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Complex Communication Needs Augmentative and Alternate Forms of Communication

Abstract

The purpose of this study was to determine the impact of augmentative and alternate forms of communication such as Picture Exchange Communication Services (PECS), assistive technology and Sign Language have on students with complex communication needs. Data collection consisted of observations, interviews, analysis of past speech and language reports on an individual student. Findings were the following: positive impacts of augmentative and alternate forms of communication, negative impacts and consistency among adults with expectations for students. The results indicated that augmentative and alternate forms of communication allow students the ability to communicate by giving them a tool to express themselves. It is extremely important to incorporate a variety of alternative forms of communication when teaching students with complex communication needs.

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Abstract

The purpose of this study was to determine the impact of augmentative and alternate forms of communication such as Picture Exchange Communication Services (PECS), assistive technology and Sign Language have on students with complex communication needs. Data collection consisted of observations, interviews, analysis of past speech and language reports on an individual student. Findings were the following: positive impacts of augmentative and alternate forms of communication, negative impacts and consistency among adults with expectations for students. The results indicated that augmentative and alternate forms of communication allow students the ability to communicate by giving them a tool to express themselves. It is extremely important to incorporate a variety of alternative forms of communication when teaching students with complex communication needs.

Complex Communication Needs

People communicate on an everyday basis to express their individual wants, needs and feelings. As a special education teacher of students with complex communication needs, I spend most of my time teaching students to communicate their wants and needs. Students use a variety of methods to interact or exchange ideas both verbally and/or nonverbally. In this particular study, I researched how the uses of augmentative and alternate forms of communication enhance communication for individuals with complex communication needs.

Looking at augmentative and alternate forms of communication for individuals with complex communication needs, I focused on three varieties: Picture Exchange Communication Services (PECS), assistive technology, and Sign Language. All three types of communication help individuals with complex communication needs communicate.

The focus of this action research project was augmentative and alternate forms of communication. Over the course of the last five years I have worked with numerous students in the special education field. Every one of the students I have worked with has deficits in the way they communicate and have complex communication needs. I have constantly asked myself the question how can I help my students communicate their wants and needs appropriately? When an individual has communication needs, interactions with others can become difficult. The desire to communicate with others enhances the importance of augmentative and alternate forms of communication. Individuals need an outlet and opportunity to communicate.

Having the opportunity to engage in action research allowed me to see what benefits augmentative and alternate forms of communication had on a student's communication needs. I have found that when students used augmentative and alternate forms of communication it

helped them to express themselves and benefited their everyday interactions. Without PECS, assistive technology and/or sign language, students with communication needs do not have an outlet to communicate and cannot be active participants within their environment. I cannot imagine not being able to express my wants, needs, or feelings. With this need to communicate my research will be on the benefits of augmentative and alternate forms of communication.

Most importantly, I wanted to use my research project as an opportunity to further my knowledge on a topic of personal interest. Through this project, I acquired more knowledge on ways for those who have communication needs to communicate. Communication is vital for an individual's success within their environment. How does the use of augmentative and alternate forms of communication such as PECS, assistive technology, and sign language impact students with complex communication needs?

Theoretical Framework

Over the years, the definition of literacy has changed as well as the way in which individuals acquire literacy. Literacy is a very complex topic that has many dimensions. However, in regards to individuals being able to communicate, communication tends to best fit under the understanding that literacy is a social practice. As Leu (2000) says, "literacy is a social act. Therefore, the meaning and language that are built and used are always framed by the social identity of the individual and the social context in which it is being employed" (p. 745). Literacy is a social practice and is dependant on the individual and social groups he or she is involved with. How individuals form literacy depends on many factors, such as their interactions with others.

When examining literacy acquisition, literacy is acquired through individuals' experiences and the environments that surround them. As individuals acquire literacy

the“...development of literacy grows out of their experiences, and the views and attitudes toward literacy that they encounter as they interact with social groups (Goodman, 1980, p.317). When individuals are not given opportunities to communicate then literacy will never be acquired. The use of augmentative and alternate forms of communication can help create a variety of social encounters and result in being a part of social groups. Children need to be immersed in society, and if augmentative and alternate forms of communication help with participation in social situations, then it is benefited by the individual.

Oral language is a vital component of becoming and being literate. When individuals communicate one must make sense of the information as “the learner generates or constructs hypotheses, rules for how a particular aspect of the language might operate. Using hypotheses as a guide, the child engages in language use and receives feedback from others” (Kucer, 2005, p.253). Through interactions individuals form literacy and develop an understanding of the rules of interacting with others.

Children learn through trial and error with language and build on their experiences and feedback to acquire literacy. Students with complex communication needs are not given the same opportunities to interact if they are not able to communicate on their own resulting in not acquiring oral language. When individuals are given the opportunity to use augmentative and alternate forms of communication to communicate their oral language is being acquired just in a different way.

