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Factors to Consider for Effective Implementation of AAC With Students With Autism: Saudi special education teachers' perspectives

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Factors to Consider for Effective Implementation of AAC With Students With Autism:

Saudi Special Education Teachers' Perspectives

by

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DEDICATION

This dissertation is dedicated to my dear parents, my beloved wife, and my brothers who were the first support for me in achieving what I have reached today. I am forever grateful for the love and support of my family, who made it possible for me to receive this degree.

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ABSTRACT

This qualitative study aimed to explore the perceptions of Saudi special education teachers regarding teaching minimally verbal students with autism spectrum disorder (ASD) and factors facilitating the use of Augmentative and Alternative Communication (AAC) system in their classroom. Semi-structured interviews were conducted with five Saudi special education teachers. Teachers were from three schools at the General Directorate of Education in Unaizah, Saudi Arabia. The findings were analyzed by using thematic analysis. Findings revealed that Saudi special education teachers faced many challenges when teaching students with ASD who have minimal verbal abilities which includes expression difficulties, challenging behavior, and teacher-related challenges. Also, findings revealed that although teachers, generally, have positive attitudes toward using AAC to enhance communication skills for students with autism, they reported no or limited implementation of ACC with students with ASD. For a successful implementation of AAC, findings revealed that five of Ely's eight conditions were perceived to have a great influence on facilitating the implementation of such an intervention which includes knowledge and skills, resources, participation, commitment, and leadership. These findings were discussed in the light of international literature and the local context. The findings may help in increasing Saudi schools' readiness for effective implementation of AAC systems with students with ASD by addressing these factors.

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CHAPTER ONE: INTRODUCTION

The number of children diagnosed with autism spectrum disorder (ASD) has been growing dramatically during the past 15 years, which has increased the concern from researchers, parents, physicians, and educational specialists. Autism spectrum disorder is considered one of the most common developmental disabilities in humans (Srivastava & Schwartz, 2014). In the United States (U.S.), 1 out of 44 children have been diagnosed with ASD, and the prevalence of ASD is more among boys than girls by 4 times according to the Centers for Disease Control and Prevention (Centers for Disease Control and Prevention [CDC], 2022). In Saudi Arabia, although the rate of the ASD incident is lacking accurate and updated information, Aljarallah et al. (2007) indicated that the prevalence of ASD is one per 167.

Social communication impairments are one of the symptoms exhibited by all individuals with ASD (Pratt et al., 2017). The first dimension of diagnosing ASD are deficits in social communication and social interaction (The American Psychological Association [APA], 2013). The APA indicates that individuals with ASD have impairments in social-emotional reciprocity which includes but are not limited to sharing interest, initiating conversation, or understanding emotions (2013). Also, speech and language disorders are considered common symptoms among children with ASD. These disorders could affect the receptive and expressive language of those children which means limitations in language comprehension and in the ability to express their feelings, thoughts, and needs. It is estimated that 30% of students with ASD have minimal or no communication skills (Pratt et al., 2017). In Saudi Arabia, Al Salehi et al. (2009) stated that lack or absence of communication skills is considered the most remarkable problem they found when teaching students with ASD.

Thus, children with ASD become frustrated in their attempts to communicate their feelings, thoughts, and needs with others because of the absence or limitation in their communication skills, which may cause them to act out their frustrations through inappropriate behaviors ("ASD: Communication Problems," n.d.). Park et al., (2012) found that impairments in social-communication skills may cause a limitation in adaptive behavior skills, social skills, and daily living skills. Additionally, the CDC (2020) has revealed that ASD can be a reason for significant social, communication, and behavioral challenges. Clark (2013) suggests the critical need for effective interventions to improve the functional communication skills of minimally verbal students with ASD so that they will be able to express their needs.

Accordingly, Augmentative and Alternative Communication (AAC) technique is an evidence-based practice that has been proved to be an effective intervention in facilitating communication for students with ASD (Odom et al., 2010; Hume et al., 2021). AAC has been around for more than 30 years and was developed to facilitate communication for students with no or limited verbal communication skills during academic and social activities (Wilkinson & Hennig, 2007). An AAC system is a set of tools range from unaided (e.g., gestures, manual signs) to aided tools (e.g., pictures, visual-graphic symbols) used to promote communication (ASHA, n.d.). The implementation of AAC has shown a positive impact in improving academic, communication, and social skills of students with complex communication needs (Chung & Douglas, 2014; King & Fahsl, 2012; Light & McNaughton, 2012).

In 2000, the Saudi government enacted a law ensuring that all students, including those with disabilities, would have equal access to a free and appropriate education (Alquraini, 2010). For many of these students, assistive technology (AT), which includes augmentative and

alternative communication, should be taken into consideration in order to give them access to a free and suitable education (Hauser & Malouf, 1996).

Statement of Problem

Due to the dramatic increase in the prevalence of children diagnosed with ASD in the past 15 years, Saudi special education teachers are expected to work with increased numbers of students who are in need of communication interventions, and teachers and schools face multiple challenges as they work to meet these students' needs. In Saudi Arabia, AlSalehi et al. (2009) assert that the lack or absence of communication skills among students with ASD is the most notable challenge Saudi teachers encountered when teaching students with ASD. There are many challenges that special education teachers encounter when trying to deal with communication and behavioral problems of students with ASD in their classrooms. Challenges might include but not limited to inadequate pre-service training (Calculator, 2009; Costigan & Light, 2010), lack of their abilities to use complicated instruction when teaching students with ASD (Ruble et al., 2010), and limited resources provided by their school district (Dingler & Mandell, 2011).

Globally, access to schools and specialist centers with the resources to implement best practice for students with ASD could be extremely patchy (Clark et al., 2019; Roberts & Simpson, 2016). The disparity is most pronounced in developing and improving countries (Elsabbagh et al. 2012; Tekola et al., 2016). In Saudi Arabia, many authors have voiced concerns about the overall quality of special education services offered to students with ASD. For instance, Albuqami (2020) said that Saudi public schools are not ready to provide services to individuals with ASD. Also, Al-Otaibi and Al-Sartawi (2009) claimed that public special education centers and institutions in Saudi Arabia provided unacceptable special education and related services to students with disabilities.

AAC has the potential to enhance social-communication skills and reduce undesired behaviors of children with autism. However, AAC is most likely not available at all in Saudi Arabian schools or fails to deliver the intended results because of shortcomings in the implementation process. In Alghamdi's (2021) study, most of the participants who were teachers of students with ASD indicated that they do not use AAC intervention due to lack of knowledge, and one of them claimed that most of the teachers have the same issue as well. Mukhopadhyay and Nwaogu (2009) stated that special education teachers feel less confident when using AAC due to limited knowledge and skills.

As a result of limited appropriate services available to students with ASD in the Saudi Arabian public school system, some students with ASD receive communication intervention and other services from private institutions as a result of the limited services available to them in the public school system (Zahrani, 2013). However, good private institutions are not available in all cities across the country. Almasoud (2010) indicated that in big cities such as Riyadh and Jeddah, there are just a few institutes that specialize in autism and have the resources and personnel who can address the demands of these pupils. Also, some students and their families even need to travel abroad, mainly Jordan, to receive appropriate interventions. It is estimated that the number of students with ASD in Jordan's centers has reached more than 800 (AlMugren, 2017).

Although the number of ASD students in public schools in Saudi Arabia is growing and schools face challenges as they work to meet these students' needs, there is a lack of research assessing school readiness to fully address autistic students' needs, especially communication needs. Alqahtani et al. (2021) suggested that further study on the quality of special education services and the implementation of recognized evidence-based teaching strategies with students

with disabilities is necessary. Also, there is a need for comprehensive information around AT, particularly the practice of AAC by Saudi special education teachers (Al Faraj & Kuyini, 2014; Subihi, 2014). In the reviewed literature, there is a lack of studies that investigate special education teachers' perspectives of teaching minimally verbal students with ASD and factors supporting the successful integration of AAC intervention in public schools. Thus, the absence of such research is a major gap in the knowledge base for understanding what schools need to effectively implement AAC with autistic students.

Special education teachers are considered as the main communication partners for students who are receiving AAC due to their teaching roles and time spent with those students. According to Bailey et al. (2006), special education instructors and speech-language pathologists (SPL) are the ones who directly experience obstacles to AAC usage and are best qualified to identify facilitators of AAC implementation. Therefore, in order to improve AAC implementation in special education classrooms and schools, Bailey et al. (2006) mentioned that it's very important to understand special educators' perceptions of facilitators and barriers of such an intervention. Additionally, Ruppar et al. (2016) found that teachers' perceptions of their ability to implement AAC are influenced by their educational level, teaching license, and professional experience. For these reasons, teachers' perceptions about factors facilitating successful implementation of AAC are crucial for understanding how such practices can be improved in Saudi public schools.

Purpose of the Study

The purpose of this study is to explore the perceptions of Saudi special education teachers regarding teaching minimally verbal students with ASD and factors facilitating the use of AAC systems in their classroom. The qualitative inquiry will generate an understanding of special

education teachers' experience and how they perceive factors that can facilitate AAC implementation. Patton (2002) argued, “Qualitative methods facilitate study of issues in depth and detail” (p. 14), which is crucial for identifying individual perceptions.

This study focused on Saudi Arabian special education teachers and will be guided by the following questions:

1. What challenges do special education teachers perceive of teaching minimally verbal students with ASD generally?
2. What are special education teachers’ perceptions related to using AAC as an evidence-based practice to facilitate commination among students with ASD?
3. Which of Ely’s factors do Saudi special education teachers believe they need for successful implementation of AAC in their classrooms?

Significance of the Study

The findings of this study will add to the current body of knowledge about current practices for minimally verbal students with ASD as well as factors that could enhance the implementation of AAC in Saudi Arabia. The findings of this study might provide teachers, decision-makers, teacher educators, and researchers with better understanding of challenges teachers face when teaching minimally verbal students with ASD and factors facilitating AAC's successful implementation. Also, policy makers, initial teacher training programs, and professional development providers can make informed decision on how to improve the implementation of AAC in Saudi public schools and the nation’s special education system in general with such information.

Theoretical Framework

To understand the perceptions of special education teachers implementation of AAC with students with ASD, there is a high need for a research philosophy that provide deeper understanding of teachers' experiences and perspectives because it provides for the researcher with detailed information regarding the tested issues. According to Schwandt (1994), interpretivists argue that lived experience can be understood through the opinions of those who experience it. Meanings are, therefore, derived according to the experiences of those who live it. Also, Lichtman (2013) described interpretivism as "a doctrine that emphasizes analyzing meanings people confer on their own actions" (p. 24). Therefore, individuals experience and perceptions can provide researchers with better understanding of issues being studied.

Also, Ely's (1978) conditions for change theory is used as a theoretical framework to understand teachers ' perceptions of various conditions that can impact the successful implementation of AAC. Ely (1990) defined these conditions as a baseline for facilitating the implementation of innovations in a variety of contexts in education. The conditions are as follows: (a) dissatisfaction with status quo, (b) knowledge and skills, (c) time, (d) resources, (e) rewards or incentives, (f) participation, (g) commitment, and (h) leadership.

Surry et al. (2009) said that innovation in K-12 schools is most often studied by using Ely's theory. In addition, they mentioned that those conditions can be used to determine the optimal adoption conditions before, during, and after new technologies are implemented (Surry et al., 2009). My study explores the perceptions of Saudi special education teachers regarding teaching minimally verbal students with ASD and factors affecting the use of AAC system in their classroom. Thus, the purpose of using Ely's eight conditions in this study is to use them as a

framework for examining factors and researching additional elements to facilitate the implementation of AAC.

Definition of Terms

Autism Spectrum Disorder (ASD)

The Individuals with Disabilities Education Act 2004 (IDEA; 2004) describes ASD as a developmental disability significantly affecting verbal and nonverbal communication and social interaction, generally evident before age three, that adversely affects a child's educational performance. Other characteristics often associated with autism are engagement in repetitive activities and stereotyped movements, resistance to environmental change or change in daily routines, and unusual responses to sensory experiences.

Minimally Verbal Students

Although the term "minimally verbal" has undergone some change over the years, it generally includes (a) individuals who have very limited expressive language, using just a few words or fixed phrases (e.g., want water), or (b) those who have no spoken language at all, known as non-verbal individuals (Tager-Flusberg & Kasari, 2013).

Assistive Technology (AT)

According to IDEA of 2004 an AT device is defined as "any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities". It should be noted, however, that there is an exclusion stating that "the term assistive technology device does not include a medical device that is surgically implanted, or the replacement of such device"(Dell et al., 2008, p. 4-9).

Augmentative and Alternative Communication (AAC)

The American Speech-Language-Hearing Association (ASHA) has defined AAC as follows: “AAC describes multiple ways to communicate that can supplement or compensate (either temporarily or permanently) for the impairment and disability patterns of individuals with severe expressive communication disorders” (ASHA, n.d.).

Reflection

When I was studying for my master's degree in 2015 in the United States, I visited many schools that have special education self-contained classrooms. Students with disabilities were provided with appropriate special education and related services to meet the different needs of students with disabilities. In particular, I noticed that there are alternative methods of communication used by teachers with students who have limited verbal abilities. Teachers use a variety of AAC systems with minimally verbal students to communicate their needs and feelings. Teachers were required under the law to document students’ skills and needs and consider appropriate interventions to meet those needs.

After coming back from the states, I worked as lecturer at a university, and was a supervisor for practicum courses for undergraduate special education teacher candidates who were majoring in intellectual disabilities and autism. The field-based practice is offered only in the last semester of the program, before graduation, and lasts for one full semester. I have visited many schools in both self-contained classrooms and separate special education schools. I noticed that neither the student teachers nor special education teachers use any intervention for minimally verbal students, especially those with Autism. It was obvious to me that those teachers were not prepared to use AAC, or not even exposed to any pre- or in-service training of such intervention. Teachers were only monitoring them to make sure they do not harm themselves or

their peers. When I saw these students struggling to communicate their needs, I felt obligated to improve the performance of teachers to meet the divers and unique needs of students with ASD. By this work, I wanted to contribute to the body of knowledge on how to develop the nation's special education system to better address the diverse and unique needs of students with ASD and overall special education services provided to students with disabilities. This study was sparked by my experiences with students with ASD which motivated me to do this study.

CHAPTER TWO: LITERATURE REVIEW

This chapter consists of a review of ASD, its prevalence in the United States and other countries in the world, their unique characteristics, and brief history of ASD. Also, it provides a review about the AAC intervention and its effectiveness with minimally verbal students with ASD. In addition, the literature on Saudi special education teachers' perception of utilizing AAC in their classroom and current practice were reviewed and analyzed.

Autism Spectrum Disorder

Since its first recognition, the definition, prevalence rate, and diagnostic criteria for autism have changed radically, and will most likely continue to change in the future. The American Psychiatric Association (2013) defines ASD as a neurodevelopment disorder that is "characterized by persistent deficits in social communication and social interaction across multiple contexts, including deficits in social reciprocity, nonverbal communicative behaviors used for social interaction, and skills in developing, maintaining, and understanding relationships" (p. 31). In addition, IDEA (2004) defines Autism as:

> A developmental disability significantly affecting verbal and nonverbal communication and social interaction, generally evident before age three, that adversely affects a child's educational performance. Other characteristics often associated with autism are engagement in repetitive activities and stereotyped movements, resistance to environmental change or change in daily routines, and unusual responses to sensory experiences.

The number of those diagnosed with ASD has dramatically increased in the past 15 years. Currently, ASD is considered one of the most common developmental disabilities in humans (Srivastava & Schwartz, 2014). According to CDC (2020), in the United States, 1 out of 54 children have been diagnosed with ASD, and the prevalence of ASD is more among boys than girls by 4 times. Based on reports from Canada's First National Autism Surveillance System, ASD prevalence is one per 65 children aged five to seventeen in 2015 (Ofner et al., 2018).

In the last revision, the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; APA, 2013) revealed certain criteria that must be present when diagnosing ASD. The first criterion is deficits in social communication and social interaction that appear in social-emotional reciprocity, nonverbal communication social interaction, and the ability to make, maintain, and understand social relationships. The second criterion is about exhibiting restricted repetitive stereotype of behavior, interests, or activities which demonstrate by two or more of the following: repetitive movements or unusual behaviors, preoccupation with parts of objects, thrive on routine, and sensory sensitivity issues. These criteria must currently manifest in the child or had been present in the past. These symptoms must be present in the early developmental stage of life and must cause limitations to the child's daily social interaction (APA, 2013).

