for these children. As a result, I believe inclusive practices are negatively affected by the school administration*". The interviewees also indicated that their school administration did not support inclusive education and even negatively affected the implications of inclusive

education. In accordance with the present results, previous studies have demonstrated that insufficient administrative support can cause teachers to take on more workload and stress, which negatively affects teachers' attitudes towards inclusion (Gray et al., 2017). In addition, teachers expressed their concerns about inclusive education policy and regulations. He stated that the school administration did not comply with the existing laws and regulations and many regulations were not applicable. Although the regulations and laws seem good in theory, it has been reported that there are problems putting them into practice.

In addition, one participant stated that the negative attitude of the management and a focus on exam results affected the teacher positively during the interview. The participant explained that both exam results and inclusive education can be successful together. It was found that the support and attitude of the school administration influenced the attitudes of the teachers. Teachers working in schools with more supportive school management have a more positive attitude. In the next section, the impact of class size on mathematics teachers attitudes towards inclusion of students with SEN will be discussed.

6.2.2.2 Class size

The current study found that class sizes have an impact on mathematics teachers' attitudes towards inclusion of students with SEN. It has been revealed that mathematics teachers with higher class sizes have more negative attitudes towards inclusion of

students with SEN. According to The Law on Special Education Services (MEB, 2012), class sizes should be as follows: if there is one student with SEN in the classroom, the maximum class size should be 35; if there are two students with SEN, the maximum class size should be 25. However, quantitative results showed that 47.7% of the participants anticipated problems with SEN students because their classrooms would become overcrowded. These concerns were also identified in previous studies (Bhatnagar & Das, 2014; Malinen, 2013). The research found that teachers have a negative attitude towards the inclusion of students with SEN and are reluctant to inclusion practices due to their large class sizes (Akalin et al., 2014).

Moreover, interviewees highlighted that they could not help students with SEN in their classes due to the large class sizes, perceiving a difficulty with the implementation of IEPs in their classrooms. In general, some teachers did not teach students with SEN individually and did not practice IEPs in the classroom because they thought class sizes did not make it easy to do so. These results seem to be consistent with other research conducted in Turkey which indicates many problems in schools and classrooms that affect teacher attitudes towards inclusion, including large class sizes, a lack of essential equipment, and programmes being inappropriate for individualised educational needs (Gulec-Aslan, 2020).

To summarise, the results of this study showed that crowded classrooms in Turkey affect mathematics teachers' attitudes towards inclusion of students with SEN. Teachers with large class sizes are unwilling to teach students with SEN and hold

negative attitudes towards inclusion. In the next section, the results of current studies on facilities and infrastructures will be discussed in the light of the literature.

6.2.2.3 Facilities, infrastructure and resources

In reviewing the literature, facilities and infrastructure were identified as a factor influencing teachers' attitudes towards inclusion and in successful inclusive education. The current study found that facilities and infrastructure influence mathematics teachers' attitudes towards inclusion of students with SEN. Mathematics teachers are more willing to include students with SEN in their classes when the school have the necessary facilities and infrastructure in place. In accordance with these results, the study of Avramidis and Norwich (2002) determined that teachers are more willing to accommodate students with special needs in their classrooms when they are supplied with enough and appropriate equipment and materials.

The results of interviews in the current study discovered that many schools do not have the infrastructure to meet the needs of students with SEN, and the school administration must reorganise school facilities and infrastructure to meet the needs of students with SEN. In addition, questionnaire results revealed that most mathematics teachers (92.4%) agreed/strongly agreed with statement 10: "*The physical conditions of the school and the classroom should be adjusted according to the needs of the student with SEN*". This study supports evidence from previous observations (e.g., Salih & Cavkaytar, 2019; Yilmaz, 2019). For example, Salih and Cavkaytar (2019) revealed that

most Turkish schools do not have the fundamental facilities and infrastructure to meet the needs of students, which negatively impacts teachers' attitudes towards inclusion of students with SEN in Turkey. Teachers must make some changes to deal with inadequate school conditions. The interviewees reported that they made some arrangements in the learning environments during the preparation phase of inclusive practices. To do this, they considered the different types of SEN as a guide in setting up the environment. Moreover, teachers highlighted that it is very important to arrange a safe environment, especially in relation to disabilities related to vision, orthopaedic impairment, attention deficit and hyperactivity disorder.

As stated earlier, one of the factors affecting schools' facilities and infrastructure is their locations. Schools in rural regions often have inadequate facilities and infrastructure compared to other regions (Sahin & Gurbuz, 2016). Contrary to expectations, the quantitative results of the current study showed that mathematics teachers working in rural areas had a more positive attitude than teachers working in the other two regions (semi-urban and urban). This finding was also reported by Sahin and Gurbuz (2016). It may be that these participants benefitted from the condition of rural areas. For example, they have better access to students in small settlements such as villages which facilitates the work of teachers in inclusive education. Another explanation for this unexpected result is that teachers working in rural and semi-urban regions are often at the beginning of their profession and, as stated earlier, less experienced teachers were found to have more positive attitudes. In addition, mathematics teachers in rural regions have higher scores in terms of their ability to teach students with SEN than teachers in the other two regions. Male teachers aged 22-

26 with less than 2 years' teaching experience in rural areas hold more positive attitudes towards the inclusion of students with SEN than other mathematics teachers.

