THE USE OF ASSISTIVE TECHNOLOGY AND ITS IMPACT ON STUDENTS WITH AUTISM SPECTRUM DISORDER IN THE INCLUSIVE CLASSROOM FROM TEACHERS' PERSPECTIVES

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by

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LIST OF ABBREVIATIONS

AT	Assistive Technologies
ASD	Autism Spectrum Disorder
GT	General Teacher's
SEN-T	Special Education Needs Teacher's
AAST	Autism Attitude Scale for Teacher
SPSS	Statistical Package for the Social Sciences
SLR	Simple Linear Regression
AAC	Augmentative/Alternative Communication
UAE	United Arab Emirates
USM	University Sains Malaysia
PECS	Picture Exchange Communication System
DSM-5	Diagnostic and Statistical Manual of Mental Disorders/ Fifth Edition
PDD	Pervasive Developmental Disorders
POD	People of Determination
KAT	Knowledge ASD

LIST OF APPENDICES

PENGGUNAAN TEKNOLOGI BANTUAN DAN KESANNYA TERHADAP MURID GANGGUAN SPEKTRUM AUTISME DALAM BILIK DARJAH INKLUSIF DARIPADA PERSPEKTIF GURU

ABSTRAK

UAE sedang giat mempromosikan penggunaan teknologi moden, terutamanya untuk individu yang menghadapi cabaran istimewa. Kajian ini meneroka peranan pengetahuan, sikap, dan cabaran dalam membentuk pendapat guru tentang kesan teknologi bantu terhadap pencapaian akademik, bahasa, dan tingkah laku pelajar yang mengalami gangguan spektrum autisme (ASD) dalam bilik darjah inklusif.Kajian ini bertujuan untuk menentukan kategori gangguan spektrum autisme yang mendapat manfaat terbesar daripada teknologi bantu berteknologi tinggi, cabaran yang dihadapi guru sekolah apabila menggunakan teknologi bantu dalam bilik darjah inklusif, dan meneroka pengetahuan guru tentang gangguan spektrum autisme dan sikap mereka terhadap integrasi mereka ke dalam bilik darjah inklusif.Metodologi kajian ini bersifat eksploratori dan deskriptif, menggunakan data kuantitatif melalui soal selidik dan data kualitatif melalui temubual. Hasil kajian menunjukkan bahawa pelajar tahap pertama dalam spektrum autisme adalah yang paling mendapat manfaat daripada teknologi bantu berteknologi tinggi. Cabaran yang paling penting yang dihadapi oleh guru telah digambarkan, dan cadangan penyelesaiannya telah dicadangkan. Kajian ini juga meneroka pengetahuan guru tentang autisme, sikap mereka terhadap inklusinya, dan pengaruh pembolehubah-pembolehubah ini terhadap pendapat mereka tentang kesan teknologi bantu berteknologi tinggi terhadap pelajar dengan gangguan spektrum autisme.Secara umumnya, hasil kajian semasa sejajar dengan penyelidikan

sebelumnya, mengesahkan keperluan panduan untuk membantu guru mengkategorikan teknologi bantu bagi pelajar dengan gangguan spektrum autisme.

THE USE OF ASSISTIVE TECHNOLOGY AND ITS IMPACT ON STUDENTS WITH AUTISM SPECTRUM DISORDER IN THE INCLUSIVE CLASSROOM FROM TEACHERS' PERSPECTIVES

ABSTRACT

The UAE is actively promoting the use of modern technologies, especially for individuals facing special challenges. This study explores the role of knowledge, attitudes, and challenges in shaping teachers' opinions about the impact of assistive technologies on the academic achievement, language, and behavior of students with autism spectrum disorder (ASD) in inclusive classrooms. The study aimed to determine the categories of students with autism spectrum disorder that benefit most from high-tech assistive technologies, the challenges facing school teachers when they use assistive technologies within the inclusive classroom, and to explore teachers' knowledge about autism spectrum disorder and their attitudes toward integrating them into inclusive classrooms. The study methodology was exploratory and descriptive, and 275 teachers and 11 educational coordinators participated in the study. Quantitative data through questionnaires and qualitative data through interviews were used. The results of the study showed that first-level students on the autism spectrum benefit most from high-tech assistive technology. The most important challenges facing teachers were presented, and solutions were proposed. The study also explored teachers' knowledge about autism, their attitudes toward its inclusion, and the impact of these variables on their opinions about the impact of high-tech assistive technologies on students with autism spectrum disorder. Overall, the results of the current study are consistent with previous research, underscoring the need for design guidelines to help teachers classify assistive technologies for students with ASD. In general, the results

of the current study align with previous research, confirming the need for design guidelines to help teachers classify assistive technologies for students with autism spectrum disorder.