Related Diagnostic Concepts

It was widely believed that psychological factors caused autism in the 1940s and 1960s. Professionals commonly held the view that poor parent-child relationship was linked to the emergence of autism (National Autism Center [NAC], n.d.). Bettleheim (1967) used the term "refrigerator mothers" to indicate that children's functioning deficits were strongly tied to weak attachment and/or absentee parents. Moreover, this view was not only widespread in America

and England, but it is also found in many other countries. In South Korea, Park (2002) mentioned that students with ASD used to be diagnosed with reactive attachment disorder which is referred to as ‘‘lack of love.” In Saudi Arabia, some people still hold the same concept, and others believe that ASD is a result of the lack of social interaction.

There have been many changes over the last 60 years. Currently, there is growing evidence that autism is caused mostly by a combination of genetics and environmental factors (NAC, n.d.). However, there has been controversy surrounding research investigating biological and physical bases for autism. On their study, Wakefield et al. (1998), concluded that ASD is caused by that the Measles, Mumps and Rubella (MMR) vaccine. Since 2003, nine studies funded or conducted by the CDC have concluded that there is no association between thimerosal-containing vaccinations and ASD. The MMR vaccine was likewise found to have no connection to ASD in children in these trials (CDC, 2021).

History of ASD

A historical perspective on autism is necessary to understand how we have arrived at our current understanding, definition, diagnosis, and possible causes of ASD. Apparently, ASD has been present in humans for a long time. Many cases have displayed some autism similar characteristics in the 1700s and 1800s (Wolff, 2004). However, two names have been connected to the emergence of autism as a unique diagnostic category; Leo Kanner, an American psychiatrist, and Hans Asperger, an Austrian pediatrician (Muratori et al., 2021). In 1943, Kanner observed a group of students previously thought to have intellectual disabilities. He noticed a pattern of similar behaviors and characteristics among those children which included difficulty in social interaction, delay of speech, repetitive behaviors, difficulty with transitions, and loss of previously acquired skills. Kanner indicated that the children have little need for

interaction with others, and they were self-satisfied. Accordingly, he used the term “infantile autism” to describe their behavior (Volkmar et al., 1994).

During the same period Kanner was studying his group, Asperger was studying another group of children (Wing & Gould, 1979). Those children seemed to have mild form of autism. He described them as having normal intellectual abilities and speech and language skills. However, they had problems in social interactions and obsessive interests and motor skills (Asperger & Frith, 1991). Unfortunately, Asperger's work was not well known in English-speaking countries, and was re-introduced three decades later by Wing (1981). His work has expanded our understanding of ASD (NAC, n.d.).

Nevertheless, the lack of information available at that time led to misidentifying them with intellectual disabilities as well as delaying their official identification as a unique category. Bettelheim (1967) said that ASD was not distinguished from mental retardation, and institutionalization was recommended as the best option for families. Also, Wolff (2004) indicated that in the UK, most developmental disorders were considered to be under the category of intellectual disabilities, implying a bleak prognosis and eventual institutionalization.

Autism was initially classified as a form of childhood schizophrenia on the Diagnostic and Statistical Manual of Mental Disorders (DSM-I), produced by (APA, 1952). After that, in the U.K., a series of studies (Kolvin 1971; Rutter 1972) revealed that autism is a unique condition that differs from childhood schizophrenia in terms of onset, clinical symptoms, and family history. Thus, in 1980, autism was separated from childhood schizophrenia and officially labeled as “infantile autism” in the DSM-III (APA, 1980).

In addition, in the second reauthorization of All Handicapped Children Act (1990), the law’s name was changed to IDEA, and two new disability categories, traumatic brain injury and

autism, were added (IDEA, 2020). Following this occurrence, a number of federal programs supporting network of investigators were established such as the Centers of Excellence for Programs in Autism (CPEA) and the Studies to Advance Autism Research and Treatment (STAART) to conduct and support studies on the causes, diagnosis, prevention, detection, and treatment of ASD. In 2007, these networks were merged into the Autism Centers of Excellence Program (ACE) (National Institutes of Health [NIH], 2017).

In response to the rising rates of ASD, governments have taken several actions over the last decade to develop services for individuals with ASD. For example, the Combating Autism Act enacted in 2006, in the U.S., to contribute to autism research, screening, treatment, and education. The law is currently known as the Autism Collaboration, Accountability, Research, Education and Support (CARES) Act of 2019. In the U.K., the Autism Act, passed in 2009, became a landmark piece of legislation, it mandated all local authorities to prepare strategies to provide relevant services to individuals with ASD which include but are not limited to the training for staff providing services.

Social-Communication Impairments in Students with ASD

Social communication impairments are one of the characteristics exhibited by all individuals with ASD (Pratt et al, 2017). The first dimension of diagnosing ASD are deficits in social communication and social interaction. The APA indicates that individuals with ASD have impairments in social-emotional reciprocity which includes but is not limited to sharing interest, initiating conversation, or understanding emotions (2013). Additionally, children with ASD have deficits in nonverbal communication skills that manifest in social interaction occasions such as using and understanding facial expressions and absent of eye contact (APA, 2013). Another symptom within the domain of the deficit in social communication and social interaction is

related to the abilities of individuals with ASD to initiate, maintain, and understand relationships which could include, for example, difficulties in making friends, joining interest areas with peers, and exhibiting appropriate behaviors based on social contexts (APA, 2013).

Moreover, speech and language disorders are considered common symptoms among children with ASD. These disorders could affect the receptive and expressive language of those children which means limitations in language comprehension and in the ability to express their feelings thoughts and needs. Pratt et al. (2017) divided the ASD competency in speech and language skills into two groups. The first group is called minimally verbal communicators where, as estimated, 20 to 30 % of individuals with ASD are in this category. Students considered minimally verbal may show delay or sever limitation in the spoken language. As a result, they may need an AAC intervention to assist them to communicate their needs.

The Impact of Social-Communication Impairment

Communication is central to classroom learning because it facilitates instruction, generates meaning, demonstrates knowledge and skills, and initiates and maintains communication interactions (Kathard & Pillay, 2015). Students with limited speech capabilities normally lack participation in classroom activities (Raghavendra, 2012). Also, Park et al. (2012) found that impairments in social-communication skills may cause a limitation in adaptive behavior skills, social skills, and daily living skills.

Children with ASD have social and other communication difficulties, which are closely intertwined with their behavioral, social, and academic achievement (APA, 2013). The CDC (2020) indicated that ASD can be a reason for significant social and behavioral challenges. That could be attributed to the lack of functional communication skills. Park et al. (2012) found that

impairments in social-communication skills may cause a limitation in adaptive behavior skills, social skills, and daily living skills.

Many children with ASD become frustrated in their attempts to communicate their feelings, thoughts, and needs with the others because of the absence or limitation in their communication skills, which may cause them to act out their frustrations through inappropriate behaviors ("ASD: Communication Problems," n.d.). Moreover, Plavnick et al., (2013) indicated that deficits in functional communication and social skills negatively impact autistic students' academic achievement, relationships, employment opportunities, and independence. Accordingly, Clark (2013) stated that the academic and social needs of children and youth with ASD must be met with an effective functional communication program.

It is essential that the communication needs of all students, including those with complex communication skills, are met so that they can access the curriculum and engage in activities in and out of classrooms, and AAC is considered one of the most important strategies to meet their needs (Calculator 2009). Chung and Douglas (2014) stated that with limited or no speech, many students need to master a form of symbolic communication to facilitate communication especially through opportunities embedded throughout the day with various partners and in different environments. Thus, having access to effective AAC interventions plays an important role in those students' success in inclusive programs (Kent-Walsh & Light, 2003; Soto et al., 2001).

What is AAC

AAC is a form of Assistive Technology (AT) that has been supported by research for its effectiveness in facilitating communication for students with ASD (Odom et al., 2010). The American Speech-Language-Hearing Association (ASHA) has defined AAC as follows: "AAC

describes multiple ways to communicate that can supplement or compensate (either temporarily or permanently) for the impairment and disability patterns of individuals with severe expressive communication disorders" (ASHA, n.d.). AAC is considered augmentative when utilized as a method of enhancing existing speech and alternative when it is substituting speech that is absent or not functional (ASHA, n.d.).

AAC has been explored since 1960's as an intervention for individuals who have complex communication skills (Hourcade et al., 2004). Since that time, AAC systems have become more accessible and affordable due to the developments of technology (Penn State University, 2016) Moreover, improvements in the size and quality of this technology have made AAC systems easier to use (Hourcade et al., 2004). These devices have provided communication options and possibilities for individuals with communication disabilities that were not available in the previous.

There are a wide range of AAC systems and devices that can be considered for students with complex communication skill needs. Types of AAC, according to ASHA (n.d.), are usually classified into two categories: unaided communication systems and aided communication systems. Unaided forms of AAC do not employ any external tool for the production of expressive communications (e.g., gestures, manual signs, and facial expressions). Aided forms of AAC require some form of external tool(s) and range from low-tech to high-tech. Low-tech devices are usually non electronic and simple (e.g., pictures, visual-graphic symbols, printed words, and objects). For example, picture exchange communication system (PECS) is a familiar aided AAC intervention. It is a method for teaching a response as a replacement for problem behaviors by using cards with unique pictures for each request (Hart & Banda, 2010). High-tech devices are typically complex and electronic (e.g., speech generating devices (SGD), tablet

devices, and computers (ASHA, n.d.). However, high tech or aided communication systems may not be the best option for meeting the communication needs of a student. Flippo et al. (1995) argued that a low-tech option might be as good, if not better, than a high-tech one.

For example, PECS is a familiar aided AAC intervention. It is a method for teaching a response as a replacement for problem behaviors by using cards with unique pictures for each request (Hart & Banda, 2010). PECS has proven to contribute significantly to the development of an enlarged repertoire of communication skills for people with autism. Preston and Carter (2009) indicated that employing PECS could help children with ASD increase their social-communicative exchanges.

It is important to note that the goal of AAC is "not to find a technological solution to communication problems but to enable individuals to efficiently and effectively engage in a variety of interactions and participate in activities of their choice" (Beukelman, 2013, p. 8). The purpose of AAC, according to Wilkinson and Hennig (2007), is to (a) improve the expressive speech of individuals who comprehend the language but have difficulty expressing it, (b) enable communication in a range of situations, (c) eliminate or decrease undesired behaviors, and (d) aid in future linguistic development.

The Effectiveness of Implementing AAC

One of the barriers to including students with ASD in general classrooms is the challenging behaviors students with ASD can present. A recent study aimed to investigate teachers' attitudes towards the inclusion of students with ASD has concluded that teachers expressed less positive attitudes toward the inclusion of students with ASD who have behavioral difficulties in comparison with those who do not (Jury et al., 2021). Students with ASD might experience some difficulties in communication and social interaction, and as a result of this

issue, they might exhibit inappropriate behaviors (e.g., walking out class, ignoring) as a manner of communicating. (APA, 2013; Barned et al., 2011; Vakilet al., 2009; Walker & Snell, 2013). Walker and Snell (2013) suggested that interventions aimed at improving communication skills could help to reduce problematic behaviors. Romski and Sevcik (2003) stated that the implementation of AAC system with students with ASD has a positive impact on improving communication skills and reducing challenging behaviors.

The implementation of AAC has been shown to have a positive impact on improving academic, communication, and social skills of students with complex communication needs. In a review of twenty-four single-case studies aimed to examine the overall impact of AAC interventions on targeted behavioral outcomes (e.g., communication skills, social skills, challenging behaviors, and academic skills) for students with ASD, Ganz et al. (2012) found that AAC appears to be more effective at improving communication skills than other behaviors, but also it appears to positively impact social skills, challenging behaviors, and spelling, as well. They also suggested that better communication leads to better social engagement and academic performance, as well as less problematic behavior as it provides an alternative way to communication such as requesting a break by raising a "break card" when needed instead of walking out of the classroom.

Additionally, Schlosser and Wendt (2008) conducted a systematic review of nine single-subject experimental design studies to determine the effects of AAC intervention on speech production in children with autism. The results showed that AAC interventions do not interfere with speech production. Rather, most studies showed an increase in speech production. The same result was reported by Millar et al., (2006) as well. They indicated that, after reviewing AAC interventions for 27 participants, AAC improved speech in 89.7% of cases.

In addition, AAC has been recognized as an evidence-based practice (EBP) intervention (Hume et al., 2021; Odom et al., 2010). An EBP is a practice where its efficacy has been documented through rigorous research. The reason why educational professionals should use EBPs is that teachers are required to implement academic and behavioral practices that are based on scientifically based research to the greatest extent possible under these U.S. federal laws; No Child Left Behind Act (NCLB) and IDEA ’04 (The IRIS Center, 2014). However, in Saudi Arabia, although teachers are encouraged to use EBPs, there is no law that mandates the use of EBPs with students with disabilities.

Assistive Technology Including AAC as a Mandate

In many nations, governments have realized the importance of using technology to provide access to education for all students, especially those with disabilities. For example, the U.S. special education law, IDEA, mandates that Individualized Education Programs' (IEP) teams to consider the implementation of AT including AAC (Poel et al., 2013). In the UK, the Equality Act 2010 recognizes AT as a 'reasonable adjustment' that can be adopted to prevent discrimination in a wide variety of situations (Equalities Act, 2010). These mandates highlight AT's potential to significantly improve equitable access to education for students with disabilities.

Although many countries have passed laws that mandate teachers to consider the implementation of AT for students with disabilities who are in need of such services, there is an absence of AT policies for students with disabilities in Saudi Arabia. Almosa (2010) said that there should be an emphasis on the use of AT to help students with disabilities overcome obstacles and increase inclusion opportunities. In addition, Alrubiyea (2010) and Aldbas (2015)

asserted to the need for a comprehensive policy that maintains rights and meet the needs of students with ASD in inclusive education, including the use of AT.

Special Education Laws in Saudi Arabia

The Disability Legislation (LD) was passed in 1987 as Saudi Arabia's first legislation for individuals with disabilities. A major purpose of this law was to provide equal access to education for all in society including students with disabilities as well as to guide eligibility decisions for special education services and appropriate interventions (Alquraini, 2010). Similarly, The Disability Code of 2000 guarantees everyone with disabilities the right to equitable, free and appropriate access to education, social services, psychological support, and rehabilitation offered by public institutions (Alquraini, 2011).

In 2001, Regulations of Special Education Programs and Institutes (RSEPI) were instituted to establish the privileges and policies that guarantee the right of students with disabilities to have access to special education programs (Alquraini, 2010; Aldbas, 2015). Regulations of Special Education Programs and Institutes law was adopted from U.S. special education laws, mainly PL 94-142 and IDEA (Alquraini, 2010). The regulations identified key groups of students with disabilities, and officially included autism as a disability (Aldbas, 2015). Students with ASD, under this law, are entitled to IEPs, transition education, related services, and early intervention programs at least restricted environment (LRE) (Ministry of Education of Saudi Arabia, 2002).

Current Status of Education for Children with Autism in Saudi Arabia

The provision for educational services for students with ASD did not begin until 1993 and it was funded by a private organization (AlAoufi, 2011). Government programs designed to help individuals who are diagnosed with autism did not start until 2004 (Sulaimani & Gut, 2019).

In the same year and as part of developing special education services, the Saudi government invested in research and encouraged universities to open special education departments to graduate teachers who are capable of meeting the needs of students with disabilities, including those with ASD (Sulaimani & Gut, 2019).

There is no accurate and updated data about the prevalence of ASD in Saudi Arabia. However, Aljarallah et al. (2007) indicated that the prevalence of ASD is one per 167 of a population of over 28 million, meaning that the total number of individuals with ASD would be well over 173,000. In addition, Alnemary et al. (2017) said that Saudi Arabia currently has no data on its confirmed cases of ASD, and anecdotal evidence suggests there may be many children who have not yet been identified with ASD. According to recent documents from the Ministry of Education (MoE), 6994 of all students with ASD served by the education system (MoE ,2021).