Environmental factors affecting teachers' attitudes towards the inclusion of students with SEN often centre on the availability or provision of teaching materials, IT resources, and a restructured physical environment (Makoelle & Somerton, 2021). Most of the teachers (62.9%) in the current study stated that they did not have the necessary teaching technologies and materials for inclusive education. In addition, educational technologies provided to teachers and students for use in the classroom are limited to using only the applications presented. For example, the smart boards and systems provided to the classrooms by the Ministry of National Education are offered with limited access. As a result, teachers are not allowed to install additional educational technologies for students with SEN (Aslan and Sendurur, 2017). Interviewees reported difficulties in teaching students with SEN with limited resources. As one interviewee said: '*I think that the experience I had in the first years affected me very much. It was very difficult for me to help students with SEN under limited resources*'. Saloviita's (2020b) findings suggested that teachers with increased access to materials have more positive attitudes than teachers with limited access to resources. On the other hand, another study claimed that adding available resources has no or only a minor influence on teachers' attitudes towards inclusion (Chiner & Cardona, 2013).

In summary, lack of resources is a matter of concern, according to the current study results. Undoubtedly, schools should assist all students with adequate resources to achieve greater success. However, despite these shortcomings, the current results

show that schools in Turkey are insufficiently equipped in terms of facilities, infrastructure and resources. Surprisingly, mathematics teachers in villages with insufficient facilities, infrastructure and resources were found to have more positive attitudes towards inclusion of students with SEN. The factors affecting teachers' attitudes towards inclusion are not only limited to educational environment-related variables, but also encompass various factors that affect inclusion from outside the school. Many previous studies have focused on assessing the attitudes of teachers to different types of children with SEN, along with such students' suitability for inclusive education. The next section will be focused on child-related variables.

6.2.3 Child-related variables

Prior studies have noted the importance of child-related variables on teachers' attitudes towards inclusion of students with SEN. For example, studies have indicated that teachers' attitudes towards SEN may be classified according to the sort of disabilities they encounter (Avramidis, 2001). In this section, student-related variables from the current findings that affect mathematics teachers' attitudes towards inclusion of students with SEN will be discussed.

6.2.3.1 Academic outcomes of inclusive education

Inclusive education can significantly improve academic outcomes for students. Children with SEN have the option to participate in school activities alongside their peers in inclusive environments, which helps students achieve their academic goals. In the current study, interviewees said that students with SEN should receive education in a special education institution to achieve academic outcomes. However, all inclusion models aim to establish academic achievement and engagement for students with and without SEN within the regular school context (Schuelka et al., 2019). Additionally, students with SEN who participate in regular education demonstrated increased academic achievement in previous studies. Schools that emphasise inclusion have been shown to be more academically efficient than those schools that practise exclusion (Schuelka et al., 2019).

In addition, 40.9% of mathematics teachers believe that the academic achievement of students without SEN will not be adversely affected in inclusive education. Participants reported that positive teachers' attitudes towards inclusion of students with SEN had a positive effect on all students' academic performance. Teachers' negative attitudes impact not only students with SEN, but also all students in inclusive settings. For example, one interviewee said: '*When the progress of the students is examined, I agree with this depending on the class size and number of students with SEN in a same classroom. However, I believe that students' academic outcomes rely on the teachers where the number of students with SEN is one in the classroom*'. Students' academic achievements vary depending on teachers'

expectations, attitudes and self-efficacy. Teacher self-efficacy is positively connected with student academic performance (O'Leary, 2016; Gentrup et al., 2020). Consequently, low teacher self-efficacy could result in low student academic performance.

The research has also shown that most participants (61.4%) indicated that they believed most students with SEN were able to learn necessary math skills. However, only 30.6% of respondents reported that they could teach math skills to students with SEN in their classes. Some interviewees argued that they had difficulties in teaching mathematics to students, but their opinions differed according to the type of SEN. As one interviewee put it: '*I believe types of SEN is effective factor in their academic outcomes. Compared to other students, students with SEN have difficulty understanding maths. […] Under these circumstances, the academic performance of this student was poor. He could not improve his math skills regardless of the exam results. There was nothing I could do for him'*. Teachers' doubts about the academic success of inclusive education are a result of their negative attitudes towards the inclusion of students with SEN. These results reflect those of Scruggs and Mastropieri (1996) who also found that teachers' attitudes towards inclusion were negatively impacted by not understanding the social and academic benefits of such inclusion. However, positive attitudes towards inclusion result in increased student performance (Lavy & Naama-Ghanayim, 2020) and facilitate constructive communication with students, which also results in improved school performance (Gal et al., 2010; Hamre & Pianta, 2001).

The current study findings show that mathematics teachers believed that students could gain math skills depending on the type of SEN they experienced. However, most of the mathematics teachers stated that they do not have the ability to teach mathematics to students with SEN. They indicated that students with SEN should be educated in special education institutions to improve their mathematics skills. Consequently, the negative attitudes of teachers towards inclusion negatively affect the academic performance of students with SEN. As mentioned in the literature review, besides the academic development of students with SEN, their social development was also often examined in the field of inclusive education. In the next section, students' social interactions will be discussed.