CHAPTER 1

INTRODUCTION

1.1 Introduction

The impact of knowledge about autism and attitudes toward the inclusion of students with autism on the use of assistive technologies is an important and multifaceted topic in the field of special and inclusive education. This topic examines how teachers' knowledge and attitudes influence their willingness and ability to integrate assistive technologies into the education of students with autism. Teachers who are well-informed about ASD and have positive attitudes toward inclusion are more likely to use assistive technologies effectively, ultimately creating more inclusive and supportive learning environments for students with autism. In addition, ongoing training and collaboration are essential components of successful inclusive education (Alanazi, 2020; Alanazi, 2019; Ibrahim & Alias, 2018; Sulaimani, 2017).

Successful inclusive classrooms benefit from a team approach in which General Teacher's and special education teachers collaborate, communicate, and share responsibilities. This partnership helps create an inclusive and supportive learning environment where all students, regardless of their abilities, can thrive academically and socially (Paulsrud & Nilholm, 2023). The general teacher focuses on delivering academic skills, considering individual differences among students. They collaborate closely with the special education teacher, who provides support through individualized plans and behavioral consultations (Kuntz & Carter, 2021).

In an inclusive school, collaboration and a team-based approach are fundamental to the success of students with autism. Special education teachers, general education teachers, and educational coordinators work together to create a supportive

and inclusive environment that promotes the academic, social, and emotional growth of all students, including those with autism (Ryndak et al., 2021).

Assistive technologies can play an important role in promoting inclusive education for students with autism spectrum disorder (ASD). These technologies can provide support and accommodation for learners with ASD, helping them to participate in learning activities and engage with their peers in the classroom. Examples of assistive technologies for learners with ASD include visual aids, such as picture schedules and communication boards, which can help to facilitate communication and support social interaction. Technology-based interventions, such as virtual reality and gamification, have also shown promise in supporting learners with ASD, providing opportunities for engagement and motivation in learning activities (Khazaleh & Abzakh, 2023).

In recent years, the integration of technology in education has opened new possibilities for personalized learning and inclusive classrooms. However, when it comes to students with autism spectrum disorder (ASD), educators encounter a unique set of challenges in effectively implementing technology. Inclusive classrooms strive to create an environment where students of all abilities can learn together, but the diverse needs of students with ASD require careful consideration (Pendy, 2023).

The autism spectrum disorder is a broad and nonspecific neurodevelopmental disorder that appears in early childhood and affects aspects of social interaction, verbal and nonverbal communication, activities, and interests. It seems that the prevalence of autism spectrum cases is increasing rapidly, and the reason may be due to social, physical, and biological factors (Brown-Beasley, 2020).

The integration of assistive technologies holds great potential for positively impacting the academic achievement, linguistic development, and behavior of students with ASD. However, it's crucial to consider the individual needs and preferences of each student and to continuously assess and adjust the use of technology to ensure its effectiveness in supporting their educational journey (Aspiranti et al., 2020).

1.2 Background of the Study

In the United Arab Emirates that focused on student with ASD because of a major rise in the number of students with the disorder and the importance of teachers' knowledge of the traits of pupils with autism and their attitudes towards including them in inclusive classrooms (Abduelkarem et al., 2019). Most of the studies that were conducted were descriptive and focused on surveying teachers' opinions. The results showed the need for teachers to develop their knowledge of autism spectrum disorder and the techniques used with students, as well as varying results regarding teachers' acceptance of students with ASD in regular schools (Khalil & Khalid, 2020).

The typical differences in knowledge and attitudes regarding autism spectrum disorder (ASD) between General Teacher’s and special education teachers effectively underscores the advantages of specialized training and daily experiences in influencing special education teachers' deeper understanding and more positive attitudes toward students with ASD and their inclusion in inclusive schools. That individual experiences and a commitment to professional growth can lead to variations in knowledge and attitudes among teachers, regardless of their roles (Ballantyne et al., 2021).

