

Special Education Teachers' Perceptions on Using Technology for Communication Practices

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Abstract

An important aspect to the effective education of students with special educational needs and disabilities (SEND) is the successful coordination between all stakeholders (parents, educators and therapists). The present study employed qualitative methods to investigate teachers' perceptions on the current communication practices and how they can be improved using technology. Nine special education teachers participated in semi-structured interviews. Teachers in the study used both traditional and, to a lesser degree, technological means of communication. Technological methods included instant messaging, the school's information system, and electronic Individualized Education Programs (IEPs) shared on the cloud. The data revealed that some special education teachers were content with the current methods of communication, while others perceived the introduction of new technology useful for the improvement of the communication process. Results can be used to identify the requirements needed before developing and launching new innovations for communication between parties involved with the intervention of SEND students.

Keywords: Special Education Needs and Disabilities; Autism Spectrum Disorder; Teachers' Perceptions; Communication; Individualized Education Programs; United Arab Emirates.

1. Introduction

Nowadays, school staff and families play an equally essential role in the education of students with special education needs and disabilities (SEND) (Zablotsky, Boswell & Smith 2012). A strong relationship among these stakeholders may lead to increased learning quality and academic success for students (Clarke, Sheridan & Woods 2010). Especially important to the intervention of students with autism spectrum disorder (ASD), is the monitoring of the child's individual progress. In order to keep track of the progress of specific learning skills, coordination between all stakeholders is of utmost importance (Witmer et al. 2015). However, the ways different parties involved with students with ASD communicate and coordinate are understudied (Woods et al. 2017).

Many studies suggest that parents are not usually involved in the communication cycle unless asked by the school personnel. Additionally, communication between school and home was found to be one-sided, where teachers are the only ones providing information to other parties (Tucker & Schwartz 2013). Moreover, it is still unclear how often communication between different parties should take place in order to make this process more effective (Woods et al. 2017).

In the Arab world, the challenges around special needs extend to the absence of a unified definition of disability between countries, the need for information on different special needs aspects, the gap between legislation and implementation, and ineffective coordination instruments between concerned parties (Hadidi & Al Khateeb 2015).

According to the "School for All" guidelines in the United Arab Emirates (UAE), all parties involved in the intervention of students with special needs are required to keep track of students' progress as well as coordinate and collaborate with each other (MoE 2010). The guidelines encompass a set of recommendations detailing the responsibility of all parties involved with SEND students. However, these guidelines are considered vague and in need of more practical details (Alborno & Gaad 2014).

Different methods can be used for communication between different parties involved in the intervention of students with ASD, including academic teachers, teaching assistants, therapists, special needs teachers, parents, and doctors. These methods include traditional ways such as personal meetings, phone calls, or written reports (Woods et al. 2017), or the use of information and communication technology (ICT) tools such as web-based systems, and applications. Technology allows different parties to easily access information while addressing schedule differences (del Valle 2011).

Despite the advances in technology, special education programs are usually the last to adapt to these advances.

The reasons behind this lag might be due to the amount of information that special education teachers and therapists have to gather about their students. This includes academic, social and behavioural information (Burns 2015). Additionally, despite the regulations advocating the rights to education in the UAE, classrooms across the country need to adopt educational applications in order to fulfil the requirements of effective education for SEND students (Khan et al. 2016).

The majority of motivation for this research comes from the lack of studies on the role of technology in the communication and coordination practices in the area of special education, especially education for students with ASD. Moreover, the research done in the Arab world in this regard is still in its early stages (Al-Arifi 2013). The purpose of this study is to examine teachers' perceptions of current communication and coordination practices between parties involved with the intervention of students with ASD and how these practices can be improved using technology.

Derived from the motivation, this study aims to answer the following questions:

1. What are the current coordination and communication practices in Special Education programs?
2. What are the challenges in coordinating and communicating between multiple parties involved in the intervention of a child with ASD?
3. What are the perceived benefits of integrating computer applications into the IEP and communication process?

The next section outlines the theoretical framework while the Literature Review section summarises previous research related to the aim of this study. Section 4 describes the methodology used while Section 5 presents the results analysis and provides a discussion of the findings. Section 6 states the implications for practice, policy, and future work. The last section provides a summary of the results and addresses their limitations.