6.2.3.2 Social interactions

One of the most significant advantages of inclusive education is social development. Inclusion of students with SEN in mainstream classrooms provides a very important opportunity for them to have good relations with their peers and develop their social skills. One of the prerequisites for this opportunity to result in a positive outcome is that the teacher and other non-SEN students in the class have a positive attitude towards the inclusion of students with SEN. A good understanding of the social benefits of inclusive education (e.g., increased social initiations, relationships and networks) has an impact on teachers' attitudes towards inclusion of students with SEN. Scruggs and Mastropieri (1996) suggested that teachers’ attitudes towards the inclusion of students

with SEN were negatively impacted by a failure to understand the social and academic benefits of such inclusion.

As stated in the previous section, many mathematics teachers primarily focus on the educational success of students with typical development and believe that students with SEN cannot learn mathematics in mainstream classrooms. In addition, mathematics teachers in the current study reported that inclusive education would only benefit the social skills of students with SEN. However, they indicated that the academic success of students is the basis of classroom education practices. These results are consistent with data obtained in Kuwait where teachers agreed on the social advantages of inclusion but stated that they were insufficient to worth risking the school performance of students without SEN (Almotairi, 2013).

In the current study, interviewees' responds to existing inclusive practices were linked with concerns about social interactions of students with SEN. For example, some interviewees reported that students with behavioural problems have a negative social impact in the classroom during the inclusive practices. One interviewee said: '*Children with typical development can put pressure on our children with SEN, and our children with SEN can respond aggressively. This situation will be a lifelong trauma for our students with SEN, which will be heart-breaking for all of us. Unfortunately, this situation is often happened for students with behavioural problems*'. Consequently, the students' behavioural problems in the classroom reflected negatively on their social relations with other students and they were socially excluded. These results reflect those of De Leeuw et al. (2019) who also found that students with behavioural difficulties are frequently

socially excluded in mainstream schools. Exclusion of students in the classroom is the opposite of the basic principles of inclusion and does more harm than benefit to students with SEN. A possible explanation for this exclusion is that the teacher may not have made preliminary preparations for inclusive classes, they may not have increased awareness of students without SEN, or the teacher's classroom management skills may be insufficient. As stated in the Teaching Strategies section, teachers' classroom management skills are an important factor in overcoming potential behavioural problems that may occur.

The fact that students with SEN have a difficult time establishing social acceptability in a mainstream classroom demonstrates the complications of inclusion (Schwab et al., 2020). In the current study, concerns were expressed about inclusive practices that aimed to improve the social skills of students with SEN, but the most significant challenge was bullying in the classroom. In addition, one participant commented that students with SEN were often rejected and bullied by some of the students with typical development. These results match those observed in earlier studies (Marlina & Kusumastuti, 2019; Schwab, 2019), which confirmed that students with SEN are less accepted by their peers in mainstream classrooms, since they have fewer peers and are less likely to be part of a social interaction network. These findings suggest that implementing inclusive education effectively demands careful consideration and assessment of all variables influencing student development.

Mathematics teachers' understanding of social interactions has an impact on their attitudes towards inclusion of students with SEN. When teachers have the

necessary classroom management skills and the prerequisites for inclusive education are met, an inclusive environment can be provided for students with SEN where they can establish good social interactions and improve their social skills. As stated in the previous section, classroom experiences were a factor affecting teachers' attitudes towards inclusion. When a successful inclusion environment is not established, problems arise in the relations of students with SEN and other students in the classroom, and managing classroom becomes much more difficult for teachers, so this bad experience of teachers reflects negatively on their attitudes towards inclusion of students with SEN.

6.2.3.3 Types of SEN

A strong relationship between types of SEN and teachers' attitudes towards inclusion of students with SEN has been reported in the literature. As mentioned in the literature review, teachers' attitudes towards students with SEN could be characterised by the type of SEN with which they are faced (Avramidis, 2001; Vaz et al., 2015). The results of the current study indicate that students' types of special educational needs affect mathematics teachers' attitudes towards inclusion of students with SEN.

Teachers' attitudes towards inclusion are also influenced by the context and type of SEN, with teachers being more supportive of children with mild SEN than of students with more complex needs (De Boer et al., 2011). A common view amongst interviewees was that teaching children with physical disabilities and mild difficulties is much easier

than teaching children with behavioural problems because teachers do not feel confident in controlling these children with behavioural problems in the classroom. For example, one interviewee said: '*There is no need to send a child with physical disabilities to a resource rooms or special education institutions for mathematics education. However, when it comes to the child with behavioural problems, we face difficulties in classroom control, especially when we have 40 children. So, it depends on the types of SEN and classroom conditions*'. These results agree with Schwab's (2019) findings which showed students with emotional and behavioural difficulties caused more difficulties than students with any other type of SEN.

Teachers very rarely dispute including students with mild disabilities who do not require a teacher with specialised training or communication skills, such as mild hearing loss and mild physical and visual disabilities (De Boer et al., 2011; McCarthy, 2019). Moreover, the current study results indicate that a less positive attitude was observed with children with mild to moderate mental disabilities. This result may be explained by these students being thought of as requiring more teaching skills. Similar findings have been discovered regarding teachers' attitudes towards students with SEN and their type of special needs in Turkey. Rakap and Kaczmarek (2010) discovered that teachers have a less negative attitude towards students with physical disabilities and mild to moderate learning difficulties. Furthermore, they noted that teachers had negative attitudes towards students with intellectual disabilities and autism, as well as those with behavioural difficulties and hearing and vision impairments.