Currently, students with autism in Saudi Arabia are taught in mainstream classrooms, self-contained classrooms, and separated special education schools. There is limited research about the type of interventions they receive and most literature reviews overall practices on those sittings. Students with ASD could be fully included in mainstream classrooms with typical peers if they have mild disabilities. Acoording to Alzhrani (2021) 1371 students with ASD are fully included in mainstream classrooms. Yet, they are not provided with the necessary services. Elsheikh and Alqurashi (2013) argued that many inclusive classes in Saudi Arabia do not offer educational methods that are suitable for children with autism. Inadequate provision of appropriate services is due in part to teachers' limited knowledge and understanding of the disability (Almasoud, 2010; Khalil et al., 2020). Also, Albuqami (2020) indicated that many

public schools in Saudi Arabia still lack the qualified personnel and instruments needed to address autism-related issues.

Students with mild to moderate disabilities are usually placed in self-contained classrooms in public schools, 2051 students with ASD are served in such settings (Alzhrani, 2021). In severe cases, a total of 1158 students with ASD receive their education in separate special education schools and institutions (Alzhrani, 2021). Students with ASD are usually taught within the framework and classes for children with intellectual disabilities. However, services provided in these centers have been criticized as well. Al-Otaibi and Al-Sartawi (2009) asserted that public special education centers and institutions in Saudi Arabia provided unacceptable special education and related services to students with disabilities.

Despite laws and regulations supporting their needs, many authors have voiced concerns about the overall quality of special education services offered to students with ASD. For instance, Albuqami (2020) said that Saudi public schools are not ready to provide services to individuals with ASD. In another study, Alnemary et al. (2017) found that Saudi Arabia's public school services for autism are insufficient. Also, Al-Otaibi and Al-Sartawi (2009) indicated that public special education centers and institutions in Saudi Arabia provide unacceptable special education and related services to students with disabilities.

Due to a lack of adequate services for students with ASD in the public school system, many students with ASD seek services from private institutions or travel overseas, such as to Jordan, for appropriate interventions (Alnemary et al., 2017). Jordan's autism centers are projected to have over 800 Saudi pupils with ASD (Al Megren, 2017). While the others might receive communication intervention and other services from private institutions in Saudi (Zahrani, 2013), many cities across the country lack respectable private institutions. According

to Almasoud (2010), there are only a few institutes that specialize in autism and have the resources and staff to meet the needs of these students which are located in big cities like Riyadh and Jeddah.

In response to the steady increase in children diagnosed with ASD as well as the poor services provided to them in the public education system, in 2017, the MoE has launched a new program known as Maaeen for Special Education. It offers free grants for a group of K-12 special education students including those with autism to study in private special education schools or special education programs (MoE, 2020).

The State of Implementing AAC in Saudi Public Schools

There is very little information available on the status of AAC in terms of current practices, in-service professional development programs as well as training at the pre-service level. However, based on the available literature and this researcher's experience, despite its great potential to enhance social-communication skills and reduce undesired behaviors of children with autism, AAC intervention is either not an option for teachers to address the communication needs of students with ASD or poorly designed and implemented.

Alasseri et al. (2010) conducted a comprehensive survey to explore the extent to which AAC services were available to students who need them. They found that there were few reliable details about AAC services in Saudi Arabia. The authors compiled a comprehensive list of institutions and organizations that deliver special education services including AAC. According to the results of the survey, the majority of institutions encounter numerous problems in providing AAC services to those who are in need. They also indicated that the provision of AAC services is hindered by the lack of well-designed training opportunities for teachers and other professionals (Alasseri et al., 2010 as cited in Albuqami, 2020).

In a recent study, Alghamdi's (2021) indicated that teachers of students with ASD do not use iPads for communication intervention due to lack of knowledge. Mukhopadhyay and Nwaogu (2009) stated that special education teachers feel less confident when using AAC due to limited knowledge and skills. In a few cases, special education teachers might implement AAC with their students. However, if they decide to utilize AAC with their students, they would be solely responsible for the implementation process due to the absence of multidisciplinary team support.

Special Education Teachers

According to Council for Exceptional Children (CEC, 2015) special education teachers have number of responsibilities which include developing curriculum, teaching, coordinating related services, working with families, and supervising paraprofessionals. Therefore, the CEC (2015) recommends specifically that delivery of AAC services be a required skill for special educators working with children who have developmental disabilities or ASD. Students who are receiving AAC often spend most of their instructional time with special education teachers. For those who are in more restrictive educational settings, special education teachers are considered as the primary communication partners, and they are responsible for teaching and communicating with students who use AAC. Among these responsibilities will be changing instruction, editing or customizing vocabulary, and providing training. They may also include assessing progress on IEP goals that require AAC. In addition, special education teachers serve as students' case managers, who evaluates academic progress, writes education goals, and supervises the implementation of the IEP.

However, lack of AAC knowledge and skills is considered to be a major barrier in implementing AAC in the classroom (Kent-Walsh & Light, 2003). Training and education

regarding AAC decision-making and classroom integration may not have been part of pre-service university special education curricula for many professionals who must later play pivotal roles in AAC processes (Bailey et al., 2006). Also, lack of specially trained professionals on AAC would in turn lead to a lack of AAC services provided to students with communication disabilities (Merill,Yilon-Hamivitz, et al., 2000). These barriers need to be addressed to ensure that the process of AAC decision-making and implementation is smooth and effective.

Studies suggested that teachers' perceptions shape their teaching practice in the classroom (Hendricks, 2011 & Shippen, 2011). Teachers' perception can serve three functions; they are filters for interpretation, frames for defining problems, and guides for action to improve teachers' practices (Fives and Buehl, 2012). Also, Bailey et al. (2006) note that special education teachers and speech-language pathologists are the ones who experience first-hand barriers to AAC use, as well as those who are best able to recognize facilitators of AAC use. They stated that understanding special educators' perceptions about the facilitators and barriers of implementation of AAC systems in their classrooms is very important to improve such intervention in their classrooms and schools. Ayres et al. (1994) found that the chance of implementing best practice with students with disabilities is linked to teachers' perception of their own knowledge and skills of such practice. Furthermore, Ruppar et al. (2016) found that teachers' perceptions about their ability to implement AAC with students with complex communication needs are influenced by their educational level, teaching license, and professional experience. Given the important role special education teachers play as IEP members and primary service providers, their perceptions about factors affecting AAC implementation would provide valuable information on how to improve such practice in Saudi public schools.

Ely's Conditions of Change

In this study, the conditions for change theory, developed by Ely (1990), was used as a theoretical framework to understand Saudi special education teachers' perceptions of various conditions that facilitate the successful implementation of AAC. Ely's work was an extension from Rogers's diffusion of innovations (DOI) theory. Rogers's theory was published in the 1960s and has since undergone further development as new technologies have become more prevalent in daily life. His theories cover topics such as the five stages of innovation decisions, individual inventiveness, the rate of adoption, and perceived qualities. The theory concentrated on the adoption of technologies and innovations, or the initial decision to use them.

By building upon Rogers's work, Ely (1999) shifted the focus from adoption to implementation and identifying the conditions that facilitate the implementation of educational technologies and innovations. He claimed that there has been some discussion of implementation, but not much about the nature and special requirements that apply when users go beyond adoption. Implementation, according to Ely, is a stage in almost all instructional design models. As a result, implementation must become the primary focus of educational technology rather than merely adoption.

As part of his work, the main focus of Ely (1999) was to uncover reasons for successful implementation. So, he identified factors or conditions facilitating the implementation of educational technologies or innovations. The eight conditions are as follows: dissatisfaction with status quo, knowledge and skills, time, resources, rewards or incentives, participation, commitment, and leadership. According to Ely (1990), conditions can be interrelated in several ways, with one influencing the other and the other preventing the other from occurring. He mentioned that "the absence of any condition will probably reduce the effectiveness of the

implementation process", then he added "the goal is to attain each of the eight conditions during the implementation process" (Ely, 1990, p. 303). In addition, Ely defined these conditions as a baseline for facilitating the implementation of innovations in a variety of contexts in education, and they can be used by any individual involved in the change process in education (Ely, 1990). All eight conditions are described below.

The first condition for implementing institutional change is "dissatisfaction with the status quo," which means that users believe that things could be improved, but they are unsure of where and how to start (Ely, 1999). Individuals might try to change things if they don't like the way they are right now. Ely argues that one of the first steps to initiating change is feeling unhappy about the current situation. This condition is often linked to leadership.

The second condition, "existence of knowledge and skills," is about competence. To implement a technology or an innovation, ultimate users must have the sufficient skills and knowledge to use that technology (Ely, 1999). This condition is considered as one of the most important factors leading to successful implementation. Frequently, the existence of knowledge and skills was linked to resources, rewards and incentives, leadership, and commitment.

The third condition identified by Ely (1990), "availability of resources," highlighted the necessity to make resources associated with the innovation easily accessible. Without the necessary resources, reforms cannot be carried out. Resources may include but not limited to funds, hardware, software, and support necessary to successfully implement the technology or innovation. The other conditions that resources related to are commitment, leadership, and rewards (Ely, 1999).

In Ely (1999) "availability of time" was indicated as the fourth condition that implementers of innovations must have quality time available to learn, use, and reflect on how

they are implementing the technology or intervention. It sometimes refers to implementers' willingness to invest part of their own time in the process. Ely (1990) said that time plays a crucial role in the overall process of education reform. Time is linked to commitment, participation, leadership, and incentives.

The fifth condition, "rewards or incentives," emphasized that there should be incentives or reward system that directly benefit the implementer in some way for changing or using a new technology or intervention (Ely, 1999). Rewards or incentives could be extrinsic rewards, for example, release time, financial bonuses, recognition, paid days off, and salary increases, or intrinsic rewards that are internal to the individual. For instance, a teacher's intrinsic rewards may include improving the ability of his or her students to effectively communicate with peers, family members, and teachers.

In Ely (1999), the sixth condition "participation" highlighted the importance of involving all stakeholders in shared decision making and communication. Ely (1990) believed that individuals should have the opportunity to comment on technology or innovation that directly affects their work. Although, state or federal governments may mandate some changes in schools, teachers should take part in determining how those changes will be implemented. However, Ely (1999) said that "when direct participation is not possible, the implementers should feel that their ideas are represented through a surrogate" (p. 5). Participation is considered a crucial factor in implementation process and linked to time, commitment, knowledge and skills, and incentives.

“Commitment”, Ely’s seventh condition, focused on the visible and firm evidence that the innovation is supported and endorsed by the key players and other stakeholders throughout its development and implementation (Ely, 1999). Implementation of the innovation needs the

support of important figures inside the organization, such as department heads or school principals. The organization's support at this level will facilitate the adoption of an innovation. It has a close connection to leadership and a strong connection to time, resources, and incentives.

The last condition was “leadership”. Leadership in this situation, according to Ely (1999), is divided into two areas: (1) the executive officer of the organization's leadership such as the ministry of education; (2) the project leadership, which is more closely related to the day-to-day operations of the innovation itself such as school principals. Furthermore, Ely (1999) said that "once the executive leadership is evident, then the project leadership becomes even more important because the person who can help with the implementation is closer to the user" (p.6). This condition is linked to participation, commitment, time, resources, and incentives.

Past Studies

Following the publication of his article on those findings (Ely, 1990), many studies have used the conditions as a framework in various contexts and fields (Ely, 1999). Among the more recent studies that focus on the implementation of innovations and interventions on the field of education include integration of the Internet in schools (Ravitz, 1999), the implementation of online educational programs (Ensminger, Miller, and Surry, 2002), implementation of educational technologies in community colleges (Murphy, 2015), effective AAC implementation (Singer-MacNair, 2017), and implementing 1:1 learning environments (Lawrence, 2018).

In a study published in 1999, Ravitz used Ely's criteria as a framework to identify factors that facilitate the use of Internet, as reported by Internet-using teachers, and the strength of relationship between the conditions and Internet use. The result of a nationwide survey completed by 238 Internet-using teachers from 124 schools across a range of settings, grade levels, and regions indicated to the importance of Ely's conditions. Also, the findings indicated

that organizational commitment, administrative support, and technical and training resources are among the conditions that are most prevalent, while other factors seemed to be lacking which include time for planning and curriculum use and the availability of curriculum-related support and resources. Generally, knowledge and skills and dissatisfaction with the status quo appeared to be the conditions that were most predictive of Internet use.

In their study, Ensminger, Miller, and Surry (2002) used Ely's conditions as a framework to discover which of the eight conditions higher education faculty considered to be most important prior to implementing online degree program. An online survey was conducted to evaluate faculty perceptions of the relative importance of the eight factors that contribute to online degree programs being successful. Participants believed that the conditions of availability resources, dissatisfaction with the status quo, and skills and knowledge were the most crucial for successful implementation of online degree programs.

In 2015, Murphy used Ely's framework to examine how community college faculty perceive the conditions that facilitate the implementation of educational technologies. Six hundred thirty four participants completed an online survey that was designed to measure how each of Ely's conditions were perceived in relation to 17 technologies that had been used by community college faculty. Among the 17 technologies, the top three conditions that consistently received the highest ratings were availability of resources, the existence of knowledge and skills, and dissatisfaction with the status quo. The author mentioned that the study's findings highlight the factors that practitioners should consider before using new technology in order to increase the likelihood of a successful implementation.

Singer-MacNair (2017) used Ely's theory as a framework to identify barriers to special education teachers implementing AAC interventions to students with AAC across one school

district. The author conducted a semi-structured interviews with 6 special education teachers. The Findings highlighted the positive impact of AAC interventions on students' communication. It also revealed that for successful implementation of AAC intervention teachers need more time, resources, knowledge and skills, and investment from stakeholders.

Another study conducted by Lawrence (2018) aimed to evaluate the presence of Ely's (1990) conditions prior to implementation of 1:1 learning environments based on the perceptions of high school teachers. 146 suburban high school teachers completed a survey instrument designed to measure users' perceptions of the importance of Ely's conditions. The author found that the following factors, arranged gradually, can facilitate the implementation of one-to-one learning environment, availability of resources, availability of time, sufficient knowledge and skills, leadership, commitment, participation, rewards or incentives, and dissatisfaction with the status quo.

In summary, there have been various studies conducted in the past in different fields based on Ely's (1990) conditions. These studies revealed that some factors were more indicative of an implementation's success than others, although they all demonstrated the existence of all eight factors to varied degrees. These studies not only give solid evidence for Ely's theory but also show how the lack of any one of the eight conditions could substantially impede the successful implementation of innovations in varied contexts. In addition, studies focusing specifically on Saudi special education teachers' perceptions of the influence of Ely's (1990) conditions for successful implementation of AAC are absent. This welcomes more research into how teachers perceive the impact of Ely's (1990) conditions within context of Saudi public school environments.

Gaps in Research

There is substantial research evidence to support the use of AAC as an EBP to improve academic, communication, and social skills of students with complex communication needs (Chung & Douglas, 2014; King & Fahsl, 2012; Light & McNaughton, 2012). Furthermore, the Saudi government passed a law in 2000 that pledged an equal access to free and proper education to all students including those with disabilities (Alquraini, 2010). In spite of this, AAC is likely to be unavailable for our students in public schools. There has been little research to understand what is needed for special education teachers to effectively implement AAC when teaching students with ASD who have communication impairments.

Using a survey method, Aldabas (2021) investigated how special education teachers perceive barriers and facilitators associated with using AAC with students with multiple disabilities. The result showed that teachers' knowledge and the school environment (e.g., lack of access and professional training) are more significant barriers to implementing AAC in Saudi schools.

In another study, Alghamdi (2021) interviewed five special education teachers in Jeddah city to investigate their perspectives regarding the use of iPads to improve communication skills of students with ASD. The results revealed the lack of knowledge, support, funding, family support, national education standards on the use of digital technology, culturally and linguistically appropriate applications, and professional development opportunities were reported as barriers to implementing the use of iPads in classrooms. However, AAC includes a wide range of devices that can be used with students with ASD which can be selected based on individual student needs and abilities. These studies were conducted in only two cities in Saudi, Riyadh and Jeddah.

The number of ASD students in public schools in Saudi Arabia is growing, and schools face challenges as they work to meet these students' needs. Unfortunately, there is a lack of research assessing school readiness to fully address autistic students' needs, especially communication needs. The absence of research is a major gap in the knowledge base in understanding what schools need to effectively implement AAC with autistic students. Bailey et al. (2006) note that special education teachers and speech-language pathologists are the ones who experience first-hand the barriers to AAC use, as well as those who are best able to recognize facilitators of AAC use. Thus, teachers' perceptions would provide insight and better understanding into how Saudi schools become successful in implementing AAC with students with ASD.