2. Theoretical Background

Coordination in the field of special needs education has been found to be challenging (Dameh 2015). Challenges include lack of communication means and the complex web of stakeholders involved in the intervention of students with special needs, including parents, teachers, and therapists. The challenges in developing tools for communication in this field are derived from the several interdisciplinary views on the issue. These include ethical issues, the gap between theory and practice, technology, and parental involvement (Frauenberger, Good & Keay-Bright 2011).

This study is concerned about Epstein's framework which focuses on the impact of parents, schools, and communities on students. Two types of involvement are relevant to this study (Epstein et al. 2009):

- Type (2) Communicating: which involves designing effective form of communication between home and school about the children's progress.
- Type (4) Learning at Home: which involves providing information to parents that helps them in aiding their children in their home learning activities.

Epstein's framework is relevant to this research because it aims to study communication between home and school as well as communicating information to parents at home in an efficient way that aids in their kid's learning.

Additionally, this study is concerned about the Technology Acceptance Model (TAM), which was first introduced by Davis et al. (1989). According to this model, users' perceptions of usefulness and ease of use determine the attitudes towards using technology. Based on this model, we aim to gain insights on special education teachers' perceptions on the use of technology as a communication method between different stakeholders.

3. Literature Review

The education of students with ASD usually requires the intervention of more than one therapist, where each one aims at a specific skill. For example, a speech therapist helps the student improve his verbal and language skills. A behavioural therapist aims at modifying behaviour, such as improving eye-contact and minimizing monotonous movements (Gaad 2010). Moreover, parents of children with special needs have a critical role in the intervention of their kids. Improving the methods of communication between school and home would increase parental involvement (Epstein et al. 2009).

The "School for All" guidelines in the UAE had defined the responsibilities of all parties involved with students receiving special education services (MoE 2010). For instance, schools are required to involve parents of students with special needs in the decision-making process concerning programs provided to their children.

Teachers, including resource room teachers, special education teachers in regular and special classrooms, subject teachers in regular and special classrooms, and assistant teacher, are all required to monitor and report the status of special education programs, collaborate with parents to support the home-school partnership, coordinate with each other, collaborate with other professions in the school and in the community, prepare comprehensive progress reports semi-annually, develop and implement IEPs, and maintain the confidentiality of information. Parents are likewise required to share related information about their children with teachers and other school personnel in order to promote student's growth.

Additionally, the "Dubai Inclusion Policy Framework" states that schools' leaders and SEND coordinators should establish an effective collaborative system that employs the information and knowledge of teachers, therapists, medical and clinical practitioners, and other members of staff to aid each other in meeting the needs of students experiencing SEND. Moreover, the framework requires all education providers to collect and analyse data in a time sensitive manner, track students' progress, and share information across relevant sectors (KHDA 2017).

Albeit the attention given to the role of parents in different policies, parents involvement in their children special education remains minimal in the Arab countries (Alborno & Gaad 2014; Hadidi & Al Khateeb 2015). Moreover, despite the benefits of all stakeholders' involvement, only few studies had tried to obtain their perceptions on communication regarding special education. For instance, Woods et al. (2017) used open ended interviews to examine the perceptions of professionals and parents regarding the communication practices in a school in the United States. The authors found that communication among education professionals clustered into three main themes: communication regarding special education services, communications with outside experts, and coordination between all people involved. In another study by Winterman and Rosas (2017), the authors reported that general teachers did not have a significant role in gathering or communicating students' progress. The authors also found that all progress reports indicated whether the student had met IEP goals or not. However, only 8% of those reports showed that any alterations were made to instruction. The findings from this study also revealed that data was either missing or not communicated properly to parents or other educational staff members.

A study investigating inclusive provision in UAE found that all teachers and administrators emphasised on the importance of collaboration. However, teacher collaboration in all the studied schools was limited to the creation of IEPs, differentiated worksheets, and assessment. Moreover, parents did not take full advantage of opportunities presented by the schools, resulting in the absence of an important source of information (Alborno & Gaad 2014).

Other studies focused on the use of technology to increase and improve communication between different stakeholders. For example, del Valle (2011) aimed to study the impact of the use of the web-based system "Connects" on parental involvement. The study also aimed at identifying the challenges faced by teachers and parents when using the system.