However, the findings of the current study do not fully support the previous research of Rakap and Kaczmarek (2010). Mathematics teachers held negative attitudes towards students with learning disabilities. As one interviewee said: '*I do not agree with the inclusion of some types of SEN. First, I believe that we have to look at the types of SEN when we make a decision about students' attendance in mainstream classes. If the child can understand the lesson even a little bit and does not disturb the lesson, it is fine'*. A possible explanation for this might be that learning disabilities appears to be poorly understood among teachers. This led Kauffman et al. (2018) to emphasise the importance of increasing teachers' understanding of such children' needs in order to foster more positive attitudes and inclusive practices. Moreover, the interviewee criticized students' participation in inclusive education. The first step of this process is to determine the special educational needs of students. The findings of this study showed that the needs of a child must be identified correctly. Participants in the current study stated that the problems experienced in the identification process were caused by Counselling and Research Centres, which use old standardized tests and do not have enough information for the process of identification. In addition, teachers' suggestions were not considered in the identification process and, as a result, the needs of the students were determined incorrectly and incompletely.

In summary, teachers' attitudes towards the inclusion of students with SEN varies according to the types of SEN. While teachers have a more positive attitude towards inclusion of students with specific types of SEN that they have more knowledge of, insufficient knowledge about types of SEN is associated with a negative attitude. A possible explanation for this is that teachers who have knowledge about different types

of SEN have higher self-efficacy, which is associated with a positive attitude, as explained earlier in the theoretical framework section. Teachers held more negative attitudes towards students with mild to moderate mental disabilities and students with behavioural problems, while they had less negative attitudes towards students with mild hearing loss and mild physical and visual disabilities because they do not require a teacher with specialised training or communication skills. Lastly, criticisms in identifying students' special education needs were included in this study: teachers would like to play an active role in the identification and guidance of SEN processes but the problems that emerged in these processes turned into difficulties in the classroom. In the next section, the effect of families as a part of inclusion practices on mathematics teacher attitudes towards children with SEN is discussed.

6.2.3.4 Parents of children with SEN

Involving parents is an essential principle of any form of education – it is critical in the case of inclusive education. The current study found that families of children without SEN need to have awareness and sensitivity for children with SEN. Parents are often overprotective of their children and hence think that children with SEN should attend special schools, which is also a social expectation (Alothman, 2014). The results of the current study indicate that increased parental awareness could assist in reducing discrimination against children with special needs. However, there were cases where teachers could not raise awareness despite explaining the situation to the parents. At

this point, mathematics teachers stated that the ministry should play an active role in raising the awareness among families.

A common view among mathematics teachers was that they had problems with parents who were not aware of the importance of inclusive education and that those parents were against inclusive education for various reasons. For example, one participant commented: '*Many parents are against inclusive education, they are making a request not to provide inclusive education, they are only worrying that their children's academic success will decline'*. These results reflect those of Garrote et al. (2020) who found that parents of children without SEN expressed concerns that their child might not obtain assistance, leading to a lack of support for inclusive education.

Moreover, several reports have shown the significance and power of working with parents of students with SEN. Teachers should work in collaboration with parents to identify the needs of students and to manage the inclusion process more successfully. Interviewees indicated that parents of children with SEN must be involved in the process of inclusive education at all stages. When teachers collaborate with parents of students with SEN, they feel more willing and positive about inclusive education. On the other hand, one participant reported that inclusive education is inefficient without adequate support from parents. In addition, the majority of those who responded to statement 40 felt that they were able to communicate and collaborate with parents of students with SEN.

It is somewhat surprising that parents of children with SEN do not accept that their child has SEN; such behaviour causes difficulties in the identification and during all

inclusion processes. In contrast, parents have high expectations from teachers, even when they admit that their child has SEN, and these high expectations put the teacher under pressure. In accordance with the present results, previous studies have demonstrated that parents of students with SEN have doubts about the qualifications of teachers in mainstream schools to meet the needs of their children (Wiele, 2011). Parents are the strongest predictor of general attitudes towards inclusion; negative attitudes and behaviours of parents are reflected in teachers' attitudes towards inclusion of students with SEN (Yada & Savolainen, 2017). The negative attitudes of parents reflect negatively on teachers' attitudes and the extra stress and pressure created by families can result in the negative teachers’ attitudes towards inclusion of students with SEN.

6.3 Summary

In this chapter, the attitudes of mathematics teachers towards inclusion of students with SEN were discussed in the light of the existing literature. The findings of the current study show that mathematics teachers in Turkey have negative attitudes towards inclusion of students with SEN. To provide a deeper investigation of this negative attitude, factors affecting teacher attitudes were also discussed from three angles: teacher-related, educational environment-related, and child-related factors. It is concluded that training and experience, age, years of teaching experience, educational

environment-related and child-related factors all have an effect on mathematics teachers' attitudes towards inclusion, but gender and having a friend with SEN had no influence on these attitudes.