CHAPTER THREE: METHODOLOGY

Research Design

The purpose of this study was to explore the perceptions of Saudi special education teachers regarding teaching minimally verbal students with ASD and factors facilitating the use of AAC system in their classroom. This study focused on Saudi Arabian special education teachers and were guided by the following questions:

1. What challenges do special education teachers perceive of teaching minimally students with ASD generally?
2. What are special education teachers' perceptions related to using AAC as an evidence based practice to facilitate commination among students with ASD?
3. Which of Ely's factors do Saudi special education teachers believe they need for successful implementation of AAC in their classrooms?

I utilized a qualitative interviewing design for this study because of the appropriateness of such methodology to the nature of this study. Stake (2010) mentioned that qualitative research relies on the perspectives of people to provide logical interpretations of how things function. Many advantages of qualitative research have been identified as it: (a) concentrates on the lived experiences of participants; (b) takes place in natural settings which assists in providing the researchers with in-depth information about the issue; and (c) allows the researcher to have comprehensive findings (Miles and Huberman,1994). Also, Alase (2017) stated that "qualitative research method infuses an added advantage to the exploratory capability that researchers need to explore and investigate their research studies" (p. 2). In particular, Turner (2010) stated that

in-depth interviews provide detailed information on participants' experiences and perspectives on a certain issue. By using this methodology, special education teachers were provided with an opportunity to share their experiences and opinions regarding teaching minimally verbal students with ASD and factors facilitating the use of AAC system in their classroom. Table 1 shows the relationship between the study design and interview questions to that of the study questions.

Table 1. Relationship Between The Study Design and Interview Questions to That of The Study Questions.

Research questions	Research design/ Protocol questions
1. What challenges do special education teachers perceive of teaching minimally verbal students with ASD generally?	Design: 1. Purposeful sampling 2. Interviews 3. Audio transcription 4. Thematic analysis Protocol questions: 1. Please describe any challenges you encounter or have encountered regarding the facilitation of communication for students with ASD who have limited or no verbal abilities. 2. How are students' communication impairments affecting their behavioral, academic, and social interaction performance in the classroom?
2. What are special education teachers' perceptions related to using AAC as an evidence based practice to facilitate commination among students with ASD?	Design: 1. Purposeful sampling 2. Interviews 3. Audio transcription 4. Thematic analysis Protocol questions: 1. Could you please share your thoughts about using AAC systems to facilitate communication among students ASD?

Table 1. (Continued)

	2. Could you please talk about the expected challenges you might experience as a special education teacher when using AAC systems to facilitate communication among students with ASD. 3. How do you describe the benefits of the usage of AAC systems in facilitating communication among students with ASD? 4. Please describe any communication tools or interventions, if at all, you use to facilitate communication among students with ASD
3. Which of Ely's factors do Saudi special education teachers believe they need for successful implementation of AAC in their classrooms?	Design: 1. Purposeful sampling 2. Interviews 3. Audio transcription 4. Thematic analysis Protocol questions: 1. Could you please tell me your thoughts on Ely's eight conditions for effective implementation of AAC intervention in your classroom? 2. What of Ely's eight conditions do you believe are the most important for teacher to utilize AAC intervention? why? 3. What should have been done for a successful implementation of AAC to facilitate communication among students with ASD? Note: Ely's eight conditions were explained to all participants before asking them the questions.

Other qualitative designs were considered and dismissed. The phenomenological design was considered as a possible research design because the goal of phenomenological research is to

collect detailed accounts of how people experience a situation (Creswell, 2012). However, phenomenological design is not appropriate for this study since it focuses on a deep understanding of human behavior, the essence, in relation to an event. Grounded theory research was not applicable because it is designed to develop a theory based on past research and inquiries (Patton, 2015). An ethnographic approach aims to describe the culture and social interactions of a particular group or subgroup (Lichtmen, 2013), and this was not the aim of this study.

Participants

In this study the participants were selected by using a purposive sampling technique (Patton, 1990), which assisted me to select special education teachers who have been working with minimally verbal students with ASD. A purposive sampling technique can be used by researchers to identify people or sites that can help us better understand our participants' experience (Creswell, 2015). Snowball sampling is a purposive sampling strategy that I used to identify participants. Snowball sampling is when "a subject from an initial sample group is asked by researchers to recommend individuals to act as future participants" (Crouse & Lowe, 2018, p. 1531). The number of participants was decided based on reaching a point of saturation. According to Merriam (2009), saturation occurs when no new data or information surfaces to ensure internal validity. Specifically, I used data saturation model which was described by Grady (1998) as the point at which:

> New data tend to be redundant of data already collected. In interviews, when the researcher begins to hear the same comments again and again, data saturation is being reached. It is then time to stop collecting information and to start analyzing what has been collected. (p. 26)

The participants in this study consisted of five special education teachers. With this number participants, the data was sufficiently saturated to answer the study's objective and research questions. The teachers all (a) have more than seven years of teaching experience with students with ASD, (b) hold bachelor's degree in, Special education- Autism and Behavioral Disorders, (c) work at the General Directorate of Education in Unayzah, Saudi Arabia.

All Participants was selected from schools at the General Directorate of Education in Unaizah, Saudi Arabia. The reason for selecting this location was because of the limited special education studies conducted in cities other than big cities such as Riyadh and Jeddah. For example, Aldabas's study(2021) evaluated the perceptions of special education teachers of barriers and facilitators associated with using AAC with students with multiple disabilities took place in Riyadh city. Another study aimed to investigate teachers' perspectives regarding the use of iPads to improve the communication skills of students with ASD was conducted in Jeddah by Alghamdi (2021). So, conducting this study in Unayzah could reveal new information on how to improve the implementation of AAC in Saudi public schools. Also, another reason for chosen this school district was because of the positive relationship I have with the principals of schools in this area and it close to where I live. The participants of this study were selected according to the following criteria: (a) Saudi special education teachers who have been working with minimally verbal students with ASD; (b) hold a bachelor degree or higher in special education; and (c) are willing to participate in the study.

The participants were special education teachers at the General Directorate of Education in Unayzah, Saudi Arabia. They were invited to participate by sending an invitation email to the department of special education at the General Directorate of Education in Unayzah, Saudi Arabia . First, I contacted and provided the following documents (purpose of the study and the

interview protocol) to the General Directorate of Education in Unayzah in order to provide me with a letter of support to conduct the study.

After obtaining the letter of support and the approval of the Institutional Review Broad (IRB) at University of South Florida (USF), I sent an invitation email to the department of special education at the General Directorate of Education in Unayzah. The department of special education asked teachers who might be willing to participate in the study to contact me via email or phone. I could then contact them and provide them with information regarding the interview process and informed consent. Finally, after indicating teachers who were interested in participating and obtaining their emails and phone numbers, I applied a checklist of criteria designed to direct my selection of participants. The potential participants were asked the following eligibility questions:

1. Are you now or have been a teacher of minimally verbal students with ASD?
2. Do you hold a bachelor's degree or higher in special education?

Then, I arranged the date, and time with For those who met the inclusion criteria to conduct the interviews.

Data Collection

As I am interested in gaining an in-depth understanding of the perceptions of Saudi special education teachers regarding teaching minimally verbal students with ASD and factors facilitating the use of AAC system in their classroom, formal individual semi-structured interviews was conducted. This form of interview, also known as the "interview guide approach" allowed me, as an interviewer, to use open-ended questions across key topics with additional optional prompting questions to better understand participants' experiences (Lichtman, 2013). Also, the individual interview is the best way to reveal in-depth, detailed accounts about

individuals' experiences or perceptions, since interviewers can explore the case in much greater detail than during focus group interviews (DiCicco-Bloom & Crabtree, 2006).

Semi-structured interviews with open-ended questions were used for this study. By conducting semi-structured interviews, I was able to engage with participants through personal contact, build rapport, and ask probing questions to get a deeper understanding of their perceptions. Castillo-Montoya (2016) suggests that when conducting qualitative interviews, the interview questions should be aligned with the research objectives, flow like a conversation, and be specific to the study's purpose.

Once I identified the interviewees and had their consent to participate, the semi-structured interviews were scheduled with the participants. I utilized the three interview series method designed by Dolbeare and Schuman (Seidman, 2006), which allowed me and participants to deeply understand the experience and place responses in context. Each participant was interviewed three times for approximately 35 minutes each in three weeks period. The first interview aimed to put the participants in the context by asking them about themselves with concertation with the topic of the interview. In the second interview, the interview deeply focused on the detail of participants lived experience regarding the topic of the study. The last interview was about connecting back to responses from the first two interviews and asking the participants to reflect on the meaning of their experience. Each participant was informed that they would be interviewed three times and would be asked three different sets of questions during each interview. (See Appendix A for interview protocol)

All participants were interviewed in Arabic. The interviews were conducted virtually by using a secure web-based platform, called Zoom. The interviews were audio-recorded and transcribed. The interviewees were informed about the purpose of the study and why the

researcher was interested in the research topic. In addition, I thoroughly explained Ely's eight conditions to participants prior to asking them about their perceptions regarding the influence of those conditions on facilitating AAC implementation in their classroom.

Since interviews were held virtually, the participants were asked to be in a quiet, distraction-free place that is comfortable and convenient to them during the meetings. After asking the participants for their consent, I used a digital recorder to recode the interview. Once the consent was obtained from both the General Directorate of Education in Unaizah, Saudi Arabia, and the IRB approval, I started the data collection process.

Data Analysis

For data analysis, semi-structured interviews were audiotaped and then transcribed verbatim using Microsoft word. The interviews were conducted in Arabic, and then translated to English. A qualitative data set should be broken into units, synthesized, and developed into broad patterns (Bogdan & Bilken, 2007). Thus, the data was thematically analyzed. This approach identifies, analyzes, organizes, describes, and reports on themes within a data set (Braun & Clarke, 2006). Also, according to Braun and Clarke (2006) and King (2004), thematic analysis is a valuable tool for assessing different study participants' viewpoints, showing parallels and variations, and uncovering unexpected findings. To interpret the data, I followed the six steps for thematic analysis that was suggested by Braun & Clarke (2006) as follow: (a) familiarizing oneself with the data; (b) initial code creation; (c) theme search; (d) theme review; (e) defining and naming the themes; and (f) writing the report.

The first step of the thematic analysis requires me to familiarize myself with the data. I therefore reviewed the literature, listened to the audio recordings, and reviewed the transcription of the interviews. Researchers should look through the full data set at least once before beginning

coding according to Braun and Clarke (2006) because ideas and patterns may emerge as researchers become more comfortable with all elements of their data.

In the second phase, I used both deductive and inductive coding methods to analyze interviews transcripts. Miles et al. (2014) stated that using any methods that lead to more differentiation and integration in a researcher's data is a very helpful way to draw a very clear map of what is happening and why, which can be achieved by combining both deductive and inductive coding methods. First, I started the data analysis process by using deductive or a priori coding. Deductive codes are those built based on the literature review, research questions, conceptual framework, and hypothesis (Miles et al., 2014). Therefore, I spent some time reading through the research questions, reviewing the literature review section and the theoretical framework to create my start list of codes. Deductive coding helped me to know what I should look for in my data, and what information would help me to answer the research questions. After deductive coding was completed, I conducted an inductive coding method by reading my data, line-by-line, to create new codes to develop a good map of my data. Initially, I coded everything, and then combined codes that have common meaning. I used descriptive coding to summarize the excerpt's main point using a single phrase or word (Saldana, 2013). However, to address the third research question, I relied solely on deductive coding because I wanted to determine which of Ely's factors are necessary for the successful implementation of AAC. Therefore, codes were built based on the theoretical framework of this study.

The third process entails organizing and categorizing all coded data extracts that may be relevant into themes (Braun & Clarke, 2006). According to them, themes are not necessarily determined by quantifiable measures, but rather by whether they provide insight into research questions. Also, Saldana (2013) suggested that as one conducts the theme search, the researcher

should focus on how to address their research questions from the thick descriptive accounts gathered from the participants in the study. I revisited the established codes to generate themes by creating thematic networks to organize codes and themes into a web-like network as described by Attride-Stirling (2001).

Following this phase was reviewing themes which starts when a group of themes has been created and needs to be refined (Braun & Clarke, 2006). In this phase, I looked through the coded data extracts for each theme and sub-theme to see if they seemed to fit together in a logical pattern. The fifth phase of research involves identifying what aspects of the data each theme captures and why they are of interest (Braun & Clarke, 2006). Braun snd Clarke (2006) suggested that theme titles should be short and clear to give the reader a sense of what the topic is about right away. At this point, I had fully established the themes and was ready to begin the final analysis and writing of the report. King (2004) indicated that direct quotations from participants are an important component of the final report. Thus, short and long quotes were included to aid in understanding specific interpretations and to demonstrate the themes' prevalence. Figure 1 provides an example of the process I undertook to move from coding raw data to generate themes following the six-phased process.

It is important to note that while Braun and Clarke (2006) suggested thematic analysis to be conducted by following the six-phased process, in reality, it is an iterative and reflective process that involved constant movement between phases. According to Creswell (2007) the steps involved in gathering data, analyzing it, and creating a report are not usually distinct ones in qualitative research; they are frequently interconnected and take place at the same time.

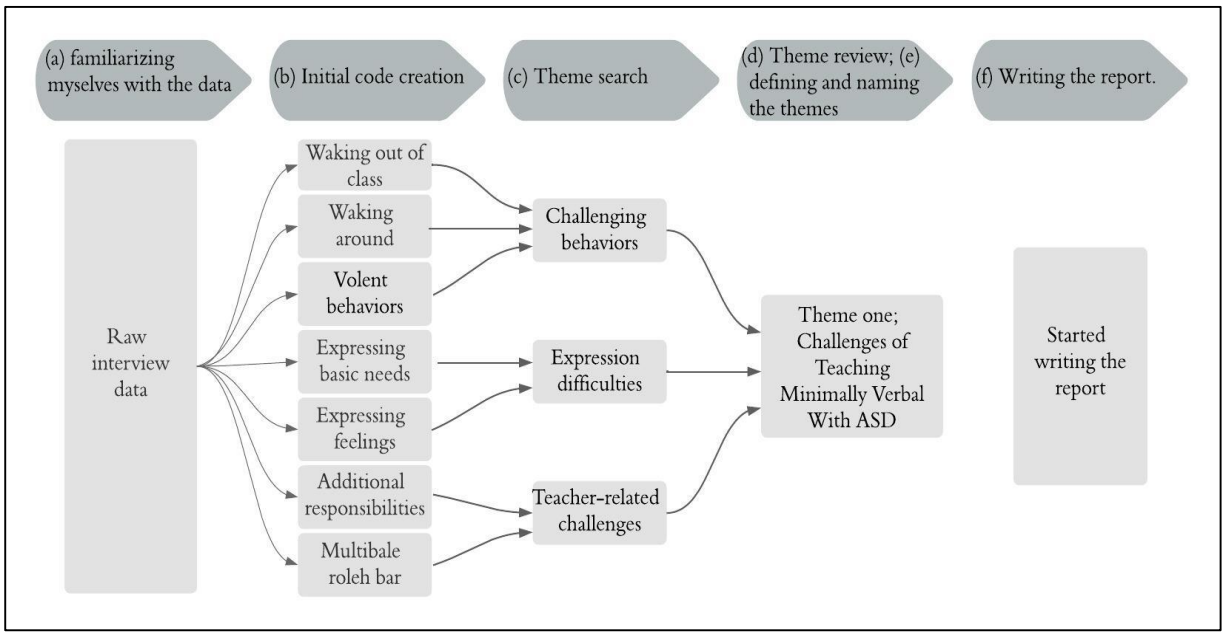

Figure 1. Coding of the Raw Interview Data to Generate Themes

Trustworthiness

The term "trustworthiness" is used to ensure that the results presented are accurate and reliable (Creswell, 2012). There are multiple methods used by qualitative researchers to support the trustworthiness of a study's results including credibility, transferability, dependability, and conformability (Lincoln et al., 1985). Several were considered to add greater rigor to this study, namely credibility and transferability. Also, as part of the data collection and analysis phases and to increase conformability, I documented my thoughts, assumptions, and concerns regarding the research process with reflective journals in order to avoid bias affecting the research process. Additionally, I created an audit trail to document the distion-making process throughout the study.