Teachers encounter primary barriers in their use of assistive technologies for students with autism spectrum disorder (ASD) in inclusive classrooms. These primary barriers encompass challenges related to resource availability, support systems, time constraints, and the need for training. Additionally, secondary barriers arise from teachers' limited skills and knowledge in this domain. Many participants reported that these barriers either diminish the utilization of assistive technology in the classroom or prevent its effective implementation. Notably, teachers tended to use high-tech more frequently than other types of assistive technology (Alasmari, 2021).

It is important to note that the effectiveness of assistive technologies for learners with ASD may depend on individual factors, such as the learner's specific needs and preferences, and should be used in conjunction with evidence-based practices and support from skilled professionals, such as special education teachers and behavior analysts. Overall, using assistive technologies in inclusive education for students with ASD has the potential to improve the learning outcomes and social participation of learners with ASD, and should be considered as part of a comprehensive and individualized approach to supporting their educational and developmental need (Khazaleh & Abzakh, 2023).

High-tech assistive technologies encompass a range of electronic and computer-based tools designed to support individuals with disabilities, including those with ASD. These technologies can include communication devices, tablet applications, computer software, and specialized hardware that aid individuals in communication, learning, social interaction, and daily activities (Chukwuemeka & Samaila, 2020)

High-tech assistive technologies, including communication devices, visual support, and computer programs, can be valuable tools for individuals with autism spectrum disorder. These techniques can support the development of communication skills, socialization, and academic achievement, especially for those who find traditional forms of communication or learning challenging (Khazaleh & Abzakh, 2023).

iPad with apps and GoTalk devices are examples of high-tech assistive technology for students with ASD. Battery-operated devices that are less complicated than high-tech devices are classified as mid-tech, such as talking pens, smart boards, talking dolls, calculators, overhead projectors, and recording devices. Examples of low-tech assistive technology consist of visual aids that don't always use electromechanical devices, such as cubes, crayons, clay, sand, and sticky notes (Gandolla et al., 2020).

Teamwork is the best solution to overcome the challenges of including students with autism in the inclusive schools, especially the challenges related to teachers' attitudes and striving to improve them and raise the teacher's level of understanding of the importance of inclusion (Alsawalem, 2019).

It is imperative to adapt teaching in inclusive classrooms to meet the needs of each student. Teachers must address the competencies of students who display cognitive, emotional, and psychomotor components (Pit-ten Cate et al., 2018; Majoko, 2019). The cognitive component presents the most significant challenge for students experiencing learning difficulties. The affective and psychomotor aspects can also be enhanced and developed based on individuality and specificity.

The Diagnostic and Statistical Manual of Mental Disorders (DSM-5) breaks down the level of support that individuals with autism spectrum disorder may need. The three support levels are: Requiring Support: Individuals at this level may have difficulties with social communication but can function with support. Requiring Substantial Support: Individuals at this level may show marked deficits in social communication and may engage in repetitive behaviors. They require significant support to operate in different environments. Requiring Very Substantial Support: Individuals at this level have severe deficits in social communication and show significant challenges in adaptive functioning (Rosen et al., 2021).

It is important to understand that these descriptions are used to determine the necessary level of support an individual with ASD may need rather than to indicate how severe the condition is. The focus is on designing interventions and supports to meet the unique needs of each person with autism spectrum disorder. If you have more specific questions or if there is a particular aspect of autism spectrum disorder you are inquiring about, please feel free to provide more details (Amoretti et al., 2021)

Students with specific educational needs are increasingly supported and helped by computer-related apps. Information and communication technologies have improved the field of assistive technology, providing several persons with disabilities with new opportunities, broader perspectives, and increased autonomy. With an ever-increasing ability to access a wide variety of data and knowledge, ICT has transformed the world into a global village and enabled the real-time sharing of written, audio, and visual information in many regions (Duran, 2022).

It's important to note that the specific technologies and interventions used can vary depending on an individual's needs and preferences, even within the same level of ASD. High-tech may be particularly beneficial for individuals with ASD Level 1 who may have fewer challenges in certain areas who have mild symptoms and higher functioning. but can still benefit from technological support, especially in areas such as communication, social skills, and organization (Shrestha & Shah, 2020).