Chapter 7: Conclusion

The primary purpose of this study was to determine the attitudes of mathematics teachers in Turkish lower secondary schools towards the inclusion of children with special educational needs in those schools. The second aim was to investigate the effects of the factors that impact mathematics teachers' attitudes towards inclusion of students with SEN. The results were discussed in the previous chapter and are summarised below by emphasising the three categories of variables: teacher-related, environment-related, and child-related. Finally, some limitations and recommendations for future research are presented based on these findings.

7.1 Attitudes of mathematics teachers towards the inclusion of children with SEN

These findings contribute to understandings of teachers' attitudes towards inclusion in several ways. The study has shown that mathematics teachers in Turkish lower secondary schools held negative attitudes towards the inclusion of children with SEN. However, they had a positive proclivity towards inclusion, showing that they are more inclined to acknowledge the value of inclusive educational practices but believe they lack the requisite expertise and abilities to implement these practices. Mathematics teachers' negative sentiments may be explained by or related to the Turkish educational system, which appears to have evolved rapidly towards a more inclusive practice to pupils with SEN. This rapid implementation of new laws appears to have generated

some difficulties in locating competent or trained individuals wanting to work in this field. It is believed that as teachers acquire the depth of specialised knowledge required for inclusion practices, they may develop more positive attitudes toward inclusion (Avramidis & Kalyva, 2007; & and Coban, 2019; Saloviita, 2020).

7.2 Factors influence mathematics teachers' attitudes towards inclusion of students with SEN

7.2.1 Teacher-related factors

This study strengthens the idea that by participating in inclusive education-related training and professional development courses, mathematics teachers would increase their knowledge and skills concerning children with SEN and inclusive pedagogy. Rose and Doveston (2015) recognised that understanding how schools formed and reacted to national policy requires an understanding of practice-related factors. The evidence from the current study suggests that factors including classroom management, planning and preparing lessons, adapting teaching materials and experience of teaching children with SEN were seen as barriers to inclusive practices in Turkish lower secondary schools. For instance, a lack of knowledge regarding teaching strategies and techniques affects teachers' attitudes towards inclusion.

The results of the current research support the idea that teachers lack necessary knowledge about specialised teaching methods as a result of insufficient training and make little effort to fulfil the special needs of children in the mainstream classroom. The

study contributes to the idea that the current model of teacher education does not meet the requirements of the Turkish educational system, and that this inadequacy has a negative effect on inclusion practices in the classroom (Melekoglu, 2014). Taken together, these results suggest that all teachers in inclusive classrooms should receive comprehensive training in special education best practices and should receive additional support as needed. Training and professional development should be prioritised with an emphasis on individualised instruction and methods for teaching in inclusive settings. This phase has the potential to alter teachers attitudes towards inclusion of children with SEN and to impact their attitudes around this inclusion.

Moreover, this study has found that, in general, teacher education programmes were not intended to fit the requirements of schools; both pre- and in-service training courses were theoretical and lacked practical advice. For instance, interviewees expressed reservations about courses that place an emphasis on conventional teaching methods but are not explicitly linked to SEN and inclusion performance. This is what Florian (2008) refers to as 'inclusive pedagogy,' which must be complemented by a variety of teaching styles to accommodate students with a variety of SEN. The contribution of this study has been to confirm that inclusive pedagogy is critical for every teacher, as it allows for the use of effective educational practices with any student, rather than focusing exclusively on one group of students (Florian, 2008). Even though the current study confirmed that any type of training has a positive effect on mathematics teachers' attitudes towards inclusion of children with SEN, pre-service and in-service training courses for mathematics teachers should include practical knowledge to prepare them for inclusive practices.

In the current study, younger mathematics teachers had more positive attitudes towards inclusion of children with SEN, while older and more experienced teachers had negative attitudes. The evidence from this study suggests that following their initial years of experience, when inclusive education is viewed as a problem or requires additional work on the part of teachers, they are put under pressure to adapt new ways and cope with unexpected student demands in inclusive settings (Saloviita, 2020b). These findings are associated with an increase in teachers' self-efficacy following years of classroom experience. The experience of teaching students who require special education may assist teachers in developing increased confidence in their abilities to educate all students, thereby resolving any concerns that may have developed during inclusive practices (Unianu, 2012). However, this study has found that sometimes teachers are unable to resolve problems, and this unpleasant experience may result in future negative sentiments.

In contrast to earlier research conducted in Turkey, the current research showed that gender had no effect on mathematics teachers' attitudes towards inclusion of students with SEN. The quantitative analysis demonstrated no differences between female and male teachers. The study's findings are consistent with prior research that found no correlation between teachers' gender and their attitudes regarding inclusion of children with SEN (e.g., Avramidis et al., 2000; Logan & Wimer, 2013; Leonard & Smyth, 2020).