A common technology used for school-home communication is school information systems (SIS). Teachers update marks and add comments to the system while parents access this information using a special username and password. However, websites and school management systems are limited in a way that they usually provide a one-way communication mean, allowing parents to receive information but not being able to reply to it. Many studies attempted to investigate the use of such technologies on the involvement of parents. Yet, these studies focused on the communication of academic information such as grades and homework assignments, ignoring the fact that the education of students with special needs requires the communication of information that aids in their intervention (Zywica 2014).

4. Methodology

This is an exploratory study that follows a qualitative research methodology with the aim of addressing teachers' perceptions regarding the current communication methods between all parties involved with the intervention of ASD students, and how they can be improved using technology. Qualitative research is suitable when there is a need to study a phenomenon within its context. It is also best suited when the objective of the study is to understand how and why things happen (Woods et al. 2017). Additionally, qualitative design helps in describing information that participants consider important (Creswell 2014).

4.1 Participants

This study took place in a private K-12 school in UAE. The total number of students is 1783 students. The school has 206 teachers, 5 students' counsellors, 2 social workers, and 30 teachers' assistants. The school has a total of 30 students with ASD, out of the 93 students with SEND.

Participants were selected using purposeful sampling. In this type of sampling, participants are chosen according

to a pre-set criterion based on the research question (Creswell 2014). Since this research aims to study perceptions on current communication methods of teachers involved with ASD students, all school staff that is involved with the learning of ASD students were invited to participate in this study. The Special Education Department coordinator provided the researcher with a list of teachers, teachers' assistants, social workers, speech therapists, and specialists involved with students with ASD. A letter explaining the purpose of the study as well as an invitation to participate was sent to the staff in the provided list. Out of the 23 teachers that received the letter, 9 agreed to participate in the study ($n=9$), for a response rate of 39%. The final sample comprised one social worker, four subject teachers, one teacher assistant, two speech therapists, and one special needs specialist teacher. Four participants were male (44.4%), while five were female (55.5%). All participants were Arabs. Table 1 summarizes the participants job roles, gender, and years of experience with ASD students.

Table 1: Study Participants

Participant	Job Role	Gender	Years of Experience with ASD students
A	Social Worker	Male	15
B	Math and Science Teacher for Special Needs	Male	1
C	Teacher Assistant	Female	2
D	Speech Therapist	Male	14
E	Speech Therapist	Female	8
F	ICT Teacher	Female	3
G	ICT Teacher	Male	1
H	Special Needs Specialists Teacher	Female	12
I	Language Teacher for Special Needs	Female	2

4.2 Data Collection

Data sources for this study included semi-structured interviews, informal observation, and supplementary documents (IEPs, schools' website, students' diaries). Semi-structured interviews allow the researcher to restructure questions during the interview process, and add or remove questions according to the participants responses (Berg 2009).

Interview questions were developed based on the research questions. Thus, the interview was structured around three main concepts; communication practices, challenges in communication, and perceptions on the use of technology. The interview consisted initially of 17 questions; 7 questions related to the first concept, 4 questions related to the second concept, and 6 questions related to the third concept. The number of questions varied according to the interviewee responses. The interview started with general questions, and followed with more detailed ones (Berg 2009). A pilot study was conducted prior to interviewing the 9 teachers. During this pilot study, the special needs department coordinator and one teacher in the school reviewed the interview questions and provided their feedback. The interview questions were modified to reflect their input and comments.

All interviews were conducted in the school. The interviews took place over a period of two weeks. Average interview time was 30 minutes.

4.3 Data Analysis and Coding

Interview data was analysed using the general inductive analysis approach. In inductive analysis, raw data is read with the purpose of deriving themes and concepts. The inductive approach allows the research findings and theories to emerge from data without the restraints imposed by deductive analysis. Deductive analysis aims to test whether the data is consistent with prior theories or hypothesis constructed by the researcher. Inductive approach on the other hand, aims to stablish links between the research objectives and the findings derived from the raw data (Thomas 2006). The general inductive approach differs from the grounded theory in that it does not explicitly separate the coding process into open and axial. Moreover, when using the inductive approach, presentation of findings is limited to the most important themes (Creswell 2014).