Since the establishment of the Ministry of Education, the main objective has been to invest in human capital. The UAE has worked hard to create ideal conditions for the establishment of an Emirati school that is innovative in terms of standards, form, and content, and has a high-quality educational environment and state-of-the-art technology. Generations capable of completing their primary education with confidence was done taught in elementary schools that have experienced significant growth and modernization, both in terms of numbers and quality (Al Murshidi & Wright, 2022).

Students with special needs receive additional attention in the UAE, and they are officially referred to as 'People of Determination.' According to the Ministry of Community Development in the United Arab Emirates, as of 2018, 4,980 children receive services in government schools that meet the integration criteria. Additionally, some of these students also receive services in government centers.

1.3 Statement of the Problem

Most of the teachers have limited or inadequate knowledge and basic misconceptions about autism spectrum disorder. They also have negative attitudes toward the inclusive education of these students. On the other hand, few teachers have positive attitudes toward the integration of autistic pupils. A sufficient percentage of

teachers have different attitudes/views on autism spectrum disorder. Additionally, some teachers hold neutral attitudes toward the integration of these pupils. Furthermore, several educators perceive students with autism differently from typical students (Kofidou et al., 2017).

Studies have indicated many challenges that students with autism spectrum disorder face in inclusive classrooms, including: Lack of teachers' competence in working with student with ASD ,Problem behavior of student with ASD ,Increased sensitivity of children to their environment, Difficulties in engaging student with ASD in the classroom community and common classroom activities, Teachers' difficulties in organizing teaching/ learning in the classroom, Difficulties in collaborating with other teachers and parents and education support professionals ,Teachers lack competencies for working with student with ASD. That is determined by a lack of teachers' training in high schools for work with student with special educational needs, including student with ASD, and a lack of in-service training on how to educate student with ASD, by responding to their needs, when creating an inclusive education environment. Therefore, teachers lack both epistemic and instrumental knowledge related to inclusive education for students with ASD (Raudeliūnaitė & Steponėnienė, 2020)

Many studies have indicated challenges facing the general teacher when using assistive technologies in the inclusive classroom, including: Limited Training and Knowledge, Resource Constraints, Individualized Needs, Technical Challenges, Time Constraints, Resistance to Change, Communication and Collaboration , Assessment and Progress Monitoring , Accessibility and Equity , Privacy and Data Security (Atanga et al., 2020; Mpofu, 2023; Zilz & Pang, 2021; Başer & Arslan-Ari, 2023).

Designing effective instruction that can meet each student's issues is a challenge for the teacher particularly if there are no special teachers who can assist the general teacher in carrying out lessons in an inclusive classroom. The general teacher cannot give enough attention to students with special needs because he must pay attention to the typical student, especially if there is no assistant teacher inside the class (Rasmitadila et al., 2019).

Regarding the use of assistive technologies for students with ASD, the Ministry of Education in the United Arab Emirates seeks to provide the latest and most effective technologies to support academic, behavioral, social and communication weaknesses, but there is still no policy for assistive technologies for ASD students.

Despite the significance that schools, families, and students with ASD place on academic accomplishment, researchers have paid relatively little attention to it. Thus, it would seem to be highly necessary to investigate the factors that contribute to higher academic accomplishment (Keen et al., 2016). Academically, students with autism often perform lower than typical students (Van Der Steen et al., 2020). Academic achievement and grades in exams are of great importance to parents of students with ASD, especially since students are enrolled in general classrooms. The effect of assistive technologies on this set of pupils' academic performance must be determined. Additionally, many students find participating in core academic curriculum areas of reading, writing, math, group work, comprehension, and task management daunting (Mintz, 2013).

One of the main difficulties that hurt social interaction and components of natural development in students with autism is communication disorder (Ghanouni et al., 2019). These students' communication skills are growing, allowing them to explain

their needs using words, gestures, signs, or pictures. Studies and research have shown that most autistic youngsters analyze and process visual information more quickly than auditory information (Ashcroft et al., 2021).

Despite the requirements for autism spectrum disorder students who are eligible for general classes, most of them have difficulties in communication and language, and limited ways of communicating with them, whether in expressive or receptive language, such as request, initiative, and participation in dialogue and discussion.