Credibility is an important aspect of qualitative research and involves assessing whether the findings are accurate from the viewpoint of the researcher, the participant, or the reader (Creswell, 2012). Member checking is a method that researchers can use to improve the

credibility of the data presented (Lincoln et al., 1985). According to Carl and Ravitch (2018), there are several techniques to conduct member check. They could occur informally during data collection (during an interview or focus group to ensure understanding), or they might occur formally during a follow-up interview, meeting, or conversation. Since I used three interview series method designed by Dolbeare and Schuman (Seidman, 2006), where the last interview was about connecting back to responses from the first two interviews and asking the participants to reflect on the meaning of their experience, participants were provided with an opportunity to confirm and reflect on information shred on previous two interviews.

In terms of transferability in qualitative research, it refers to the extent to which the same findings can be applied to people belonging to the same population (Lincoln et al., 1985). According to Merriam (2009), rich, thick description is a strategy to enable transferability. I described the information in-depth to enable others to determine the findings' transferability.

Ethical Considerations

According to Halai (2006) qualitative research generally adheres to three main ethical criteria which include anonymity of research participants, confidentiality of information, informed consent, and no harm to participants . To ensure confidentiality of the participants, their names were kept anonymous and pseudonyms names were used in the final report and the data was used by only the researcher for the purpose of the study. Additionally, there was no personal information in the final report or during data collection. Since I used a digital recorder to audio recode the interview to capture what is said during the interview, I explained to the participants the confidentiality of the data by indicating that the data generated from will be only accessible to the researcher for the purpose of the study and maintained on an approved cloud storage site for five years in accordance with USF IRB guidelines. Then, I will delete all the data.

A great deal of consideration was given to the principle of protection from harm before conducting the study. A verbal conversation was held with each participant before participating in the study to explain the purpose of the study and to ensure their voluntary participation. In addition, I explained the potential benefits and their right to withdraw at any time from the research without any negative consequences.

While consent were verbally obtain at the beginning of each interview, participants were given written copies of the informed consent in Arabic, their first language, that explain the purpose of the study, the estimated time of the interview, the rights regarding their participation, and the foreseeable risks to the participants. Therefore, upon approval of the English consent document by the IRB, a hired translation service in Saudi Arabia translated the consent in Arabic to ensure that the participants can read and understand the informed consent document. In addition, I commenced upon approval from the IRB. The IRB has the responsibility of ensuring all research conducted through South Florida University complies with ethical standards and U.S. federal regulations.

CHAPTER FOUR: FINDINGS

The purpose of this study was to explore the perceptions of Saudi special education teachers regarding teaching minimally verbal students with ASD and factors facilitating the use of AAC system in their classroom. A qualitative interviewing design was selected as the method and was guided by three research questions:

1. What challenges do special education teachers perceive of teaching minimally verbal students with ASD generally?
2. What are special education teachers' perceptions related to using AAC as an evidence based practice to facilitate commination among students with ASD?
3. Which of Ely's factors do Saudi special education teachers believe they need for successful implementation of AAC in their classrooms?

For this study, a qualitative methodology was chosen. Through the use of virtual meeting software called Zoom, semi-structured, open-ended interview questions were conducted to collect the data. Data were analyzed thematically by extracting codes from verbatim texts from the semi structured, open-ended interviews and responding to each research question.

Chapter 4 presents, (a) a brief descriptions of participants educational background and teaching experience,(b) a full discussion of the findings of this study that are grouped and described in accordance with each study question, and (c) a summary about the major findings of the study.

Participant Descriptions

Ali

Ali has been teaching students with Autism for eight years. He graduated with a bachelor's degree in, Special education- Autism and Behavioral Disorders in 2012. Ali had taught in different cities in Saudi Arabia and moved to the Special Education Institute in Unayzah city 4 years ago. At the time of this study, he was teaching two classes and had a total of 8 students. His students' ages are eight to 11 years old, and their identified disability is, as he described, mild autism and have signs of Attention Deficit Hyperactivity Disorder (ADHD).

Zayad

Zayad has eight years of experience teaching students with ASD. He holds a bachelor's degree in, Special Education- Autism and Behavioral Disorders since 2013. Zayad had taught in a different city in Saudi Arabia in a self-contained classroom for 1 year. Then, he moved to the Special Education Institute in Unayzah city. At the time of this study, he was teaching the same students for three years. The identified difficulties of his students, who range in age from eight to twelve years old, include mild to moderate autism with signs of ADHD and intellectual disabilities.

Khaled

Khaled has been teaching students with Autism for eight years. He graduated with a bachelor's degree in, Special Education- Autism and Behavioral Disorders in 2011. Prior to moving to Unayzah city to work in both the Special Education Institute and self-contained classes, Khaled had spent the previous two years teaching in the Special Education Institute in another city in Saudi Arabia. Khaled has been teaching in a self-contained classrooms for 2 years

in a mainstream middle school. His students' ages are 13 and 14 years old, and their identified disability is, as he described, mild to moderate autism.

Omar

Omar has been teaching students with Autism for twelve years. He graduated with a bachelor's degree in, Special Education- Autism and Behavioral Disorders in 2011. Omar had taught in the institute for 11 years. While this study was conducted, he was teaching one class and had six students. The students in his class range in age from 7 to 10 years old, and it was identified that they have severe autism, according to him.

Mohammad

Mohammad has eight years of experience teaching students with ASD. He holds a bachelor's degree in, Special Education- Autism and Behavioral Disorders since 2013. Mohammad had been a self-contained classroom teacher for three years in other cities in Saudi Arabian. He has been teaching in the Special Education Institute in Unayzah for 5 years. His students, ranging in age from 8 to 11 years old, have mild to moderate autism and ADHD as well as intellectual disabilities as he described.

Findings

The data analysis revealed four key themes that corresponded to the research questions. The major themes include; (a) challenges of teaching minimally verbal students with ASD, related to research question one, (b) positive Attitudes toward using AAC, related to research question two, (c) status of current implementation of AAC, related to research question two, and (d) the perceived need to successful implementation of AAC, related to research question three.

Theme One: Challenges of Teaching Minimally Verbal With ASD

Saudi special education teachers who participated in this study described challenges of teaching minimally verbal students with ASD in terms of expression difficulties, challenging behavior, and teacher-related challenges.

Expression Difficulties. Several teachers interviewed expressed frustration at their students limited spoken ability. Almost all participants voiced their concern about students' limited ability expressing their basic needs. Three of the teachers mentioned that those with limited verbal ability may not be able to express their feeling or needs, such as asking to go to the bathroom.

> *"Students with ASD who have limited verbal skills have many problems, among those problems are lack on daily life skills, some students might not be able to ask to go to the bathroom, and instead they pee themselves on the classroom."* (Ali)
>
> *"There are children with ASD who are completely non-verbal. I have a student who is non-verbal now. It is difficult for me to understand him. Even though he wants to use the bathroom, he does not want to speak at all, and he might do it on the classroom."* (Khaled)
>
> *"Some students have a problem with urinating, so they need to go to the bathroom very often, and they may not be able to express themselves and ask for bathroom, instead they would just leave the classroom without permission."* (Omar)

Khaled indicated to a similar issue and stated that "the problem is that you don't know exactly what he wants, and if he was tired, he wouldn't say I'm tired or thirsty".

Challenging Behavior. In addition, participants in this study suggested that poor communication skills could lead to behavioral problems such as walking around or out of class. Two of the participants reported:

> *"He can't communicate, he doesn't show what he wants, and even the eye contact he can't make it with you. When he sees the classroom's door opened in front of him, he would leave without a permission, he would not say I want to go out, or ask for a break."* (Ali)

> *"The absence of communication is a big problem, you do not know what exactly the students want, and you can't teach what you want them to learn. For example, it is normal for them, in the middle of lesson, to get up and walk out of class or throw something in the trash without asking for permission."* (Zayad)

Also, Omar indicated that some students may exhibit violent behaviors because of the lack of verbal communication skills.

> *"Some students do not know how to express their needs, so you find them hurting themselves or their peers. They may want to eat, or want to go out, or feel sick, but they do not know how to express.*"

Teacher-Related Issues. Participant teachers indicated that minimally verbal students with ASD requires extra effort and responsibilities. The majority of participants frequently mentioned that in addition to being a special education teacher, they also had to act as teacher-aids and related service personnel (e.g., speech and language therapy, psychological services, physical and occupational therapy).

> *"We have a shortage of specialists; therefore, I need to create behavior modification plans and teach them how to properly communicate. All of that is under my*

responsibility, it is a lot of work. That might cause me to falter in teaching the curriculum to other students because the time that I divide for each student could be entirely taken for that student who needs more support." (Omar)

"A teacher for students with autism would act as a speech pathologist in addition of his main job as a special education teacher, and that is a good teacher who wants to improve students' performance and care about his students. Some teachers might say I have nothing to do with students' speech problems." (Khaled)

Mohammad pointed outs the difficulties he encountered when trying to teach the required curriculum and address the unique needs for each students. He stated that "it is not an easy task to meet the content curriculum standards for those students as they are highly heterogeneous and each one of them needs to learn unique and complex skills". The same issue was also indicated by Zayad who stated that:

"I am a teacher who should teach a curriculum. A student comes from home knows nothing. Should I teach him PECS, or I teach him the curriculum, I do not know. We suffer from cases who do not understand nothing definitively, do not know how to communicate, do not know how to ask. How it is possible to teach them the curriculum? They have other needs that are really important to be addressed."

Theme Two: Positive Attitudes Toward Using AAC

The importance and advantages of adopting AAC with students who have ASD were highlighted by the majority of teachers who took part in this study. Two of the teachers' have tried to implement AAC with autistic students and their responses highlighted the positive impact of using AAC on improving students' ability to communicate their feelings and basic needs.

"When using PECS, a student will be self-reliant and able to express his needs, it is very essential for them to learn daily life skills and how to tell if he wants anything from their teachers." (Mohammad)

"It is very useful, especially with non-verbal children. It helps those students to express their needs, if he wants to eat or drink. It could be so difficult for some of them to tell you what they want." (Omar)

Omar, also, added that AAC decrease in the problematic behaviors demonstrated by the students.

"*I have applied it before on one of my students. To be honest with you, I noticed that the student was calmer than before due to the ability to express themselves and be understood. He was able to use cards to express what he needs instead of just walking around.*"

Moreover, Zayad and Ali expected, as they never used the intervention before, that AAC would be a good way to help minimally verbal students with ASD communicating their needs.

*"I have told you earlier that lack of communication is a major issue since it makes it impossible to know exactly what those children want. The biggest benefit is that you can communicate with them and understand their needs." (*Zayad)

Ali also mentioned that "communication through cards is the only way to know what they want".

However, Khaled was skeptical of using AAC as a strategy to communicate with students with ASD. He indicated that using AAC could hinder the improvement of verbal skills for students with ASD.

"What I would like to say is that cards by themselves are not enough. I have a non-verbal student, and this student would not speak if I provided him with the cards because he would find the alternative to speaking."

Theme Three: Current Implementation of AAC

All of teachers who participated in this study indicated that ACC was not or limitedly implemented with students with ASD. Khaled stated that, in the KSA, AAC is rarely used with students who have ASD.

> *"Never implemented, only a few teachers implement AAC in all regions of the Kingdom, you can count them on the fingers of one hand, I would say only 5% of them."* (Khaled)

Ali, Zayad, and Khaled indicated that the majority of teachers do not utilize AAC and instead they use natural gestures to communicate with their students.

> *"They use it very very very little, it may be difficult to use, so they don't use it. I see only a few teachers use it. Most teachers use sign language to communicate with the nonverbal students or let the student walk and follow them to see what they want"* (Ali).
>
> *"If he wants something, he would use gestures and facial expressions. So, you know what he wants from his face and his gestures or by pointing, we know what he wants. We use it in general, but as a strategy we're adopting! No."* (Khaled)
>
> *"I believe that it is used by only a very few teachers, and it is not used with all students. Students who have limited or no communication, I don't know what to tell you, but I get to know them. I come to know their needs through a lot of experience. He shows it in a certain way. If he is hungry and wants to eat, he would point to his mouth."* (Zayad)

Also, Zayad pointed out that they have not used AAC even in the field-based practice course before becoming a special education teacher.

> *"Even in the practicum course when I was a special education candidate, I did not use it. It was a separate special education school, most of the students had limited verbal abilities and sever autism, and nothing was used with them."*(Zayad)

Further, Other participants noted that some teachers might use AAC only to teach functional communication, not for teaching them the curriculum. Mohammad said "we might use pictures to know if they want to drink or go for bathroom, but not for teaching them literacy". Further, Omar mentioned that:

> *"It is rare for a teacher to use cards to teach the content in the curriculum. 40-50% of teachers might utilize them to teach students how to communicate their feelings and basic needs. For, example if a student needs to eat or go for bathroom."*

Theme Four: The Perceived Need to Successfully Implement AAC

Another important theme was anticipated needs for successfully integrating AAC. All of the participants agreed that there are a number of factors that impact the successful and effective deployment of AAC with minimally verbal students with ASD. Five of Ely's eight conditions were perceived to have a great influence on facilitating the implementation of such an intervention which includes knowledge and skills, resources, participation, commitment, and leadership.

Knowledge and Skills. Participants reported a great need for training to be effective in implementing AAC interventions. Two teachers have indicated that they have not received any training since they have become teachers, and mandatory and ongoing training on how to effectively implement AAC should be considered.

> *"Some teachers do not have the knowledge on how to teach autistic students, they teach them as if they are teaching normal kids. Simply, they are not teaching. We might need training, and I believe there are some courses teachers can take but they are not mandatory. So, it is up to them if whether they want to take them."* (Ali)

"We learned about PECS when I was on college. I believe they offer some training courses for those who want, but I am not sure if there are training sessions about AAC. I think that special education teachers need to have professional development opportunities on such an intervention and other strategies." (Omar)

In addition, Zayad mentioned that the field of special education, especially autism teaching, is evolving. As a result, special education teachers will most likely have to change the ways in which they teach students with ASD to meet the complex and unique needs for each student.

"The problem of teaching autistic children, you have to update your information constantly. Every once in a while new information and updates come up in how to deal with them, and the techniques you should use with them. Like the new classification of autism, I only learned about it two years ago. Therefore, we need training courses that are mandatory for all teachers."

Also, Khaled pointed out that he has learned from the sources available on the internet, but he indicated that there is not enough information on the internet and in-service training is very important to make teachers more effective.

"We are trying to carry out the educational process according to our efforts, and there are YouTube videos that we can learn from, but the content is unfortunately very little. So, teachers depend on themselves if they want to improve their teaching skills. Therefore, teachers need training courses which could be online, and I am sure that with practice they will become proficient in it."

Availability of Resources. One-hundred percent of the participants frequently discussed the challenges associated with funding, availability of materials and support or related services. Khaled stated that the necessary supplies were not available at their schools, so he had to pay out

of his own pocket for obtaining supplies for pictures. He said “I am the one who has to bring pictures with me, which costs me effort and money. Schools don't support that. If you bring pictures, they don't give you expenses for them”. Omar described similar experiences with being responsible for buying and assembling these materials.

> *“If a teacher wants to use pictures for communication, the school will not provide them or give you money to buy them. You are responsible for buying those cards. We have to choose the pictures, cut them out, and laminate them.”*

Zayad pointed out the differences between public schools and private special education centers on the amount of support available to teachers to better meet the needs of students with ASD.

> *“Teachers need support and tools because autistic students are visual learners. When you go to private centers, you will find a big difference from public schools, because private centers have resources and financial support. They have everything provided. However, in public schools, teachers need a lot of support.”*

Moreover, Ali described the difficulties he had encountered in obtaining supplies for those pictures and cards. He said “Teachers are not supported. When I was in another school district, I had a student who needed PECS. I requested it from the administration and it did not provide it to me”. Similar issues were raised by Mohammad as well. He stated “school administration did not buy us tools we need in general, we are buying from our own money”

Participation in the Decision-Making Process. The majority of teachers indicated that there is a lack of related services, such as speech language services, which are crucial for the successful implementation of AAC with students with ASD. Khaled mentioned that speech-language pathology services are completely not available on his school.