Adults and children work together to construct literacy. A typically functioning child is actively involved in forming literacy through events with an adult with oral language. Individuals with complex communication needs are acquiring literacy, however they may require assistance with the use of augmentative and alternate forms of communication. Parents, teachers, and other adults in a child’s life can make a large impact on how a child becomes literate as well

as their feelings towards literacy. If an individual has difficulty communicating, the influential people in their lives need to be patient and open to the use of augmentative and alternate forms of communication. These forms of communication may be the only way for an individual to communicate their needs. The way in which a child and adult interact impacts literacy interactions. When adults read books with children, have social conversations, problem solve, and look at their environment, children become literate.

Research Question

Through the theoretical framework of literacy as a social practice, the use of augmentative and alternate forms of communication with individuals who have complex communication needs will be studied. The study will look at how the different forms of augmentative and alternative forms of communication can benefit those with complex communication needs. Based on this information, my research question is the following: how can the use of augmentative and alternate forms of communication support students to communicate when having complex communication needs?

Literature Review

Augmentative and alternate communication for students is a complex topic that varies from individual to individual with complex communication needs. Augmentative and alternate forms of communication have begun to attract interest from recent research such as Sulzer-Azaroff, Hoffman, Horton, Bondy & Frost (2009). In examining such an intricate topic, it is imperative to consider how one's communication can be impacted by Picture Exchange Communication System (PECS), assistive technology, and sign language.

Picture Exchange Communication System (PECS)

Bondy and Frost (1994) created the Picture Exchange Communication System (PECS) to enable students with complex communication needs. PECS was created, "...as a picture-based procedural package to teach children lacking spoken language skills to initiate wants and needs as well as describe what students observe" (Sulzer- Azaroff et al., 2009, p. 89). Numerous studies have been conducted to determine the value of PECS such as Sulzer- Azaroff et al. (2009), Magiati and Howlin (2003), Brunner and Seung (2009), Ganz and Simpson (2004), Stoner et al., (2006), Ben Chaabane et al. (2009), and Allgood et al. (2009). Within these studies benefits of PECS have also been determined for individuals with communication needs. Sulzer- Azaroff et al. (2009) analyzed 34 different peer-reviewed reports on PECS to determine if PECS could facilitate nonspeaking individuals to initiate functional communication. In this study, it was determined that PECS gives individuals with communication needs a means of communication.

PECS is expanding individuals' communication, but different challenges have been concluded through Sulzer-Azaroff's et al. (2009) research. One area of concern is there are six stages to implement to fully utilize the system. Students do not move on to the next stage until they have mastered each individual stage. According to Sulzer-Azaroff et al. (2009), it was determined that most teachers are not teaching past stage III. Students should be utilizing PECS to a higher scale in regards to communication. Another challenge those implementing PECS face is that it is imperative to be applied the same across all settings. There must be consistency. Overall, PECS make communication possible for individuals who have communication needs (2009).

Similarly, Magiati and Howlin (2003) conducted a pilot program to determine the value of PECS for students with autism spectrum disorder. DSM-III defined autism as individuals with deficits in communication (DSM-III criteria: American Psychiatric Association, 1994). In this research study, the participants were 34 children, aged five to 12 with autism spectrum disorder. The participants were from eight different schools chosen by a Pyramid Consultant. Teachers were formally trained as well as monitored throughout the study to help with the consistency and validity. The findings indicated that students made tremendous progress over the six month study. However, even with the students' individual progress, concrete conclusions were not reached because no comparison group was involved. Measures were based on interviews and questionnaires and lastly, the variety of implementation across the eight schools. However, Sulzer-Azaroff et al. (2009) and Magiati and Howlin (2003) came to the same conclusion that with the variety of implementation results there is no accurate data collection. Students made progress with the pilot program, however, the validity is not accurate.

According to Brunner and Seung (2009), children who master PECS may remain nonverbal. However, PECS is a way for the students who are nonverbal to communicate to the best of their ability. On the other hand, Ganz and Simpson (2004) conducted a study to examine the role PECS has on improving students' number of words spoken as well as the length of utterances. Three students with ASD participated in the study. All three participants had little to no functional speech and zero experience with PECS. The students' ages ranged from three to seven years and were in need of augmentative and alternative communication systems (AAC). Ganz and Simpson (2004) found all three participants in the current research made progress in mastery of the PECS system and demonstrated increases in average intelligible words.

In addition, Stoner, Beck, Bock, Hickey, Kosuwan and Thompson (2006) studied individuals that had no prior experience with PECS. This study consisted of five adults who were nonverbal, classified with mental retardation, and had zero experience with a communication device. The basis of this study was to determine if individuals would be able to use their PECS communication books out in the community. Based on the findings of Stoner et al. (2006), “three of the five participants successfully completed PECS training through Phase III and, at the termination of this study, were using their communication books during community outings.... two participants did not progress past Phase III of training, and PECS was not considered to be a functional communication system for them” (p. 158-159). An important aspect to keep in mind is that not all AAC’s are beneficial to all participants as, “...the reality [is] that each individual has unique strengths and needs, and it cannot be assumed that one intervention technique will work for everybody” (p. 162).