Autism spectrum disorder students exhibit various behaviors both within and outside the classroom. Many of which have the potential to disrupt classes for general education seriously. Typical behaviors include yelling, clapping, hand flapping, and self-harming. Other behaviors that might be seen include rocking, mouthing items, intense staring, and focusing on objects or subjects (Reisinger et al., 2020). Sensory issues limited and repetitive interests and activities, and poor social and communication skills are symptoms of autism spectrum disorders (ASD) (American Psychiatric Association, 2013). ASD also has a high rate of emotional and behavioral problems (EBPs), which can show aggression, anxiety, hyperactivity, and disobedience (Tarver et al., 2019).

A lot of assistive technology is used to increase student with ASD learning capacities. Assistive technology, according to Mallin et al. (2015), can be used as a linguistic aid, a rehabilitation tool, and a helping tool for autistic children. Therefore, some of the deficits in ASD student can be remedied with assistive technology, social skills, communication skills, and repetitive behavioral and functional skills are all examples of repetitive skills. The researcher has seen from his own experience that,

despite their high cost, general schools in Abu Dhabi provide assistive technology to all students with SEN. However, the degree of these technologies' effects on students is unclear.

Because each student's need for services and intervention is individual, it's critical to have policy standards for the education and treatment of students with autism spectrum disorders. Such policies or government-led instructions are currently absent in the United Arab Emirates. In terms of culture, ethnicity, religion, and language, the United Arab Emirates boasts a diverse population. With the UAE's long-standing commitment to providing educational opportunities for people with disabilities, it has established a federal policy framework for special education (Bhuptani, 2017).

1.4 Research Objectives

The objective of this study is to find out the effect of assistive technologies among students with autism spectrum disorder in the United Arab Emirates Specifically, the objectives of this study are:

i) To identify the category of students with autism spectrum disorder who most benefit from the use of (High-Tech) assistive technologies in Inclusive Classrooms.

ii) To identify the challenges faced by General Teacher’s when using (High-Tech) assistive technology for the student with autism spectrum disorder in inclusive classrooms.

iii) To investigate the impact of (High-Tech) assistive technology among the students with autism spectrum disorder in the inclusive classroom in terms of:

   a) Academic Achievement.

b) language.

c) Behavior.

iv) To investigate whether the general teacher's knowledge about autism spectrum disorder influences the impact of (High-Tech) assistive technologies for students with autism spectrum disorder.

v) To investigate whether the special education teacher's knowledge about autism spectrum disorder influences the impact of (High-Tech) assistive technologies for students with autism spectrum disorder.

vi) To investigate whether the General Teacher's' attitudes towards the inclusion of students with autism spectrum disorder influence the impact (High-Tech) assistive technologies for students with autism spectrum disorder.

vii) To investigate whether the special education teachers' attitudes towards the inclusion of students with autism spectrum disorder influence the impact (High-Tech) assistive technologies for students with autism spectrum disorder.

viii) To design a guideline named "Assistive Technologies Classification Guideline for Students with Autism Spectrum Disorder" designed for teachers' in the inclusive classroom.

1.5 Research Question

The research questions are raised based on the research objectives of the present study as follows:

i) What category of students with autism spectrum disorder most benefit from the use of (High-Tech) assistive technologies?

ii) What challenges do face General Teacher's when using (high-level) assistive technology with autism spectrum disorder students in inclusive programs?

iii) Is there impact of (High-Tech) assistive technology among the students with autism spectrum disorder in the inclusive classroom in terms of:

a) Academic Achievement.

b) Language.

c) Behavior.

iv) Does the general teacher's knowledge of the autism spectrum disorder influence the impact (High-Tech) assistive technologies for students with autism spectrum disorder?

v) Does the special education teacher's knowledge of the autism spectrum disorder influence the impact (High-Tech) assistive technologies for students with autism spectrum disorder?

vi) Do the general teacher's attitudes toward inclusion influence the impact (High-Tech) assistive technologies for students with autism spectrum disorder?

vii) Do the special education teacher's attitudes toward inclusion influence the impact (High-Tech) assistive technologies for the student with autism spectrum disorder?

1.6 Significance of the Study

Several studies have found that most autistic people have a natural affinity for technology and a good disposition for using technology and learning on computers. This is because the environment and context provided by these experiences are

predictable and structured, allowing autistic people to maintain their routines and repetitive behaviors while remaining comfortable (Wojciechowski & Al-Musawi, 2017).