"I have a non-verbal student in the class, this student should be referred to a speech-language pathologist (SLP), but we do not have a SLP in our school. The shortage of related service personnel is a big problem in our schools."

Also, some participants indicated that even though they have a speech-language pathologist in their schools, services could not be provided for all students because of the limited number of SLPs compared to large number of students who are in need. One participant stated:

"We have one SPL, and I do not see any benefit from him due to the large number of students and only one specialist. It is just a routine procedure. I do not see any benefit. A large percentage of my students have a need for intervention in communication, especially those who are young, such as 6 or seven years old, who have problems with speech." (Zayad)

Omar said "Most of my students need a speech therapy. We have only one SLP who cannot cover all the center's students. He takes the students who can benefit and their parents can cooperate with us."

In addition, some participants discussed the importance of getting all the people involved on board when using AAC interventions. Omar indicated that the school's SLP usually has a whole different plan than they have, and he asserted that related services personnel, including SLPs, should work hand in hand with special education teachers.

"The SLP takes the student two days a week for 45 minutes. What does he do with them? I don't know. We work on our own plan in the classroom, and he works on his own plan in the communication room. I mean, there is no teamwork. We don't know the plan that he is following. I mean, we have studied and learned that we are supposed to work as a

team, but it is not applied in reality. Everyone works on his own, the psychologist is on his own, and the speech therapist is on his own."

Zayad, also, commented about the same issue and said "I do not know what the SLP is doing with my students, I really have no idea. He takes a student for a class period and returns him back to the classroom".

Commitment. Teachers indicated that because there is no school policy on integrating AAC with students with ASD, not all school teachers are utilizing AAC. Zayad pointed out the absence of legislations that support AAC implementation. He said "AAC is rarely implemented because we are not required under the law to use it. Similarly, Khaled mentioned that in order for AAC to be adopted, teachers need "law and supervision".

In addition, it was noted the curriculum teachers used didn't include or promote AAC implementation or any other communication strategies. Mohammad stated that the curriculum did not consider students' unique needs such as communication needs.

"We mostly follow the individual educational plan (IEP) and the goals are sequential from the easiest to the most difficult. The problem is that it is difficult to teach skills other than the one on the curriculum. We are required to apply the curriculum from the ministry. The Ministry did not take into account, in general terms, the importance of behavior modification and language and speech disorders."

The same issue was noted by Ali and Zayad who said "We follow a specific schedule and a specific curriculum. Every student has his own needs, but the ministry wants us to apply the curriculum". Furthermore, Omar was complaining that it was not possible to teach curriculum to students who are not able to express their basic needs.

"The problem that we are restricted to teach the elementary school curriculum. A student comes to me who does not know anything, how do I give him a curriculum? He cannot even express his needs if he wants to eat or drink."

Further, one of the factors that could facilitate the effective implementation of AAC is family participation or involvement. One of the teachers indicated that a parent's lack of cooperation is affecting the acquisition of skills taught at school.

"Parents are not cooperating. They dump their son at school so they can rest. Ok, do they use the cards at home? They don't use them. With these people, it is very difficult for us and for the child to learn, as the year may end, and the student did not benefit from anything because I am working on my own." (Omar)

Also, Khaled said that "most of parents are not interested to be involved in their children education, which make it hard for us to teach them new skills".

Leadership. AAC implementation would be more effective when school administrators support it, according of the majority of participants. Three teachers indicated that many administrators, including school principals and district supervisors, are not aware of the complex and unique needs of students with ASD, and to implement such intervention, administrators support becomes extremely important. The teachers said:

"The administration is not familiar with the needs of students with autism. The district has only one supervisor who specializes in autism education" (Omar)

"The autism teachers are under a leader who does not enough knowledge about autism, even the district supervisor. So, we need educational reform" (Khaled).

"The administration must be familiar with ASD and have a background in autism. That will help them understand the nature of students with autism" (Mohammad).

Moreover, Ali shared his negative experience with one administrator when he tried to use cards for communication with a student.

> *"I remember a school principal when I was teaching at other district. The principal came in and saw a student crying because the student wanted to go the bathroom, so I opened the file for him to let him point to what he wanted. The principal told me to open the door for him and let him go and see what he wanted. I wanted to teach him how to communicate by cards, but the principal intervened. Therefore, the administration must be familiar with it in order to know his needs and know the appropriate intervention for him."*

Conclusion

This chapter concentrated on the findings drawn from the semi-structured interviews with five Saudi special education teachers who have worked with students with ASD. Qualitative interview data were thematically analyzed using a six step coding strategy suggested by Braun & Clarke (2006). Three research questions guided this study; (a) The first research question was: What challenges do special education teachers perceive of teaching minimally verbal students with ASD generally?, (b) What are special education teachers' perceptions related to using AAC as an evidence based practice to facilitate commination among students with ASD? , and (c) Which of Ely's factors do Saudi special education teachers believe they need for successful implementation of AAC in their classrooms?

In response to the first research question, the research findings focused on the challenges special education teachers faced when teaching minimally verbal students with ASD which includes expression difficulties, challenging behavior, and teacher-related challenges. Teachers have noticed that students with limited verbal skills struggle to express their basic needs and

emotions, which can result in behavioral issues. Additionally, they discussed difficulties faced by teachers, including additional work and responsibilities.

In response to the second research question, there were two themes raised from teachers' responses; positive Attitudes toward using AAC, and status of current implementation of AAC. Teachers, generally, have positive attitudes toward using AAC to enhance communication skills for students with autism. Participants' responses confirmed that from their perspectives the use of AAC improves students' ability to communicate their feelings and basic needs. Although there were positive attitudes toward using AAC with students with ASD, teachers reported no or limited implementation of ACC with students with ASD.

In response to the third research question, participants' responses revealed five factors or conditions perceived to be necessary for successful implementation of AAC. Conditions for change discussed by participants included knowledge and skills, resources, participation, commitment, and leadership.

CHAPTER FIVE: DISCUSSION OF THE FINDINGS

The purpose of this study was to explore the perceptions of Saudi special education teachers regarding teaching minimally verbal students with ASD and factors facilitating the use of AAC system in their classroom. This study was guided by three questions:

1. What challenges do special education teachers perceive of teaching minimally verbal students with ASD generally?

2. What are special education teachers' perceptions related to using AAC as an evidence-based practice to facilitate commination among students with ASD?

3 - Which of Ely's factors do Saudi special education teachers believe they need for successful implementation of AAC in their classrooms?

The main components of this chapter contain: a full discussion and interpretation of the study findings, possible limitations of the study, possible implications for practice, and suggestions for future research. The key findings of the study provided answers to the three research questions that guided this research. The first key finding was that teachers who had experience teaching minimally verbal students with ASD described challenges of teaching such students in terms of expression difficulties, challenging behavior, and teacher-related challenges. It had been noted by teachers that limited verbal abilities have a negative impact on students' ability to communicate their basic needs and feelings which may lead to behavioral problems. Also, they described challenges related to teachers which included extra effort and responsibilities. The second key finding of this study was that for the teachers involved, even though AAC is rarely implemented in their schools, they had positive attitude toward the

implementation of AAC intervention with students with ASD. Finally, this study revealed that a number of perceived conditions were necessary for successful AAC implementation, including knowledge and skills, resources, participation, commitment, and leadership.

Interpretation of Findings

Theme One: Education of Minimally Verbal Students With ASD

Research question one was formulated to explore challenges Saudi special education teachers perceive of teaching minimally verbal students with ASD. Findings from teachers' responses revealed that teaching minimally students with ASD had many challenges that took the form of expression difficulties, challenging behavior, and teacher-related challenges.

Expression Difficulties. According to Pratt et al. (2017), 20 to 30% of individuals with ASD do not develop vocal skills. A communication deficit can range from non-vocal to people who speak but have difficulty conversing (APA, 2013). Some teachers faced difficulties when students were unable to find a way to effectively communicate their basic needs and feelings, for example asking for the bathroom.

Teachers were frustrated because of their students' lack of verbal ability, which is considered a main characteristic of students with autism (APA, 2013; Pratt et al, 2017), as they were not able to fulfill their students' basic needs. These findings were consistent with that of Westling (2010) and Manukwana (2020) which aimed, in part, to understand teachers' perceptions of working with student with challenging behaviors, and they found that teachers may feel stressed when trying to understand what students need. Also, similar observations were made by Almutlaq (2021) who investigated the challenges Saudi special education teachers faced when coping with students with autism exhibiting problem behaviors. She indicated that some teachers face difficulties understanding what students need.

Literature has indicated that those with ASD who are unable to express themselves may experience serious difficulties both academically and socially in school (Plavnick et al., 2013; Clark, 2013; Wei et al., 2014). Research also showed that limited communication minimizes students' relationships with their teachers and peers. Considering all these factors, it is important to address the challenges teachers note when it comes to helping students express themselves. The findings of this study are consistent with to the body of knowledge already available on the problems brought on by teaching ASD students who have limited communication abilities and the importance of effective communication interventions to help those students and their teachers.

Challenging Behavior. Due to the lack of or limitations in their communication abilities, many children with ASD become frustrated when attempting to communicate their feelings, thoughts, and needs, resulting in them acting out their frustrations in inappropriate ways ("ASD: Communication Problems," n.d.; CDC, 2020; Chiang, 2008 & Park et al., 2012; Walker & Snell, 2013). This also accords with what teachers indicated in this study attributing behavioral problems to the lack of communication skills. Specifically, teachers elaborated that poor communication skills may lead to violent behaviors and disruptive behaviors such as walking around or out of class.

A similar issue was shared by one of the teachers who noted that some of his students were physically aggressive and hurt themselves or their peers because of their limited vocal abilities. These observations align with Bjorkly's (2009) analysis of 29 violent incidents involving individuals with autism spectrum disorders, Bjorkly found that 10 (35%) of these violent acts were provoked by the person with ASD's limited communication skills. In

accordance with existing literature, autistic children may display violent behavior when they cannot express themselves (Chiang, 2008 & Park et al., 2012; Wei et al., 2014).

These relationships were explained by Walker & Snell (2013) who indicated that challenging behaviors function as a means of communicating for those with ASD. According to them, there were three types of challenging behaviors described: (a) distracting behaviors such as leaving class, ignoring, telling people "no", (b) stereotyped conduct such as pacing, rocking, and (c) behaviors that differed from typical students their age. They suggested that interventions aimed at improving communication abilities would reduce problematic behavior.

Teacher-Related Issues. Besides student-related challenges, teachers also faced difficulties teaching students with ASD who have limited verbal abilities. Teachers indicated that teaching those students required additional burdens and responsibilities. Moreover, participants frequently mentioned that they had to act as teacher-aides and related service personnel on top of being special education teachers. These findings describing the challenges of teaching students with autism from teacher perspectives were consistent with those of Almutlaq (2021) and, Mukhopadhyay and Nwaogu (2009). According to Almutlaq (2021) there was a long list of responsibilities that teachers had beyond the actual teaching process when becoming a teacher for students with ASD which, for example, may include feeding and protecting. Also, Mukhopadhyay and Nwaogu (2009) found that teaching non-verbal students with disabilities put more demands on teachers.

The findings strongly imply that Saudi special education teachers require more support from a multidisciplinary team when teaching students with ASD who have limited verbal skills. That was evidenced by their responses which indicated that teachers' responsibilities were not limited to the teaching process. As a special education educator, the biggest challenge is

fulfilling the multiple roles outside of education that require exceptional levels of communication and collaboration (Geiser, 2019). According to a review of studies published between 1979 and 2013, the most significant factors in special education teachers' reported burnout were their teaching experience, the disabilities of their students, role conflict, role ambiguity, and the absence of administrative support (Brunsting et al., 2014).

Also, this study illustrated issues related to the difficulties participants faced when teaching the curriculum and addressing other unique needs of students with ASD which include communication needs. For example, some teachers indicated that they could not complete the required curriculum because each one of their students had unique needs that should be addressed. This finding was reported by educators from a prior study conducted in Amman by Sabayleh and Alramamneh (2020) that aimed to explore barriers of implementing educational techniques in special education centers from the perspective of teachers of students with ASD. In their study, teachers indicated that using learning technologies delays the completion of the curriculum because the length of time for classes was not sufficient to integrate such interventions. These findings may be explained by the possibility that the curriculum does not take into account the different needs of students with disabilities. Therefore, the teachers in this study faced difficulties whether they had to teach the required curriculum and meet the different needs of their students. Alghamdi (2021) noted that because there are no national standards, teachers employ similar teaching strategies even when working with students who have different needs. He also found that when implementing an intervention, teachers must make sure that it does not conflict with approved learning outcomes and curriculum needs of students, in accordance with the Ministry of Education. Abu Alghayth (2019) further indicated that the current curriculum places limited emphasis on the use of technology to facilitate teaching and

learning. For this reason, current curricula do not fulfill the unique needs of students with autism, one size does not fit all.

Theme Two: Positive Attitudes Toward Using AAC

Findings revealed that the majority of teachers in this study support the idea of using AAC interventions to enhance communication skills for students with autism. Specifically, teachers who have used AAC elaborated that using AAC improves students' ability to communicate their feelings and basic needs. Teachers' observations are consistent with research findings that have been previously published in the literature, where researchers and teachers have similarly shown positive attitude for using AAC to improve communication skills in ASD students (Ganz et al., 2012; Joginder et al., 2020; Romski & Sevcik, 2003; Soto, 1997). For teachers who had not used AAC with their students, they predicted that such an intervention would be very helpful for them and their students. Furthermore, one of the teachers mentioned that AAC would at least help us on understanding students' needs and feelings. Also, similar to the observation made by special education teachers who participated in this study, Joginder et al. (2020) found that following the implementation of AAC, teachers noticed a decrease in the students' problematic behaviors.

While most participants knew the benefits of AAC, a few continued to have misconceptions about it. Specifically, one teacher shared his negative thoughts about the use of AAC to enhance ASD students' communication ability and noted that such intervention may hinder speech development. The study findings were also consistent with Joginder et al.'s (2020) work that explores teachers' use and perceptions of AAC. Findings from the study showed that several teachers believed that using AAC would impede speech development because it would reduce the need for speech. According to Cress and Marvin (2003), the idea that AAC would

prevent someone from learning to speak is a prevalent misunderstanding among practitioners. However, studies have demonstrated that AAC can help children develop their speech and language (Millar et al., 2006; Schlosser & Wendt, 2008). To evaluate the effects of AAC intervention on speech production in children with autism, Schlosser and Wendt (2008) conducted a systematic review of nine single-subject experimental design studies. The findings demonstrated that AAC interventions do not hinder speech production. Millar et al. (2006) also reported the same outcome. They found that, after evaluating AAC interventions for 27 individuals, AAC improved speech in 89.7% of instances.

In general, special education teachers who participated in this study were supportive to successful and effective implementation of AAC. Teachers positive support for AAC utilization could be an importance factor for improving current practice. This can be understood in the light of Ely's work (1990), the conditions for change theory. Ely asserted that “dissatisfaction with the status quo" is the first condition for achieving institutional change, which means that users feel that things should be improved (Ely, 1999). If people don't like the way things are right now, they might try to change them. Ely argues that one of the first steps to initiating change is feeling unhappy about the current situation. The findings of the present study indicated that teachers were looking for better practices to address communication needs of their students.

Theme Three: Status of Current Implementation of AAC

Even though teachers held positive attitude toward using AAC with students with ASD, there was no or limited implementation of ACC with students with ASD, according to all teachers who participated in this study. One teacher claimed that AAC is implemented in limited ways across the nation. This finding reflects those of teachers in studies by Alghamdi (2021) and Alasseri et al. (2010). Alghamdi (2021) found that Saudi special education teachers described

similar finding and indicated to the limited implementation of AAC with students with autism in public schools in. Alasseri et al. (2010) conducted a comprehensive survey to explore the extent to which AAC services were available to students who need them. The survey results revealed that many institutions encountered numerous obstacles when attempting to deliver AAC services to students with disabilities. Generally, there is a lack of effective AAC intervention services in many countries, especially in countries with low and middle incomes (Alant & Lloyd, 2005; Hock & Lafi, 2011; Joginder et al., 2020)

Communication between students and teachers using AAC could take different forms. Types of AAC, according to ASHA (n.d.), are usually classified into two categories: unaided communication systems and aided communication systems. In this study, some teachers asserted that facial expressions and natural gestures were their main modes of communicating with students. Also, one teacher mentioned that teachers do not adopt AAC, and that their use of sign language and gesture came naturally without considering students' abilities and needs. Similar observations have also been made in the literature by Mukhopadhyay and Nwaogu (2009), who found that many teachers were communicating with nonverbal students by using natural gestures, which were mostly functional in nature. One explanation for these findings is that, according to Meadows (2018), teachers often revert to traditional methods of instruction and communication when AAC intervention becomes overwhelming for them.