Interviews were recorded and then transcribed. Transcriptions were formatted (using heading styles) to be used in the computer assisted qualitative analysis software "QDA Miner". Once documents had been prepared, they were read to familiarize with the themes emerging from the text. Documents were then exported to the computer program. Then, the data was open coded by assigning chunk of text to labels. Labels or categories were compared and codes belonging to each other were grouped under one node. Qualitative data analysis software is a useful way to store and organize interview documents, allocate labels and codes, and simplify searching through data (Creswell 2014).

4.4 Data Saturation

The small participants sample in this research (n=9) is considered a limitation. However, in qualitative research, sampling usually stops when data redundancy or saturation occurs. Data saturation occurs when no new information or codes are emerging from data (del Valle 2011). In this study, the sample was relatively homogenous, as all participants worked at the same school and used almost the same communication methods. This allowed the researcher to reach data saturation in 9 interviews, which diminished the sample size limitation.

4.5 Ethical Considerations

Participants were notified about what their participation in the study consisted of through a consent form. Consent forms were signed and collected before the interviews took place. Participants could refuse to participate or withdraw from the study at any time. They could also choose not to record the interview. However, all participants agreed to record the interview. Recordings were kept on a hard drive on the researcher's laptop. The recordings will be kept for a period of 1 year and will be deleted afterwards. The interviews contained demographic data. Each participant's information was kept confidential during and after the study. Any information that could identify the participant was removed from the documents before analysing them using QDA Miner. These measures are taken to ensure participants' rights are respected (Creswell 2014).

5. Findings Analysis and Discussion

Interview data was prepared for analysis. The initial analysis aids the researcher in developing a general sense of the data. Codes that are found in the interviews' transcript are clustered into themes (Creswell 2014). Preliminary data coding resulted in five initial themes: (a) the use of IEPs, (b) general communication practices, (c) ways used for communication, (d) challenges in communication, and (e) suggestions for improvement. These initial themes were merged in a meaningful manner to aid in answering the research question. Figure 1 represents the themes of particular interest as well as the codes that emerged from the interviews. The inner circles represent the main themes, while the outer squares represent the codes. Findings were reported using narrative discussion of themes as well as graphs and tables (Creswell 2014). The following sections describe the findings for each theme with extracts from the interviews to support the findings.

Figure 1: Themes and Emerging Codes



5.1 Communication Practices

The first theme that arose from the interviews was how teachers communicate information regarding students with ASD. When asked how they keep track of information and how do they share it with others, all teachers said that important information, specially the initial identification, is available in the Individualized Education Program (IEPs). IEPs are documents that describe the educational plan for students with special needs and disabilities (Long et al. 2010). All teachers, except the two ICT teachers, mentioned that they are involved in a way or another with the creation of the IEPs. The school used electronic IEPs shared on a Dropbox folder. Teachers perceptions on the use of electronic IEPs are discussed in the following sections.

Once the teachers mentioned the use of IEP to share and keep track of information, additional questions were added as a follow up to understand the dynamics of creating and articulating IEPs. The data revealed that special

education teachers are responsible of writing the behavioral, social and psychological objectives, while speech teachers write the verbal and speech training plans. Lastly, teachers of the main subjects (Language, Math, and Science) write the academic objectives. On the other hand, teachers of other subjects (like ICT) and teacher assistants have access to the IEPs but do not contribute to its creation. Table 2 shows some examples of emerging themes from the interview data regarding the use of IEP.

Interview data revealed that all the teachers have a clear understanding of whom is involved with the students with ASD and how data is shared among all parties. Additionally, all participants were able to identify what type of information they should share, and what information they should receive from others. Figure 2 shows the emerging codes from the first theme, “Communication Practices”.