7.2.2 Environment-related factors

The findings of this research provide insights about the effect of environment-related factors on mathematics teachers' attitudes towards inclusion of children with SEN. Booth and Ainscow (2011) assert that inclusive education entails several educational and societal benefits. Overall, this study supports the idea that consistent and adequate support from school administrators, parents, and society is critical for inclusive education to succeed. Indeed, communication and collaboration with parents, other teachers, school administration, and the broader community will contribute to the sustainability and success of inclusive practices. It is necessary to raise awareness and knowledge about inclusive education and SEN so that acceptance and comprehension of inclusion and SEN could be initiated and enforced. Additionally, discussions between teachers, policymakers, professionals, organisations, and parents must be developed in order to reconsider present inclusive practise. Developing a collaborative culture requires participating in new collaborative processes that result in new values, beliefs, norms, and preferred behaviours (Waldron & McLeskey, 2010).

The current study has identified school administration as another key element that influences mathematics teachers' attitudes towards inclusion of students with SEN and their inclusion practices. Mathematics teachers' efforts towards inclusive practices evolved commensurate with the support of their school administrators. Teachers are more successful and willing when they have appropriate help from their school administration. The findings of this study suggest that mathematics teachers are more willing to accept children with SEN in their classes when they are provided with enough

and suitable administrative assistance. The current study strengthens the idea that teachers working in schools with more supportive school administration have a more optimistic attitude (Avramidis & Norwich, 2002).

Furthermore, this study explored facilities and infrastructure as another component affecting the educational environment. Mathematics teachers with larger class sizes have been found to have more negative attitudes regarding the inclusion of children with SEN. Teachers have a negative attitude towards the inclusion of students with SEN and are hesitant to implement inclusion strategies as a result of their large class sizes (Akalin et al., 2014). School management and national education directorates should introduce necessary sanctions for the implementation of this article in the law.

As stated in the literature review, within the scope of the Ministry of National Education Textbooks and Educational Tools Regulation (2022), teachers are obliged to apply the curriculum in accordance with the teacher's guidebooks. However, mathematics teachers are not provided with the necessary guides for inclusive education and information on the mathematics curriculum. In addition, there is no resource on mathematics teaching in inclusive education in Turkish literature. According to the law, teachers must only use textbooks and educational tools provided by the Ministry of National Education. The ministry should make special guidebooks and support materials for mathematics teachers to use in inclusive education.

The results of the current study have a potential influence in the identification of implications for stakeholders in the Turkish education system. Each agency involved in

affecting teachers' attitudes will be considered in light of the framework. To begin, this research emphasises the chances of children with SEN receiving equal access to education as much as their typically developed peers. As indicated earlier, for example, many schools do not have the infrastructure to meet the needs of students with SEN. As a result, children with SEN will benefit from increased accessibility and will not be excluded. Their right to be education in mainstream schools, especially those situated in rural places, cannot be denied, when only one school is close to their homes geographically. Ensuring accessibility to school will assist in initiating and motivating parents to enrol their children with SEN in school. As a result, some parents of children with special needs will no longer have to worry about finding nearby mainstream school that accept children with special needs.

School locations provide information about the schools' facilities and infrastructure. Rural schools have less appropriate facilities and infrastructure than schools in other locations (Sahin & Gurbuz, 2016). Contrary to predictions, the current study indicates that mathematics teachers in rural areas had a more favourable attitude towards their jobs than teachers in the other two regions (semi-urban and urban). The research has also shown that teachers have easier access to children in rural areas such as villages, which enhances teachers' work in inclusive education. Teachers in rural and semi-urban areas are potentially at their early stages of their careers and, as previously indicated, less experienced teachers have more positive attitudes towards students with SEN.

Moreover, the study's findings indicate that a shortage of resources is a cause for concern. Without question, schools should provide appropriate resources to support all students in achieving greater success. However, this study has identified that schools in Turkey lack adequate facilities, infrastructure, and resources. Surprisingly, mathematics teachers in areas with poor facilities, infrastructure, and resources show a more positive attitude towards the inclusion of children with SEN. Mathematics teachers are more receptive to including students with special needs into their lessons when the school has the requisite facilities and infrastructures. The evidence from this study suggests that teachers are more willing to accommodate students with special needs in their classes when provided with sufficient and adequate equipment and materials (Avramidis & Norwich, 2002). To summarise, many schools lack the infrastructure necessary to fulfil the needs of students with SEN, and the school management must reorganise school facilities and infrastructure to meet these demands.

7.2.3 Child-related factors

This research has also shown the significance of child-related factors on teachers' attitudes towards inclusion of children with SEN. Most mathematics teachers believe that most students with SEN are able to learn necessary math skills. However, most mathematics teachers reported that they lacked the skills to teach mathematics to children with SEN. For this reason, mathematics teachers express a negative attitude towards inclusion of students with SEN and recommended that students with SEN be educated in special education facilities to enhance their maths abilities. Thus, teachers'

negative attitudes toward inclusion have a detrimental effect on the academic achievement of students with SEN. However, all inclusion practises aim to foster academic accomplishment and engagement in the ordinary school setting for children with and without SEN (Schuelka et al., 2019).

Social development is one of the most significant benefits of inclusive education. Inclusion of children with SEN in inclusive settings provides a critical chance for them to establish positive relationships with their classmates and to learn social skills. The findings of the current study suggest that mathematics teachers do not fully understand the social and academic benefits of inclusive education, and this negatively affects their attitudes. Scruggs and Mastropieri (1996) claimed that a lack of understanding of the social and academic benefits of inclusive education has a detrimental effect on teachers' attitudes towards the inclusion of students with SEN. In addition, mathematics teachers indicated that when the essential classroom management skills and the classroom requirements for inclusive education are satisfied an inclusive environment conducive to the development of positive social interactions and social skills can be provided for children with SEN. In many schools, it was reported that the physical and educational material requirements for students with SEN were insufficient. More suitable classroom environments should be provided for students to improve their social and academic skills, and classroom management skills of teachers should be developed by providing in-service training.