Assistive technology plays an important role in assisting people with disabilities to function more effectively in society. Assistive technology is becoming an indispensable tool in education, and it has been linked to higher academic achievement for students with disabilities. Advancing and integrating assistive technology in higher education settings allows students with disabilities to practice independence and social participation alongside their peers, free of disability discrimination (MacLachlan et al., 2018).

By including persons with disabilities in regular activities like work, sports, and education, the United Arab Emirates makes enormous efforts to promote social inclusion. Due to the National Policy in Empowering People of Determination and Federal Law No. 29 of the Year 2006 on the Rights of People with Special Needs being implemented, the UAE adopted best global practices and solutions in this field through the standards of services offered, initiatives, and technology (Alsoori Alzaabi, 2020).

Theoretically, this research holds significance because it sheds light on teachers' opinions regarding the impact of assistive technologies on the successful inclusion of students with autism in inclusive classrooms. Despite the abundance of scientific research on the influence of assistive technologies in integrating students with ASD into regular education in Western societies, there is a scarcity of research and studies in Arab societies. Therefore, much research needs to be conducted on the same subject. This study is among the first to address the issue of levels of autism spectrum disorder and appropriate assistive technologies for each level.

Moreover, this research may provide theoretical support for previous literature related to teachers' knowledge about ASD. An important theoretical aim of the research is to investigate teachers' attitudes toward including ASD students in inclusive classrooms. Additionally, the study delves into the most significant challenges that teachers face when using assistive technologies with students with autism. This aspect provides crucial theoretical support for similar studies on the same subject.

Practically This study aims to provide an official reference that supports decision-makers in the Ministry of Education in the United Arab Emirates to continue funding contracts for the purchase of assistive technologies for students with autism spectrum disorder in inclusive classrooms. This is especially crucial given the high cost of these technologies, which include devices equipped with advanced applications.

Based on a review of the study's results related to teachers' knowledge of autism and their attitudes toward integrating students with autism into inclusive classrooms, it is expected that the recommendations from this research will contribute to updating teachers' professional development plans.

Furthermore, considering the results of studies related to the challenges faced by government teachers when using assistive technologies for students with autism spectrum disorder in inclusive classrooms, it is anticipated that the recommendations of this research will contribute to making decisions in the educational environment aimed at reducing these challenges.

Lastly, this study aims to design a guideline titled 'Assistive Technology Classification Guide for Students with Autism Spectrum Disorder,' specifically created for teachers in inclusive classrooms.

1.7 Limitations of the Study

The first limitation of this research concerns the study population, which comprises educational coordinators in public schools within the city of Abu Dhabi, United Arab Emirates, as well as regular teachers in inclusive classes. Specifically, this includes teachers responsible for teaching basic subjects, with the exclusion of activity teachers and special education teachers. The second limitation of this research pertains to the target group of students under study, specifically students with autism spectrum disorder (ASD) at the first level of support, as they constitute the majority within inclusive classrooms. The third limitation of this research relates to the assistive technologies targeted for study, which are High - Tech.

The fourth limitation of this research concerns the data collection methods utilized, which involve a mixed-method approach encompassing both qualitative data collection through interviews and quantitative data collection via questionnaires. The fifth limitation of this research is associated with the data analysis methods employed. The research relies on the simple linear regression method to predict the impact of the independent variable on the dependent variable and to derive the regression equation for each research objective separately. To note, this study does not compare the knowledge or attitudes of the general teacher to the special education teacher because the previous study showed the advantage of the special education teacher. The study demonstrates the role of knowledge and attitudes in decision-making.

1.8 Definitions of Terms

1.8.1 Assistive Technology

Conceptual definition: Devices, equipment, instruments, and software, specifically designed or generally available for use by individuals with disabilities. These products serve various purposes such as enhancing participation, providing protection, offering support, facilitating training, measuring performance, or substituting for both functions and structures. They also play a role in preventing impairments, addressing activity limitations, and reducing participation restrictions" (Syriopoulou-Delli, 2022).

Operational definition**:** The assistive technologies in this research encompass all High-Tech tools, devices, and equipment designed to support students with autism spectrum disorder in inclusive classrooms that rely on electrical power. These technologies include devices such as iPads, laptops, and augmentative and alternative communication devices**.**

1.8.2 Autism Spectrum Disorder

Autism Spectrum Disorder (ASD) is a term used to describe a group of developmental disorders characterized by persistent challenges in social communication and social interaction across diverse settings, as defined by the National Institutes of Health (2018). Early childhood symptoms typically include repetitive behaviors and resistance to changes in established routines, often manifesting within the first two years of life. These symptoms can necessitate support for daily functioning. The term "spectrum" denotes the broad array of symptoms, behaviors, and varying degrees of disability experienced by individuals with ASD.