Teachers Assistants were regarded as an important source of information in what concerns students with ASD. For example, Teacher B stated that “*Teacher assistants are very important, they help in the progress of the student*”. The reason behind their importance was pointed out to be their proximity to students and the amount of time they spend with the students in the school. A speech therapist said,

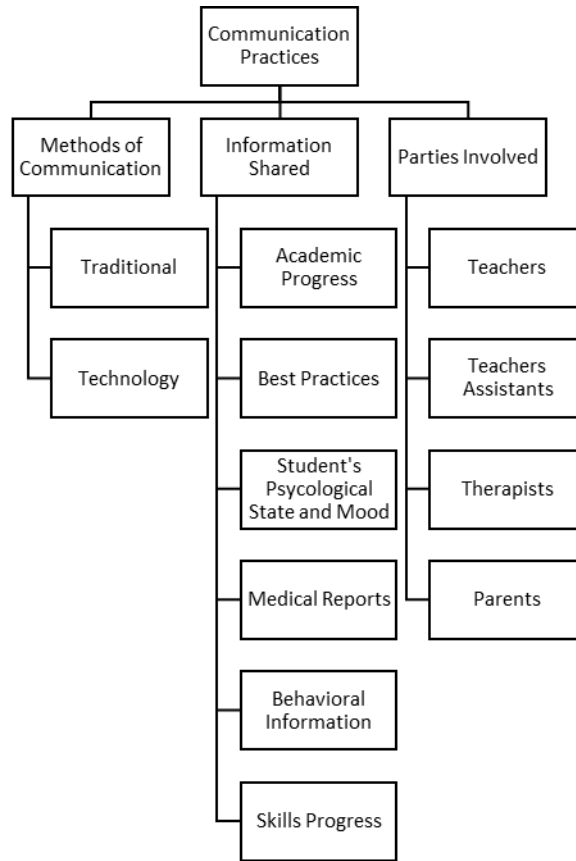
“An important source of information for me are teachers’ assistants. Those are the ones who stay with the child most of the time. I always ask them about certain social behavior, whether [the student is] capable of doing it or not. For example, I ask them to notice whether the child is able to salute adults without being asked to.”

Table 2: Examples of Emerging Themes (IEP)

Code	Emerging Theme	Examples of Emerging Theme
Creation of IEP	Who is responsible?	“Usually the teachers write the academic objectives in the IPE” (Teacher A) “I write the IEP by myself, in what concerns the academic objectives in Math and Science.” (Teacher B)
	What is included?	“I write the language and speech objectives.” (Teacher E) “I put the social and psychological objectives for the students in the IPE” (Teacher A) “I am responsible of writing the behavioral goals for each student” (Teacher H)
Sharing of IEP	How IEP is shared?	“After the objective has been achieved in my class, I need to circulate the objective to other people involved” (Teacher E) “I send them to all involved people in different categories such as social, psychology, and academic.” (Teacher A) “Once an objective is accomplished in my session, I have to circulate this objective. This means that I have to make sure this objective is applied in all other places, like the home or the class.” (Teacher D)
IEP Progress	How progress is measured?	“I check their progress by comparing marks.” (Teacher B) “I regularly check the IEP plans to ensure I am working on the right objective.” (Teacher D) “I do that through a monthly progress report” (Teacher E)
	How progress is tracked?	“The therapist is the one who usually keeps track of relevant information” (Teacher C) “I use excel sheets” (Teacher G) “I keep a table where I record the daily progress for each student” (Teacher E)

Parents were also regarded as an important part of the coordination process. However, most participants stated that parents communicate with them mostly to ask about progress, or about solutions to problems they are facing with their kids. On the other hand, most participants, specially therapists and coordinators, maintained that parents are an important source of information, especially in the initial identification phase, “*at the beginning of the year, we have an intensive meeting with parents*”. Parents can provide therapists and teachers with information that can help in dealing with the child in the school and improve their progress. For example, the social worker said that “*Sometimes something happens in the morning that might affect the student’s mood, so the parents call to tell us about this incident so that we can deal with him in a better way*”.

Figure 2: Codes Emerging from "Communication Practices" Theme



In general, three types of information were communicated between different parties involved with the intervention of students with ASD; academic, behavioral, and social. Teachers share with parents the academic progress of their child, while they share with other teachers the practices that have a positive impact with each student. For example, Teacher B said that *“I find that the student is very motivated these days and want more challenging questions, I tell the other teachers so that they can benefit from this motivation”*. Therapists and speech teachers communicate with parents and other teachers regarding the student’s verbal communication skills progress, fine-motor skills progress, and behavioral information.