Some teachers who involved in this study confirmed that AAC was used only to teach functional communication skills, not for teaching the curriculum. For example, one of the teachers shared that teachers might use cards to understand students' basic needs such as eating. This finding was also reported in previous observations (Soto, et al., 2001; Mukhopadhyay & Nwaogu, 2009). Both studies found that teachers might use AAC to understand students' needs

and feelings rather than for academic use of language. Based on the teachers' responses and past literature studies on the topic, it may be concluded that AAC systems are rarely implemented with ASD students in Saudi public schools, and if applied, this application is not without major shortcomings. The next theme presents factors that participants in this study believe would facilitate the successful implementation of AAC system.

Theme Four: The Perceived Need for the Successful Implementation of AAC

Interpretation of this theme involved analyzing all subthemes identified through coding. These subthemes were extracted based on Ely's (1990) eight conditions of change. These subthemes were discussed in relation to current literature and the study's theoretical framework. Conditions for change discussed by participants included knowledge and skills, resources, participation, commitment, and leadership.

Knowledge and Skills. The ability to employ a technology or invention requires that the final users have the necessary skills and knowledge (Ely, 1999). This subtheme was the first to emerge as an important factor for successful implementation of AAC that all participant teachers indicated too. Ely (1990) said that existence of knowledge and skills is considered as one of the most important factors leading to successful implementation. According to the special education teachers involved in this study, they need extensive training to implement AAC interventions effectively. These findings were consistent with local and international literature. To enhance effective implementation of AAC in Saudi's public schools, available research found that improving teachers' knowledge is essential (Aldabas, 2021; Alghamdi, 2021). Internationally, lack of teachers' AAC knowledge was considered as a major barrier to its implementation (Andezik et al., 2019; Joginder et al., 2020; Kent-Walsh & Light, 2003; MacNair, 2017).

Consistent with Ely (1990), lack of knowledge in this area is problematic because acquiring the necessary skills and knowledge is necessary to effect change.

Teachers involved in this study suggested that AAC ongoing in-service training sessions should be mandatory for all teachers. Like the findings of this study, Meadows (2018) stated that "district-wide professional developments need to be mandatory for special educators and be comprehensive" (p. 100). Alasseri et al. (2010, as cited in Albuqami, 2020) also indicated that the provision of AAC services, in Saudi Arabia, is hindered by the lack of well-designed training opportunities for teachers and other professionals.

Ideally, educators should receive more training on AAC at the pre-service level. However, such training might not be offered for teacher candidates or only in a limited fashion. For example, one teacher pointed out that he did not use AAC in the field-based practice course before becoming a special education teacher. Similar observations were also made by Subihi (2013) who targeted 30 special education teacher candidates in Jeddah city to evaluate their knowledge of AAC as well as to what extent their knowledge was associated with academic levels and unique specializations (e.g., autism and intellectual disabilities). The data were collected by using a survey consisting of ten questions. The results indicated that participants' knowledge of the AAC was very limited. Furthermore, no statistically significant differences between the academic levels and the unique specializations of the participants were found in their knowledge of AAC.

The CEC (2015) also explicitly suggested that the delivery of AAC services would be a necessary skill for special educators working with children with developmental delays or ASDs. Thus, teachers in this study reported a need for extensive training to implement AAC

interventions effectively and suggested mandatory and ongoing in-service professional development opportunities for all special education teachers working with students with ASD.

Availability of Resources. According to Ely (1990), availability of resources plays a key role in making an implementation successful. Without the necessary resources, educational reforms cannot be carried out. Resources may include but are not limited to funds, hardware, software, and support necessary to successfully implement the technology or innovation (Ely, 1990). Based on responses of the participants, the field of autism education was in critical need of funding, availability of materials and support to successfully implement AAC. Participants elaborated by saying that the Saudi Ministry of Education's lack of financial and material support was a significant barrier to AAC implementation in the classroom. For example, teachers shared that if they would use AAC, they would be responsible for buying and assembling the needed materials. Similar findings have been reported by Aldabas (2021) who investigated Saudi special education teachers' perceptions in barriers and facilitators associated with using AAC with students with multiple disabilities. The results showed that lack of resources is considered one of major barriers to implementing AAC in Saudi schools. Alghamdi (2021), as well, indicated the absence of financial support is perceived as a significant barrier to the utilization of iPads to improve communication skills of students with ASD. Consequently, it should be mentioned that in Saudi Arabia, the need for financial support remains one of important factors to bring about change in AAC implementation among special education teachers, especially in classrooms with students with ASD in Saudi Arabia.

It was noted by one teacher that public schools and private special education centers have different levels of support available to teachers for meeting the needs of students with autism. Special education centers, as he claimed, provided much better services due to the availability of

resources and financial support. Thus, another teacher asserted that some students with limited verbal abilities might be referred to private centers to receive communication interventions. These findings were also highlighted by Al-Zahrani (2013) who said that some students with ASD receive communication intervention and other services from private institutions as a result of the limited services available to them in the public school system. The availability of resources, including financial support and assistance, may ensure the implementation of AAC as it was prevalent in private centers, which would allow teachers and students to receive materials and assistance related to the intervention.

Participation in the Decision-Making Process. This condition highlighted the importance of communication between all stakeholders and collaborative decision-making on the part of the users and implementers of the innovation (Ely, 1999). In the current study, participants recognized the importance of working with SLPs in a shared-discussion process regarding the implementation of AAC. In elaboration, teachers asserted that there is a shortage of related service personnel especially SLPs who collaborate with teachers in the selection and implementation of AAC intervention. Speech-language pathology services were inconsistent or absent due to the limited number of SLPs compared to the large number of students who are in need. The lack of SLPs is a common issue reported in previous literature (Kent-Walsh & Light, 2003; Soto et al., 2001; Tonsing & Dada, 2016), the issue became even more pronounced in low- and middle-income and developing countries (Joginder et al., 2020; Mukhopadhyay & Nwaogu, 2009; Muttiah et al., 2018).

Participants of this study shared that few schools have SLPs, but they usually have a whole different plan than they do. This finding was also reported by a recent study, conducted in a developing country by Joginder et al. (2020), aimed to explore Malaysian teachers' use of,

experience with, and perceptions about AAC. Findings from the study showed that most teachers do not have SLPs in their schools. On the other hand, those who had the chance to work with an SLP noted that there was a communication gap between them and the SLP. They claimed that SLPs did not consult them before introducing AAC or provide them the information about the AAC system that had been introduced to the student (Joginder et al., 2020). Contrary to what Binger et al. (2012) recommended, SLPs are urged to collaborate closely with teachers during the assessment process since they can provide important information to teachers on how to address students' communication needs. Thus, the need for SLPs' collaboration was perceived as an important factor for effectively implementing AAC in Saudi public schools.

Commitment. Ely (1999) stated that commitment is the visible and firm evidence that the innovation is supported and endorsed by the key players and other stakeholders throughout its development and implementation. Therefore, the fourth subtheme that emerged in this theme was the importance of commitment among key players. Teachers who participated in this study reported that there is a need for legislation that require the consideration of AAC intervention for those in need. Otherwise, teachers would not implement such an intervention. These findings were well recognized on the previous studies. Alghamdi (2021) shared that one of the factors hindering special education teachers from the utilization of iPads for educational purposes is the lack of national standards on the use of technology relevant to student needs. In addition, Alrubiyea (2010) and Aldbas (2015) asserted the need for a comprehensive policy that maintains rights and meets the needs of students with ASD in inclusive education, including the use of assistive technology. Absence of AAC related legislation would affect teachers' commitment to the uptake of such intervention in schools.

According to responses of the participants, teachers' commitment was also affected by the current curriculum that does not mandate the integration of AAC or any other communication strategies. Similar concerns have been reported in the literature by Alghamdi (2021) and Abu Alghayth (2019) who indicated that the use of technology to enhance teaching and learning is not given much attention in the existing curriculum. Because of this, the current curriculum does not satisfy the particular needs of students with autism. In addition, Barri (2014) noted that teaching special needs students is largely based on traditional approaches, making it challenging for teachers to integrate technology into their classrooms. The paucity of commitment caused by current curriculum ignorance to the unique needs of students with ASD hinders the uptake of AAC intervention in schools.

Beside the importance of new legislation and curriculum to promote AAC integration, teachers also recognize the value of parental involvement and commitment. Collaboration with the family has been emphasized as a key component of successful AAC interventions (Calculator & Black, 2009; Hunt et al., 2002). Teachers shared that most of parents do not follow up with what have been taught in school which effect the acquisition of skills taught at school. This finding is consistent with that of Kent-Walsh & Light (2003) which indicated that teachers have reportedly raised concern about the lack of effective family collaboration. Also, Omar (2014) indicated that Saudi parents were less likely to participate in educational interventions. A possible explanation for this, based on informal conversations with both parents and teachers and previous literature, might be (a) lack of parents time due to other parental or occupational responsibilities, (b) lack of parents knowledge about the intervention (Algamdi, 2020 & Omar, 2014), or (c) lack of schools' effort to proactively ask for family involvement or offer adequate guidance about transition programs (Almalki et al., 2021).

Leadership. According to Ely (1999), leadership is composed of two levels: (1) the executive officer of the organization's leadership, like the ministry of education; and (2) the project leadership, which is more intimately tied to the day-to-day operations of the innovation itself, like school principals. The desire for supportive leadership was the fifth subtheme that emerged from this theme. Teachers in this study reported an urgent need for the support from school leasers in the process of AAC service delivery. They shared that due to school administrative lack of knowledge about the complex needs of students with ASD, teachers were not supported to uptake AAC interventions. This finding broadly supports the work of Andzik et al. (2019) in linking administration support to their knowledge of unique needs of students and possible interventions. Joginder et al (2020) also indicated that increasing the levels of knowledge among school administrators on AAC will facilitate teachers' use of the strategy by providing them with the necessary resources. Based on the teacher responses and past literature studies on the topic, it may be concluded that AAC service delivery demands better administrators' support for special educators and other team members.

Limitations

This study is not without potential limitations that must be taken into consideration when interpreting the findings. One limitation is related to the nature of the research methodology used in this study. Although this small sample included five special education teachers with a range of teaching experience (8 -12 years), who taught at different school settings (special education institutes and self-contained special education classrooms), it should be highlighted that qualitative research does not aim to generalize its findings to a larger population. Also, the findings were drawn from semi-structured interviews with the participants which were the main

source for data. Thus, obtaining results from multiple sources of data may yield different findings.

In addition, due to the fact that semi-structured interviews were conducted only in one city called Unayzah, the findings were limited to special education teachers in this city. There might be different challenges that special education teachers face in other cities when teaching minimally verbal students with autism spectrum disorders, as well as on their perspectives on the factors that facilitate AAC implementation. The experience and perceptions of special education teachers in Unayzah cannot therefore be generalized to other parts of Saudi Arabia.

Lastly, this study was limited by the relatively homogeneous sample of participants. All of the study participants were male special education teachers who have at least 8 years of experience working with students with ASD. Including novice teachers and female teachers would allow for a more diverse population of teachers teaching students with ASD which might bring additional insights on the topic of the research. The study may have been limited by only interviewing special education teachers and could revealed different findings by interviewing other stakeholders such as parents and administrators.

Implications

The result of the current study holds important implications in terms of positive change regarding teaching minimally verbal students with ASD by identifying factors needed for teachers to facilitate the implementation AAC intervention to enhance communication skills for students with ASD. The results suggest some important implications for educational leadership, initial teacher education programs, and professional development.

First, there are number of implications for leadership in both levels executive officer represented by the Ministry of Education (MoE) and project leadership represented by school

administrations. Insights from this study showed that the absence of AAC related legislation would affect these teachers' commitment to the uptake of such intervention in schools. Therefore, the MoE might need to revise the current policy to include more details about the nature of services, including AAC, that ought to be delivered as well as comprehensive guidelines for classrooms practices. These policies might include the following: (a) students' rights to have a free access to AAC devices and services in the Least Restrictive Environment (LRE) (b) comprehensive guidelines for considering and documenting the need of AT, including AAC, in students' IEPs as well as for the implementation process, and (c) providing support for collaborating work and training to educational teams and parents. Also, the MoE should consider developing strategies for a teacher to be able to integrate AAC into curriculum and pedagogy. Lastly, due to the shortage of SLPs, the MoE needs to consider opening academic degree programs in speech and language pathology in Saudi universities. That would increase the participation of a multidisciplinary team in a shared-discussion process regarding the implementation of AAC.

On their part, school administrators, including school principals and district supervisors, need to possess knowledge about the complex needs of students with ASD and possible interventions to meet those needs. Also, school and district administrators need to source additional funding for materials related to AAC intervention and its implementation in special education schools. In addition, district and school administrators should use strategies to increase parental involvement as it was recognized an important factor for effective AAC implementation by the participant of this study. Districts might need, for example, to (a) develop a communication app to document students' educational profile and progress, schedule parental meetings, and provide information about school's events, and (b) hold mandatory annual

meetings for parents to increase their awareness of their right and responsibilities with regard to their children's education.

Second, initial teacher preparation programs ought to effectively prepare student teachers for AAC interventions by teaching them about the theoretical and practical framework of AAC. In addition, teacher candidates need to be provided with sufficient time to practice learned knowledge under the supervision of their advisors during the field-based practicum courses. Generally, student teachers need more opportunities to develop their competencies in teaching minimally verbal students with ASD.

Third, in-service educational team members are in urgent need for developing professional development training courses about AAC systems because most practicing special education teachers felt that their lack of knowledge and skills related to AAC implementation. Professional development opportunities are needed to be consistent and mandatory for all special education teachers. To ensure high-quality training, we might need to develop an assessment tool such as an indicator checklist to evaluate the quality of training sessions.

Recommendations for Future Research

Future research around deepening the understanding of what is needed for public schools to effectively implement AAC intervention is critical. First, the findings of the current study are based only on teachers' perspectives. Thus, there is a need for future studies to compare teachers' perceptions with actual practice by using different methods of data collection, such as field note observation, beside interviews. Also, future studies might explore other educational team's perspectives (e.g., general education teachers, principals, and parents) about what schools need for successful implementation of AAC intervention.

In addition, future research should take into account recruiting special education teachers from other cities besides Unayzah to enable cross-comparison of teacher perceptions of using AAC intervention with students with ASD as well as factors that facilitate AAC integration in Saudi public schools. That would assist understanding whether special education teachers from other cities hold similar or different perceptions on challenges when teaching students with ASD who have limited verbal skills as well as factors facilitating the use of AAC system in classrooms.

Furthermore, it seems that special education private institutions are better at meeting the need of students with ASD. There are no studies exploring private institutions with respect to what is available to them to make them provide better special education services. Therefore, future researchers should consider exploring factors underlying the effective implementation of AAC in private institutions.

Also, teachers reported that the majority of parents do not follow up with what their children have learned in school, which has an impact on their ability to learn those skills. Future studies might need to explore the extent to which students' academic achievement was affected by lack of parental engagement in Saudi Arabia, and factors associated with parents' lack of participation in education.

Lastly, further work may consider conducting quantitative research to include large numbers of special education teachers across the country to explore malleable factors (e.g., teachers' knowledge, support, policies, leadership) that are associated with better school system readiness to effective AAC implementation). The findings from such research would reveal important information that might support this study's results about the challenges special

education teachers encounter when teaching minimally verbal students with ASD and factors affecting the use of AAC system in their classroom.