Operational Definition: For this study, individuals classified as students with autism spectrum disorder (ASD) are those who have obtained an official diagnosis from accredited authorities in the United Arab Emirates. Moreover, they must hold a disability card designating them as autistic students. Furthermore, these students have been incorporated into inclusive classrooms, specifically targeting those generally situated within the initial level of the autism spectrum disorder (Requiring Support).

1.8.3 Knowledge

Conceptual Definition: Knowledge is a cognitive state characterized by the awareness, understanding, and familiarity with facts, information, concepts, and skills acquired through learning, experience, and the processing of data. It represents a mental repository of information that enables individuals to interpret, apply, and adapt their understanding to various contexts and problem-solving situations (Zagzebski, 2017; Chen et al., 2020).

Operational Definition: in this research, The Autism Knowledge Scale was done used to assess the level of accurate information possessed by teachers in public schools, particularly those in inclusive classes, regarding students with autism spectrum disorder (ASD).

1.8.4 Attitude

Conceptual Definition: The meaning of ‘attitude’ involves the way people think, behave, or feel or their opinions about some issue or situation (Oxford Advanced Learner’s Dictionary, 2015). The study’s focus was on teachers’ attitudes toward teaching students with autism spectrum disorder in their classrooms because the attitudes of the individuals involved in implementing and planning inclusive

education programs are important to their success (Stafford & Green, 1996; Al-Saleh, 2019).

Operational Definition**:** In this research, attitudes refer to the beliefs and behaviors exhibited by teachers in inclusive classes within public schools. These attitudes serve as indicators of their acceptance or rejection of the concept of including students with autism spectrum disorder (ASD) in inclusive classrooms. By applying a scale of attitudes towards including students with autism spectrum disorder on the research sample.

1.8.5 Academic Achievement

Conceptual Definition: Academic achievement refers to the performance outcomes that indicate the degree to which an individual has successfully attained specific objectives that were the primary focus of activities within educational settings, notably in schools, colleges, and universities. Educational systems often establish cognitive objectives that either encompass a broad range of subject areas (e.g., critical thinking) or encompass the acquisition of knowledge and comprehension within a particular intellectual domain (e.g., numeracy, literacy, science, history) (Howard et al., 2020).

Operational Definition: In this research, academic achievement is defined as the grades earned by students with autism spectrum disorder (ASD) based on their performance in examinations and tasks that adhere to the standards set by the Ministry of Education. These assessments cover academic subjects such as languages, reading, writing, and mathematics, and are conducted in inclusive classroom settings.

1.8.6 Language Skills

Conceptual Definition: Language is the expression of ideas using speech sounds combined into words. Words are combined into sentences, and this combination answers that of ideas into thoughts (Crystal & Robins, 2022) formulated the following definition: A language is a system of arbitrary vocal symbols using which a social group cooperates (Budiyono et al., 2021).

Operational Definition: In the context of this study, the term "language" refers to the ability of a student with autism spectrum disorder (ASD) to employ expressive language, encompassing activities such as making requests and utilizing vocabulary. Additionally, it encompasses receptive language, involving the understanding and following of instructions, particularly within inclusive classroom settings.

1.8.7 Behaviors

Conceptual Definition: The behaviors are the Actions, activities, or processes which can be observed and measured. Often, these actions, activities, and processes are initiated in response to stimuli that are either internal or external (Bonta & Andrews, 2016). The term 'behaviors' refers to the observable actions, responses, and conduct exhibited by individuals in various situations. These actions encompass a wide range of physical, verbal, and non-verbal activities that reflect an individual's thoughts, emotions, intentions, and reactions (Martin & Pear, 2019).

Operational Definition: In this research, 'behaviors' encompass all the activities and actions exhibited by students with autism spectrum disorder (ASD) within inclusive classroom environments. These behaviors are directly associated with

the successful integration of the ASD student with their typical peers. Those behaviors include group play behavior, attention, and shyness.