5.2 Challenges in Communication

When asked about the challenges they face during the communication process with other parties, many teachers stated that they are very content with the methods they are using, whether traditional or computerized. Teacher E, for example, said that *“Regarding communication, I don't think anything is missing.”*

However, when asked whether they think there are parties or information missing in the communication circle, teachers believed that there is missing information in the system, such as medical information. They also believed that the methods used are not enough. Table 3 shows the emerging themes from the codes related to the challenges of communication general theme.

Table 3: Examples of Emerging Themes (Challenges in Communication)

Code	Emerging Themes	Examples of Emerging Theme
Method of Communication	The school’s management system	<i>“The school's system is not beneficiary at all for ASD students”</i> (Teacher C)
	Consistency	<i>“We should have a consistent and coordinated way in dealing with the child.”</i> (Teacher A)
Computer Skills	Low computer skills	<i>“Also, not all parents know how to use the Dropbox”</i> (Teacher H) <i>“Those who are dealing with the ASD child [have low computer skills].”</i> (Teacher G)

Missing Information	Quality	“we have in the current system a place to write comments for every day. But these comments are usually academic and very general.” (Teacher A) “I think the way objectives are written is not effective.” (Teacher A)
	Medical information	“Sometimes I can't find information that is related to the medicines the student is taking” (Teacher D)
	Incomplete	“I think it is not complete.” (Teacher F) “The file has information on all the child history. But not all information is there” (Teacher D)
Shared Information	Privacy	“And there is some information in the IEP that is only for us, but parents see it anyway.” (Teacher H)
Time	Time barrier	“Sometimes teacher do not follow the recommendations in the IEP because they don't have enough time” (Teacher A) “I feel I have no time to teach because I am dealing with paperwork and meetings” (Teacher F)

The quality of information shared was one major concern for many participants. Teacher A emphasized in different occasions that the way the information is written in the IEPs is not effective, stating that they are usually general and do not provide operational objectives. While electronic IEPs are helpful in regards of saving teachers' time as well as facilitating their sharing process, the goals that are developed can be considered as more “standardized” that “individualized” since usually teachers choose goals and actions from pre-defined lists. This requires special education teachers to be aware when writing IEP objectives, in order to avoid goals that are hard to read, do not match students' learning needs, or are not measurable (More & Hart Barnett 2014).

5.3 Use of Technology

As shown in Figure 2, there are two main methods of communication between parties involved with students with special needs: traditional and technological. Interview data suggested that the school had a clear system established in regards of methods used for communication. Electronic IEPs were stored in a Dropbox folder shared with all teachers. The school's management system served as communication mean in regards of students' academic behaviour, which parents can access easily. However, when it came to daily communication, teachers used what they call the “diary” or “journal” of the student, which is a notebook where teachers write comments about the student's progress, skills they are learning, or challenges they are facing. The students take this journal to every class they attend so that each teacher can write her/his own comments. Students also take this journal to their homes, so that parents can read teachers' comment and reply to them if needed. Additionally, therapists and social workers mentioned that they use instant messaging such as “WhatsApp” to send images or videos to parents (see Table 4).

Table 4: Frequency of Communication Methods Used

Teacher	Communication Method					
	Traditional			Technological		
	In Person	By Phone	Journal	Social Media	School's System	Shared Files
Teacher A	**	*	*	*	*	**
Teacher B	***		*		**	*
Teacher C	*					
Teacher D	*	*	***	**		**
Teacher E	**	*	***	***		**
Teacher F	**		**	*	***	*
Teacher G	*		*		***	*
Teacher H	**	**	**	*		**
Teacher I	**	*	***	*		**
* Sometimes ** Frequently *** Everyday						

The use of electronic IEPs shared on a cloud was regarded by participants as easy to use and access (“The IEP is easy to edit and is accessible anytime and in real-time. Also, all what is saved in the Dropbox can be archived for next year.” Teacher B). Schools adopt these types of IEPs in order to help teachers in the process of creating the plans, save time, and reduce paperwork (Serfass & Peterson 2007). Electronic IEPs allow teachers to use ready templates to create individualized IEPs for each student and store it in separate folders to be access by multiple people at the same time (More & Hart Barnett 2014). However, when using the cloud to share documents, teachers are not notified when a change occurs on the documents. This means that someone may update the IEP, but this update may remain unnoticed until the teacher opens the document to check it. Moreover, sharing Dropbox links is considered to be insecure as anyone with the sharing link will be able to access and edit the documents. Thus, confidential issues should be considered (Davis 2014).