Conclusion

This study provided an exploration of the perceptions of Saudi special education teachers regarding teaching minimally verbal students with ASD and factors facilitating the use of AAC system in their classroom. In teams that deliver AAC services to students with ASD, special education teachers are expected to play a variety of roles and responsibilities which include but are not limited to determining students' needs, implementing AAC, and assessing the effectiveness. Thus, their perceptions are very important on how schools can effectively implement AAC systems with students with ASD. Based on responses from five special education teachers, it was found that teaching minimally verbal students with ASD may yield several challenges that includes expression difficulties, challenging behavior, and teacher-related challenges. The study participants indicated that students with limited verbal abilities have difficulties communicating their basic needs and feelings, which may lead to behavioral problems. As a result, participants indicated that teaching these students required additional burdens and responsibilities. Results obtained in this study were consistent with those obtained in previous studies in which teachers reported similar challenges (Almutlaq 2021; Geiser, 2019; Mukhopadhyay & Nwaogu, 2009; Sabayleh and Alramamneh, 2020).

While teachers in this study have a generally positive attitude toward using AAC to enhance communication skills for students with autism, there was no or limited implementation of AAC with students with ASD among these teachers. However, participants had positive attitudes about the use of AAC to improve students' ability to communicate their feelings and basic needs which would eventually lead to a decrease challenging behaviors. Teachers positive

attitude for using AAC to improve communication skills and reduce challenging behaviors for those with ASD have also been reported by other researchers (Ganz et al., 2012; Joginder et al., 2020; Romski & Sevcik, 2003; Soto, 1997).

However, the participants asserted that, currently, there was no or limited implementation of AAC with students with ASD. They indicated AAC systems are rarely implemented with ASD students in Saudi public schools, and if applied, it was not without major shortcomings. According to teachers, the main method to communicate which students who have limited verbal abilities was natural gestures. The lack of AAC implementation was also reported in several studies in Saudi and international literature (Alghamdi, 2021; Alasseri et al., 2010; Alant & Lloyd, 2005; Hock & Lafi, 2011; Joginder et al., 2020).

According to the responses by the special education teachers in this study, there are five conditions they perceived to be needed for successful AAC implementation in Saudi public schools, including knowledge and skills, resources, participation, commitment, and leadership. For knowledge and skills, teachers who participated in this study indicated to the need of ongoing and mandatory training to carry out AAC interventions successfully. In addition, participants shared that availability of resources, which includes funding, materials, and support, were critically needed to successfully implement AAC in the field of autism education. Also, the participation from other educational team members including SLPs and students' families was perceived as an important factor for effectively implementing AAC in Saudi public schools. To enhance AAC implementation commitment among teachers, participants confirmed that there is a need for legislation and curriculum that support the integration of such an intervention. Finally, AAC service delivery demands better support from school leadership represented by principals for special educators and other team members according to the participants. Findings on factors

that facilitate the implementation of AAC have also been supported by past local and international literature (Aldabas, 2021; Alghamdi, 202; Andezik et al., 2019; Al-Zahrani, 2013; Joginder et al., 2020; Kent-Walsh & Light, 2003; MacNair, 2017; Tonsing & Dada, 2016).

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Appendices

Appendix A: Interview Protocol

Semi-Structured Interview Protocol

First Interview:

1. Can you tell me about yourself? (e.g. age and educational background)
2. Could you please tell me about your educational experiences thus far. (i.e., year of experience, grad level)
3. How did you become a teacher?
4. Could you tell me more about your day at school?
5. What are the challenges you encounter in the school, and in your classroom?
6. What is your professional experience in teaching students diagnosed with Autism?
7. Tell me more about your students' characteristics (e.g., age, the need of support, any other disabilities)
8. Could you please describe any challenges you have encountered in terms of facilitating communication among students who have minimal or no verbal communication skills? How do you respond to them?
9. What are the type of services and interventions your students receive? Do they receive any functional communication interventions and strategies?
10. What are the type of supports you receive to teach minimally verbal or nonverbal students with ASD?

Second Interview:

1. How are students' communication impairments affecting their behavioral, academic, and social interaction performance in the classroom?
2. Please describe any communication tools or interventions, if at all, you use to facilitate communication among students with ASD.
3. Could you please tell me what your thoughts are on using AAC systems to facilitate communication among students with autism?
4. As a special education teacher, could you please talk about the challenges you might experience when using AAC systems to facilitate communication among students with ASD?
5. How do you describe the benefits of utilizing AAC systems as a means of facilitating communication among students with ASD?
6. How do you describe the barriers of utilizing AAC systems as a means of facilitating communication among students with ASD?

7. What are the factors that hinder teacher' ability to successfully implement AAC systems in their classroom?
8. Could you please tell me your thoughts on Ely's eight conditions for effective implementation of AAC intervention in your classroom?
9. What of Ely's eight conditions do you believe are the most important for teacher to utilize AAC intervention? why?
10. Please, explain how those factors could be met?

Third Interview:

1. Given what you have said about your educational background and teaching experience, how do you evaluate the usage of AAC systems with students with ASD? Why?
2. How AAC could effective intervention with students with ASD?
3. What should have been done for successful implementation of AAC to facilitate communication among students with ASD?
4. Where do you see the usage of AAC systems with students with ASD in the future?
5. Anything you want to add?

Appendix B: Recruitment Letter

Recruitment Letter
Pro # 004696

To the Special Education Department at General Directorate of Education in Unayzah

Greetings.
My name is Mazen A. Almethen, a doctoral student at the University of South Florida in the USA. I am currently working on my dissertation in the area of (Factors to Consider for Effective Implementation of AAC With Students With Autism: Saudi Special Education Teachers' Perspectives).

I'm emailing to ask if you would be willing to give me permission to do interviews with several Saudi special education teachers who work with autistic students. I'm looking for the teachers who have experience in teaching minimally verbal or nonverbal students with Autism. These interviews will help me to collect the data for this research project. Participation is voluntary, and all answers will be anonymous. The purpose of this study is to understand and explore the perceptions of Saudi special education teachers regarding teaching minimally verbal or nonverbal students with Autism and factors facilitating the use of Augmentative and Alternative Communication (AAC) system in their classroom. The interview will be conducted by using a virtual meeting software. The platform that I'm going to use is Zoom. I will arrange a time with the participant, and request them to be in a quiet, distraction free space that is most comfortable and convenient to them for the duration of the interview. Each participant will be interviewed three times for around 45 minutes in length. Interviews will be audio-recorded and transcribed.

If you have any questions, please do not hesitate to contact me by email: malmethen@usf.edu or by phone at: [redacted]

I appreciate your assistance and thank you in advance.

Best regards,
Mazen A. Almethen
Ph.D. Student
Special Education Program
Department of Teaching & Learning
College of Education
University of South Florida
Email: malmethen@usf.edu
Phone: [redacted]
Pro # 004696

Appendix C: Institutional Review Board Approval

UNIVERSITY of SOUTH FLORIDA

EXEMPT DETERMINATION

November 7, 2022

Mazen Almethen
1433 Sedgwick Drive
Wesley Chapel, FL 33543

Dear Mr. Mazen Almethen:

On 11/7/2022, the IRB reviewed and approved the following protocol:

Application Type:	Initial Study
IRB ID:	STUDY004696
Review Type:	Exempt 2
Title:	Factors to Consider for Effective Implementation of AAC With Students With Autism: Saudi Special Education Teachers' Perspectives
Protocol:	• Study Protocol - Almethen

The IRB determined that this protocol meets the criteria for exemption from IRB review.

In conducting this protocol, you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Please note, as per USF policy, once the exempt determination is made, the application is closed in BullsIRB. This does not limit your ability to conduct the research. Any proposed or anticipated change to the study design that was previously declared exempt from IRB oversight must be submitted to the IRB as a new study prior to initiation of the change. However, administrative changes, including changes in research personnel, do not warrant a modification or new application.

Ongoing IRB review and approval by this organization is not required. This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these activities impact the exempt determination, please submit a new request to the IRB for a determination.

Sincerely,

Gabriela Plazarte
IRB Research Compliance Administrator

Institutional Review Boards / Research Integrity & Compliance
FWA No. 00001669
University of South Florida / 3702 Spectrum Blvd., Suite 165 / Tampa, FL 33612 / 813-974-5638

Appendix D: Institutional Review Board Certificate

Certificate of Completion

Mazen Almethen

Completed the Social / Behavioral Investigators and Key Personnel Refresher Course

on Friday, May 27, 2022

USF
UNIVERSITY OF SOUTH FLORIDA

CITI Certificate ID#: 2295

Appendix E: English Consent Form

Script for Obtaining Verbal Informed Consent
Information to Consider Before Taking Part in this Research Study
Title: Factors to Consider for Effective Implementation of AAC With Students With Autism: Saudi Special Education Teachers' Perspectives

Study # 004696

Overview: You are being asked to take part in a research study. The information in this document should help you to decide if you would like to participate. The sections in this Overview provide the basic information about the study. More detailed information is provided in the remainder of the document.

Study Staff: This study is being led by Mazen Almethen who is a Principle Investigator at The University of South Florida. This person is called the Principal Investigator. He is being guided in this research by Dr. David Allsopp. Other approved research staff may act on behalf of the Principal Investigator.

Study Details This study is being conducted at the General Directorate of Education in Unayzah, Saudi Arabia. The purpose of this study is to understand and explore the perceptions of Saudi special education teachers regarding teaching minimally verbal or nonverbal students with Autism and factors facilitating the use of Augmentative and Alternative Communication (AAC) system in their classroom. I will use a qualitative interview study. You will be interviewed three times for around 45 minutes each in three weeks period. Interviews will be audio-recorded and transcribed.

Participants: You are being asked to take part because you are a Saudi special education teacher who teach students with autism in Saudi Arabia.

Voluntary Participation: Your participation is voluntary. You do not have to participate and may stop your participation at any time. There will be no penalties or loss of benefits or opportunities if you do not participate or decide to stop once you start. Your decision to participate or not to participate will not affect your job status, employment record, employee evaluations, or advancement opportunities.

Benefits, Compensation, and Risk: We do not know if you will receive any benefit from your participation. There is no cost to participate. You will not be compensated for your participation. This research is considered minimal risk. Minimal risk means that study risks are the same as the risks you face in daily life.

Confidentiality: Even if we publish the findings from this study, we will keep your study information private and confidential. Anyone with the authority to look at your records must keep them confidential.

Privacy and Confidentiality

If completing the study online, it is possible, although unlikely, that unauthorized individuals could gain access to your responses. Confidentiality will be maintained to the degree permitted by the technology used. No guarantees can be made regarding the interception of information

sent via the Internet. However, your participation in this study involves risks similar to a person's everyday use of the Internet.

Contact Information

If you have any questions, concerns or complaints about this study, call Mazen Almethen at +966 505 516 175 or email me at malmethen@usf.edu If you have questions about your rights, complaints, or issues as a person taking part in this study, call the USF IRB at (813) 974-5638 or contact the IRB by email at RSCH-IRB@usf.edu.

We may publish what we learn from this study. If we do, we will not let anyone know your name. We will not publish anything else that would let people know who you are. You can print a copy of this consent form for your records.

I freely give my consent to take part in this study. I understand that by proceeding with this interview, I am agreeing to take part in research and I am 18 years of age or older.

Would you like to participate in this study?

Appendix F: Arabic Consent Form

اقرار بالموافقة على المشاركة في الدراسة البحثية
معلومات يجب مراعاتها قبل البدء بالمشاركة في هذه الدراسة
العنوان: العوامل المساعدة في تطبيق استراتيجية التواصل المعزز و البديل مع الطلاب ذوي اضطراب التوحد: وجهة نظر معلمين التربية الخاصة في المملكة العربية السعودية
مقترح # STUDY00004696

نظرة عامة: يُطلب منك المشاركة في هذه الدراسة البحثية. سوف تساعدك المعلومات المرفقة في هذا المستند على تحديد ما اذا كنت ترغب في المشاركة في هذا الحث العلمي او الانسحاب. تشمل النظرة العامة معلومات تفصيلية حول طبيعة الدراسة المرفقة أدناه .
فريق البحث: الشخص المسئول عن هذه الدراسة البحثية هو مازن المذن مرشح في جامعة جنوب فلوريدا للحصول على درجة الدكتوراة. ويسمى بالباحث الرئيسي. يتم توجيهه في هذا البحث من قبل الدكتور ديفد الساب. كذلك قد يكون هناك بعض الباحثين الاخرين ممن يمكنهم أن يتصرفوا نيابة عن الشخص المسئول.
تفاصيل الدراسة: سوف يتم اجراء هذه الدراسة في المدارس التابعة لإدارة التعليم بمحافظة عنيزة بالمملكة العربية السعودية. الغرض من هذه الدراسة هو يهدف الى فهم واستكشاف تصورات معلمي التربية الخاصة فيما يتعلق بتعليم الطلاب ذوي اضطراب التوحد الذين لديهم قدرات لفظية محدودة والعوامل التي تسهل استخدام نظام الاتصال المعزز والبديل لتعزيز التواصل في فصولهم الدراسية. سأستخدم تصميم بحث نوعي وبالتالي سأجري مقابلات شبه منظمة؛ ستتم مقابلتك ثلاث مرات لمدة 45 دقيقة تقريبًا في فترة ثلاثة أسابيع. علما بأن المقابلات سوف يتم تسجيلها وتحويلها إلى نصوص مكتوبة.
المشاركون: يُطلب منك المشاركة لأنك معلم للطلاب ذوي اضطراب التوحد في المملكة العربية السعودية.
المشاركة الطوعية: المشاركة في هذا البحث تطوعية بالكامل ، لديك الحرية في المشاركة وتستطيع الانسحاب في أي وقت. لن تكون هناك أي عقوبة أو فقدان المزايا أو الفرص إذا لم تشارك أو قررت الانسحاب . لن يؤثر قرارك بالمشاركة أو عدم المشاركة على وضعك الوظيفي أو سجل التوظيف أو تقييمات الموظفين أو فرص الترقية.
الفوائد والتعويضات والمخاطر: ليس هناك أي فوائد مباشرة تعود عليك من هذه الدراسة. ايضا ليس هناك أي أجر أو تعويض جراء مشاركتك. ليس هناك أي مخاطر من الانخراط في هذه الدراسة, هذا يعني أن المخاطر المرتبطة بهذه الدراسة هي نفسها التي قد تواجهها كل يوم في الحياة الطبيعية.
السرية: ربما نقوم بنشر نتائج هذه الدراسة ، اذا قمنا بذلك ، كل معلومات الدراسة ستحفظ بشكل سري وخاص. أي شخص لديه الاحقية للنظر في معلوماتك سوف يبقيها سرية .

الخصوصية والسرية

إذا أكملت الدراسة عبر الإنترنت ، فمن الممكن ، على الرغم من أنه من غير المحتمل ، أن يتمكن الأفراد غير المصرح لهم من الوصول إلى ردودك. سيتم الحفاظ على السرية إلى الدرجة التي تسمح بها التكنولوجيا المستخدمة. لا يمكن تقديم أي ضمانات فيما يتعلق باعتراض المعلومات المرسلة عبر الإنترنت. ومع ذلك ، فإن مشاركتك في هذه الدراسة تنطوي على مخاطر مماثلة لاستخدام الشخص اليومي للإنترنت.

معلومات الاتصال
إذا كانت لديك أي أسئلة أو مخاوف أو شكاوى حول هذه الدراسة ، يرجى الاتصال على مازن المذن
جوال رقم [redacted] ، البريد الإلكتروني: malmethen@usf.edu
إذا كانت لديك اسئلة حول حقوقك أو شكاويك أو مشكلاتك بصفتك شخصٌ مشارك في هذه الدراسة يرجى الاتصال على مجلس البحث المؤسسي لجامعة جنوب فلوريدا على رقم (813) 974-5638 أو البريد الإلكتروني على RSCH-IRB@usf.edu.

قد ننشر ما تعلمناه من هذه الدراسة. إذا فعلنا ذلك ، فلن نسمح لأي شخص بمعرفة اسمك. لن ننشر أي شيء آخر من شأنه السماح للأشخاص بمعرفة هويتك. يمكنك طباعة نسخة من نموذج الموافقة هذا لسجلاتك.

أمنح موافقتي بحرية على المشاركة في هذه الدراسة. أفهم أنه من خلال متابعة هذه المقابلة ، فأنا أوافق على المشاركة في البحث وأن عمري 18 عامًا أو أكبر.

هل ترغب بالمشاركة في هذه الدراسة؟