1.8.8 The Educational Coordinator

Conceptual Definition: The educational coordinator is an individual who orchestrates student fieldwork placements, bridging academia. The educational coordinator also navigates the world of curricular design and ensures that internships reflect the scope, sequence, and culture of the professional program (Gregersen-Hermans & Lauridsen, 2021). Additionally, educational coordinators are responsible for preparing students for the fieldwork environment, mentoring fieldwork educators for educator roles, and providing ongoing support for students and fieldwork (Stutz-Tanenbaum et al., 2016).

Operational Definition: In this research, the educational coordinator is a teacher who assumes this role upon meeting the necessary academic qualifications and gaining relevant experience. Their primary responsibility is to provide academic leadership within the school. This includes tasks such as coordinating ongoing curriculum reviews, managing schedules for teaching equipment and student materials, organizing professional development activities, and overseeing class scheduling and distribution. The educational coordinator also maintains oversight of students 'needs, conducts weekly meetings with teachers, and periodically visits classrooms to ensure effective implementation of educational strategies.

1.8.9 The General Teacher's

Conceptual Definition: A general teacher is an educator responsible for teaching students in mainstream or regular education classrooms. Their role involves providing instruction to a diverse group of students, including those with varying

abilities and needs. General Teacher's often covers a broad range of subjects and topics within the standard curriculum. They create lesson plans, deliver instruction, assess student progress, and provide support and guidance to foster students' academic, social, and emotional development. General Teacher's may collaborate with special education teachers, specialists, and other professionals to address the unique needs of individual students and promote an inclusive learning environment. They play a fundamental role in the foundational education of students and are essential to the overall educational system (Imara & Altinay 2021; Seikkula-Leino, 2018).

Operational Definition: The general teacher in this research is the teacher who teaches typical students the basic subjects in the inclusive classrooms in Abu Dhabi city.

1.8.10 A Special Education Teacher's

Conceptual Definition: A special education teacher is an educator with specialized training and expertise in teaching and supporting students with disabilities or exceptional needs. Their primary role is to provide individualized instruction and tailored support to students who require special education services. Special education teachers work closely with students, parents, and a multidisciplinary team to develop and implement Individualized Education Programs (IEPs) that address the unique learning needs of each student. They adapt instructional strategies, materials, and assessments to accommodate diverse learning styles and abilities. Special education teachers also foster an inclusive and supportive classroom environment to promote the academic, social, and emotional growth of their students with disabilities. Their goal is to facilitate meaningful and successful learning experiences for students with special

needs, helping them reach their full potential and achieve educational outcomes. (Al-Zboon, 2022).

Operational Definition: Within the scope of this study, a special education teacher is identified as an educator possessing a valid license to practice in the specialized field of special education. Their principal responsibilities include delivering training, instruction, and rehabilitation services tailored to students with disabilities. These educators operate within resource rooms situated in inclusive schools, where they furnish specialized support to address the educational requirements of students with disabilities.

1.8.11 Guideline

A guideline is a structured and authoritative document or set of recommendations that provide specific instructions, advice, or best practices to assist individuals or organizations in making informed decisions, performing tasks, or achieving goals within a particular context. Guidelines typically offer clear and systematic guidance, often based on expert knowledge or established standards, to help users navigate complex processes, address challenges, or adhere to specific criteria and standards. They serve as valuable tools for promoting consistency, efficiency, and quality in various fields, from healthcare and education to industry and governance (Rezaeian,2020)

Operational Definition: In this research, the guideline is a booklet that serves as a comprehensive resource. It includes general information about autism spectrum disorder (ASD), outlines the characteristics of students falling within this category, and provides pictorial instructions for categorizing assistive technologies for students with ASD in inclusive classrooms. The primary purpose of this guideline is to facilitate

the appropriate selection and use of assistive technologies for the benefit of these students.

1.9 Summary

In this chapter, the researcher presented a general introduction to the study and the scientific background of the study, and a statement of the problem from all its sides related to politics and legislation, as well as to the general teacher, the special education teacher, and the educational coordinator, and their attitudes towards including autism students in the regular classrooms, as well as their knowledge of autism spectrum disorder and the challenges facing the general teacher when using assistive technologies. As well as the main purposes of this study.

The chapter also included the eight main research objectives, the seven main research questions, the importance of the study from a theoretical and practical point of view, and its limitations. Moreover, a special framework has been designed for this existing study, and many operational definitions related to this study have been clarified in addition to the approved operational definitions.