Even though WhatsApp is not a computer application, it is considered as the world's most popular communication method in the 21st century. WhatsApp allows real-time texting, including the ability to send and receive images, videos, audio recordings and documents. The reasons behind the widely adoption of WhatsApp as a tool of communication include its accessibility, ease of use, time saving, sense of belongingness, sociability, and costs saving (Ahad & Lim 2014). All participants in the study confirmed that this method is easy to use and aids them in the coordination process. For example, Teacher E mentioned *"I communicate with parents at night through WhatsApp on things such as what food the child is eating"*. Similarly, participants mentioned that parents use WhatsApp to send audio messages and videos, *"parents send me audio messages that show how their kid is practicing a certain skill at home"*. According to Epstein's framework of parents and community involvement (Epstein et al. 2009), learning at home is one of the six types of involvement that includes providing information to parents that they can use for home learning activities. Parents involvement, especially in special education, is essential as it increases students' academic, social and behavioural progress (Woods et al. 2017).

The school's management system was also used as a mean of communication between different parties. However, this involved a one-way communication method where only teachers can update academic information regarding the students, while parents cannot add their input or comments to the system. However, some participants believed that allowing parents to comment on their kids' academic behaviour is not beneficial. The 2001 No Child Left Behind Act prioritized and required parent-teacher communication (Burns 2016). However, many studies suggest that this communication usually involves teachers providing information to parents (Tucker & Schwartz 2013). Also, even though the system allows teachers to write customized comments to parents, some teachers mentioned that they do not use them, *"I only enter marks there. There is an option to write comments, but I don't use it."* This is consistent with other studies, suggesting the reluctant use of educational technology, even when it is available (del Valle 2011).

However, when asked how technology can be used to improve the communication process, most participants said they are content with the ways they are using now, and that they do not think that the process can be improved using technology. For example, Teacher D mentioned that some schools use tablets instead of the journal to record students' progress. However, he concluded with *"why would I use a tablet if the notebook we are using is effective"*. Similarly, Teacher E stated that *"I think this is the best way. As long as the information is reaching the parent, there is no need to do it any other way"*.

On the other hand, some participants suggested using some web-based programs that can facilitate the communication process by involving more parties in the process, as Teacher A said, *"[We] need all stakeholders to be more aware of each student's need and progress."* They also suggested the use of technology to measure IEP progress, rather than the use of paper tracking sheets or journals. Teacher A described this application saying that *"anyone who is involved with this student enters information in that application according to their position, like parent, teacher, therapist, or even a stranger"*. He predicted that such application will have many benefits, such as having a database of information from different parties involved with the student. He also mentioned that *"this information can be used to find better ways on dealing with this child and increases the impact of intervention"*. A special education teacher suggested the use of a chat feature embedded in the school system, since teachers and parents use the school's management system regularly (*"It would be good to be able to chat with other people involved and share information more easily"*). Similarly, a speech therapist suggested that *"it is beneficiary if I could send voice messages and videos along with the comments I send on the notebook"*.

It was evident from the interview data, as well as the researcher's observations in the school, that the use of technology was very limited in regards of communication practices. The majority of the teachers believed that the current communication system is efficient, even though it included limited uses of technology and applications. From Table 3, we can see that low computer skills among people involved with the intervention of students with ASD was also considered a challenge in regards of communication. According to TAM (Davis et al. 1989), users perceptions of usefulness and ease of use determine the attitudes towards using technology. As the interview data shows, participants did not find the use of technology useful as they were content with the current methods of communication. On the other hand, participants believed that the means of technology they use such as instant messaging and cloud file sharing are easy to use and that are helpful in providing all parties involved with the information they need.

Using technology for communication between different parties involved in the education of a child was thoroughly studied. For example, Lewin and Luckin (2010) provided students with tablets to use in the school and take home with the aim of supporting family involvement. The results indicated that providing technology to parents did not result in increased involvement. Even though technology can support communication between different stakeholders, it does not necessarily increase the quality of involvement or even the quality of learning (Zywica 2014). For example, Grant (2011) studied the communication practices using an online learning tool.