The research has also confirmed that mathematics teachers' attitudes towards inclusion differ depending to the severity of their students' SEN. In addition,

mathematics teachers had more positive attitudes towards children with specific forms of SEN about which they were knowledgeable; conversely, a lack of information about specific types of SEN is connected with a negative attitude. In this respect, mathematics teachers' attitudes toward students with mild to moderate mental disabilities and students with behavioural problems were more negative, whereas teachers' attitudes toward students with mild hearing loss and mild physical and visual disabilities were less negative, as these students do not require specialised training or communication skills from the teacher. The current study addressed issues about the identification of students with SEN. Mathematics teachers would like to take an active part in identifying and guiding SEN processes – issues related to these processes manifested as challenges in the inclusive classroom. The scales and materials used in this process are old and not fit for purpose, and they should be replaced with new and more suitable scales and materials.

Finally, parental involvement is a fundamental element of inclusive education. The results of this investigation show that parents' negative attitudes reflect on teachers' attitudes, and the additional stress and pressure produced by families results in mathematics teachers' negative attitudes towards students with SEN inclusion. Mathematics teachers have been unable to increase awareness of parents regarding inclusive practices in certain instances despite describing the issue to parents. The Ministry of National Education should take a proactive role in increasing family understanding.

7.3 Limitations and recommendations for further study

The current research produced significant information and insights that may help to foster teachers' attitudes positively towards the inclusion of students with SEN for a successful inclusive education, however, it also had a few limitations that should be addressed when interpreting the results. There is an absence of reliable information and research papers in the field of inclusive education. As a result, while most of the information used in the literature comes from Western sources, very few studies from Turkey exist. This creates complications for academics and underscores the critical need for further study around attitudes. Additional study is required to examine teachers' attitudes towards the inclusion of students with SEN, with the goal of identifying the issues that impede the successful implementation of inclusion in Turkey and establishing the circumstances that positively affect teachers' views in this area.

International and Turkish studies that examined teachers' attitudes towards inclusion of students with SEN were deemed especially relevant resources for this research since they include primary data. Such investigations enable the comparison of teachers' attitudes towards inclusion of students with SEN to those in this research, as well as the identification of areas that need more exploration in this field. However, studies examining teacher attitudes towards inclusion of students with SEN in the existing literature, including the current study, have not been sufficiently linked to the disability literature through a discussion of ableism and discrimination. Future studies investigating teacher attitudes may refer to disability literature and teacher attitudes in more detail by providing detailed discussion about ableism and discrimination.

Another limitation of the current research is the method in which data were gathered. Although the researcher obtained data through a questionnaire and semi-structured interviews, the contextual elements for enhancing inclusive education addressed by teachers in the current research may not accurately reflect teachers' practise on the ground. The current research examined teachers' attitudes, not their actual classroom behaviour and practice. The quantitative results were partly collected with online survey due to the request of some teachers. It was impossible to regulate teachers' replies to an online survey. Additionally, the current study's results also reveal that mathematics teachers in Turkey have inadequate awareness of inclusive teaching strategies and lack expertise with the requirements of students with SEN. Case studies enable the examination and comprehension of difficult situations. According to Yin (2014), a case study is an empirical investigation that examines a contemporary phenomenon within its real-world context; when the distinction between the phenomenon and context is not immediately apparent; and when numerous sources of data are used. Thus, case studies of specific inclusive mainstream education environments may help to improve knowledge of inclusive education and to better evaluate teachers' interactions with students with SEN. However, due to the limited permission given by the Ministry for case studies, the study's scope was confined to questionnaires and interviews.

Additionally, the researcher obtained respondent perspectives through semi-structured interviews. There is always a potential that respondents may not completely express their (real) thoughts during an interview. The researcher attempted to avoid this outcome by ensuring that respondents and school locations remained anonymous.

Future studies may focus on developing more thorough research tools with a bigger sample size to allow for data generalisation.

The current research investigated mathematics teachers' attitudes towards the inclusion of students with SEN in Turkish lower secondary schools. As a consequence, the findings cannot be generalised to other subject teachers (like science, art and music) in Turkish lower secondary schools. Thus, one of the proposals for future study is to compare the attitudes of mathematics teachers towards inclusion to those of other subject teachers in Turkish lower secondary schools. The investigation of teachers' attitudes towards the inclusion of students with SEN in Turkey, as well as potential strategies for improving inclusive education practices, were drawn only from mathematics teachers. Future research examining and comparing the attitudes of all subject teachers working in lower secondary schools would be beneficial. A further study could be conducted in collaboration with other teachers and stakeholders in this field and this could contribute to a more complete understanding of the context of inclusive education in Turkey, identify possible factors influencing teachers' attitudes toward inclusion, and suggest ways to improve teachers' understanding of inclusion. Despite these limitations, the current study's results and suggestions have the validity and reliability necessary to contribute significantly to knowledge of inclusive education in Turkey.