The author found that teachers and parents sent a few messages, but usually no one replied to those messages. This raises an important point that in order to make use of technology as a mean of communication, all parties should be well aware of the importance of communication in a timely manner and in a way that allows them to send and receive media files instantly, which technology can surely provide.

6. Implications of Results

This study aimed to address the lack of research on the role of technology in the communication and coordination practices in the area of special education, especially in the Arab world. This was done by examining teachers' perceptions of current communication and coordination practices between parties involved with the intervention of students with ASD and how these practices can be improved using technology. Accordingly, this section addresses the research's practical contributions, implications for policy makers, and directions for future work.

6.1 Implications for Practice

The findings of this study point to many practical implications in regards of communication practices. The challenges derived from the interviews stresses the need to support teachers in various ways. First, the roles and responsibilities of special education teachers should be clearly defined in regards of communication and collaboration with other personnel. These responsibilities should be detailed rather than vague, allowing teachers to easily interpret and implement them (Alborno & Gaad 2014). Detailed handbooks should describe what information should be shared, to whom, and how, according to the specific role of each educator.

Additionally, an accountability measure should be in place to ensure that necessary information is properly circulated and that students' progress is accurately tracked. On the other hand, administrators should find ways to reduce teachers' load to allow them sufficient time to record and report information. Although we believe that technology can aid teachers in this regard and reduce their work load, it remains of importance to consider the need to provide enough time for teachers to practice the use of technology tools. This leads us to our next note regarding practical implications, and perhaps the most important one, in that institutions should provide appropriate preparation and training for teachers joining them. Training on communication strategies and special education policies interpretation should be delivered as well. Moreover, professional development should not only cover special education content, but should provide more opportunities to teachers to become familiar with various technology tools, including digital equipment, online teaching resources, digital documents editing software, file sharing tools, and communication and collaboration tools.

Finally, schools and special education institutions should adopt more family-oriented approaches and invite parents to participate in their children learning and progress journey. Parents should easily find channels to communicate with teachers and therapists and should be encouraged to share relevant information with them. Similarly, the school should provide parents with periodic reports on their children progress as well as useful recommendations for practice at home to create a more consistent environment.

6.2 Implications for Policy

The findings of the study highlight the slight disparity between policies and practice. As discussed in the previous section, policies are usually vague and lack the practical facet. Policy makers should include special education teachers and practitioners in the policy-making process. Following the proper instituting of policies, local official and schools' administrators must assume full responsibility to guarantee that policies are adequately established. Additionally, schools should provide financial support to locate resources to meet policies requirements, including proper tools for communication and files sharing between staff.

Moreover, more policies should be in place to ensure proper means of data tracking and storing. Data pooled from different parties involved with ASD students will provide an invaluable data repository for research. On the other hand, it is of utmost importance to establish policies stressing the need to maintain data privacy in what concerns students with SEND information.

6.3 Implications for Future Research

More research should be done to examine how technology can be used to improve the communication between different parties involved. Before introducing any new technology, it is essential to keep in mind that the requirements of systems designed for special education purposes differ from those of general education. For instance, information that concerns SEND students is not limited to academic skills but also includes social and behavioural data. Thus, more research investigating the requirements of effective specialized communication software for special education teachers is needed. Moreover, research should be done on how effective training on technology tools can ensure its proper use. Finally, reasons behind the unwillingness to use technology by special needs educators should be investigated.

7. Conclusion and Future Prospects

This study investigated special education teachers' perceptions on the current communication practices. It also aimed to gain insights on their perceptions on the use of technology as a mean of communication. The interviews data analysis indicated that teachers have a clear understanding of the role of all stakeholders in the intervention of students with ASD. They are also aware of the importance of communication between all parties, as well as to whom to send information and from whom to receive it. Teachers in the study used both traditional and, to a lesser degree, technological means of communication. For example, they communicated with parents through face-to-face meetings, the school's management system, instant messaging and phone calls, while they communicated among each other through daily or weekly meetings, phone calls, and electronic IEP documents stored in the cloud. Most participants stated that they do not face any challenges with the current communication system, while others suggested the use of more advanced applications to improve the communication process. It was evident from the data that participants were reluctant to accept the idea of introducing new technology to the system. However, findings of this research reflect only the studied population, and thus, cannot be generalized.

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