The current study could serve as a basis or comparable data frame for future research. For example, the current study's results indicate that teachers' locations influence their attitudes towards inclusion. Thus, further study is needed to determine

whether location-related elements substantially affect teachers' attitudes and motivate them to participate in inclusive education and the assistance of children with SEN.

In addition, the current research might be expanded to consider strategies to improve inclusive practices in Turkey. Indeed, future research might examine parents' attitudes towards the inclusion of students with SEN, as well as the form and depth of the teacher-parent interaction as the current study was limited in being able to explain this interaction. This would require an examination of the interactions between parents' views of special needs, their engagement in their children's schools, and the elements in the Turkish settings that could alter the relationship between the similar factors (environment-related, teachers-related, and parents-related) discussed in the current study.

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Appendix

Appendix 1 – Interview Questions (English Translation)

Q	**QUESTIONS**	**PROMPTS**
1	What is your name?	
2	What are your existing qualifications?	
3	Where did you do your undergraduate degree?	
4	When did you start teaching mathematics?	
5	When you started teaching which ages group did you teach	
6	which ages group are you teaching now?	
7	What is your teaching purpose? (Why do you teach?)	
8	What do you think inclusive education mean?	-What does inclusive education mean to you? -How do you define inclusive education?
9	What do you think inclusive practices would involve?	-Could you give few example about what would involve your inclusive practices?
10	What does success of the inclusive practices mean?	-What does success of the inclusive practices mean to you?
11	What is your experience of having students with special needs in your class?	-Could you please indicate which type of special needs children have you taught?

12	How do you get information about students with special needs in your class?	-Where, When do you get information about students with special needs in your class?
13	How does your school organise collaboration among staff? what is the role the principal?	-What do you think the principal helped you with?
14	Can you reflect on the support you get from your school in terms of SEN?	-Could you please describe the support you receive from you principal regarding including students with disabilities?
15	What is the role of SENCO or school counsellor in your everyday educational activities?	-Do you find the special education staff support or not?, In which way? How could they be more helpful?-
16	What kind of additional support do you believe will help to improve your inclusive practices?	-Why do you think is important for inclusion to be successful? -In what ways these is most important to you?
17	How do you find about national educational policies in Turkey?	- What is the role of policy in your practice? Why would you change?
18	How do you find about inclusion in national educational policies?	- What would you change first if you had the chance to change? - reflect on the role of policy for your practice
19	How do existing national educational policies in Turkey affect inclusion practices in your classroom?	-Do you think that you have enough information about national educational policies related to inclusion practices?, -What far information about educational policies about inclusion?
20	What extent do you think you have enough facilities for student with SEN,	-Why do you think that? -How can it be improved?

	please think about resources provided in your classrooms?	- How do you think the available resources affect teacher's' understanding of the inclusion?
21	How does what is provided in your classroom help student with SEN?	-How can it be improved? -Do you think they are adequate to help student with SEN? -how student learn with the available resources. The effects on student's learning.
22	What extend have you had professional development or training since you were teaching?	-Did you find it useful? - What do you think about the role in-service training for improving inclusive practices?
23	How did your teacher training help you prepare to work with students with disabilities in your classroom?	- Could you please give some example in what ways these training prepare you to work with student with SEN? -How you transferred the pedagogy you learn in those training to your classroom?
24	How did your in service training help you to prepare working with students with disabilities in your classroom?	-In what ways these training prepare you to work with student with SEN?, -Did you find it useful?
25	Now please think about strategies you used…have there been any strategies that you found to be especially effective?	-Why do you think it was effective strategy? -Are they any other strategies you've found to be particularly effective in the classroom? -Which one do you think work?
26	Now please think about strategies you used…Have there been any	-Why do you think it was ineffective strategy?

	strategies that you found to be especially ineffective?	-Are they any other strategies you've found to be particularly effective (Or ineffective) in the classroom?
27	In what ways could your knowledge and skills be more effective in inclusion teaching?	-Why do you think they makes your teaching practices more effective?
28	What is your experience of creating Individualized education program for each student with special needs?	- How IEP implementation help to create an inclusive classroom? -Did you use any form of ready Individualized education program?
29	What is your experience of managing Individualized education program for each student with special needs?	-How are you dealing with making Individualized education program for each student with special needs with other staff? - How do you implement the program and how do you follow students' improvement?
30	In what ways were you prepared individualized education program during your training?	-Do you think your education helps you to make individualized education program?
31	Now think about your classroom, How does inclusion work in your classroom?	-What does a usual day in the classroom with inclusionlook like?
32	How do you accommodate children with special educational needs in your classes?	-How do you deal with their needs?, -How are they being engaged in class activities? - Why do you think that engaging them is significant for inclusive practices.
33	What challenges have you encountered in accommodating children with SEN in your classes?	-Which of the challenges were the most significant?

		- What kind of support can reduce the challenges? - What can be done to remove obstacles to inclusion?
34	When you think your practices, what is the most important factor you would attribute to the success of the inclusive practices?	-Why do you think this factor is the most important? -Are there any other factor you think attributing to the success of the inclusive practices?
35	When you have been able to support student with SEN in your class what has contribute to your success?	-Why?