Individuals need to communicate, regardless of disability, and the importance of getting families involved in the process and having students generalize skills and communicate within their community is critical. Ben Chabbane, Alber-Morgan, and DeBar (2009) conducted a study in which mothers were trained to incorporate the teaching of PECS to their children with autism at home. The researchers had two children, five and six years old, with both mothers participating. Participants were first instructed on requesting (manding) preferred items using the PECS system. Once participants mastered manding for preferred items, the children were to generalize the skills learned and use other picture cards to request a preferred item when the exact picture card was removed. Both participants were able to generalize skills learned. The results of Chababne et al. (2009) study found “a clear functional relation between parent-implemented training and improvisation of mands by children with autism” (p. 175). Parent

involvement in their child's education was critical for the student's success especially when the learners had complex needs.

Students who are unable to generalize skills will not be successful within their environment. Allgood, Heller, Easterbrooks and Fredrick (2009) investigated how the use of picture dictionaries help students with expressive communication needs within their work place. When looking at students with special needs, the ultimate goal is for them to feel successful and be active participants within their environment. Having a job is one way for individuals to feel success. With the investigation of Allgood et al. (2009), five participants participated. Participants aged 17 to 20 years old were diagnosed with mild to moderate disabilities, classified as being deaf, enrolled in a community-based vocational training program and preferred to communicate through sign language. The community-based transition sites consisted of a grocery store, retail store, and a pet store. Individuals with disabilities may have difficulty when interacting with co-workers and customers as well as understanding what is being asked of the individual. When sign language is your main mode for communication, not everyone around you understands. With this communication barrier, getting and maintaining a job can be difficult. Allgood et al. (2009) had the individuals use picture dictionaries to communicate. Based on the results from the research study, all five participants were able to successfully use their picture dictionaries. The criterion for success was predetermined by student questionnaires pre and post tests. Picture Exchange Communication System (PECS) is a way for individuals with complex communication needs to express themselves. Sulzer-Azaroff et al. (2009) have found that PECS assists those with little to no functional speech a way to communicate.

Assistive Technology

Every individual has the right to communicate. With advances in technology this right is becoming more prevalent for individuals with complex communication needs. One way is with assistive technology such as electronic devices with speech output.

The National Joint Committee for the Needs of Persons With Severe Difficulties (1992) noted that all individuals with disabilities have a basic right to “affect, through communication, the condition of their existence” (p. 2). This right is of particular importance to people with severe communication disabilities. Augmentative and alternative communication (AAC) devices often become the vehicle to attempt realization of this basic right in our society (American Speech-Language-Hearing Association [ASHA], 1991).

Several studies have been conducted to determine the areas of importance when incorporating these devices into students’ lives. A study done by McLean, Bausch, and Ault (2007) examined the collaboration among special education teachers and general education teachers in regards to providing assistive technology services to students with disabilities included in the general education population. At the end, McLean et al. (2007) analyzed 96 teachers’ interviews, and based on teacher interviews, four themes were found with five subgroups and they were the following: “...(a) current collaboration practices, (b) teacher-reported barriers to collaboration, (c) teacher suggestions to improve collaboration, and (d) teachers who do not practice collaborations” (p. 20-21). The subgroups consisted of strategies, staff participation, the amount of time teachers collaborate, communication techniques and topics to concentrate on (2007). These results are of great importance because students need to best use their communication devices. All individuals involved with the assistive technology need to be

aware of the importance of collaboration and understand the difficulties that are involved. It is an individual's right to communicate.

Consequently, when students use assistive technology, school personnel and a family's involvement and collaboration are critical. Bailey, Parette, Stoner, Angell, and Carroll (2006) researched families' perceptions of technology in regards to their children's communication. Six parents and/or guardians of seven middle and high school males participated. The research consisted of interviews of parents and/or guardians, observation of the students using the devices in school, and home in addition to follow up questions. Bailey et al. (2006) discovered many benefits and barriers in regards to families' perceptions of assistive technology. All families trusted that assistive technology would increase students' independence and communication, and that school was responsible for providing training and technological support regarding maintenance and new programs.

McLean et al. (2007) report that school support is critical. However, the results of their study need to be addressed to benefit families' involvement and perceptions of assistive technology. One parent's feelings on using assistive technology at home was that "it turned out to be more than I thought it would be- more demanding and a little more difficult. I take some of the responsibility for not having it up and running, but I just expected more support from the school district" (2007, p. 56). Families tend to feel overwhelmed with the new technologies and require constant support from students' teachers and support staff.

In addition to Bailey et al. (2006), parents found other barriers to be the insufficient amount of training on using and programming, limitations to the individual devices, amount of time the students used the device, as well as families being involved in the school process.

Nonetheless, the positives outweigh the negatives in regard to families' perceptions on assistive technology. The study that Bailey et al. (2006) conducted found that "the overall impression from all participants was that although there were difficulties, stressors, and barriers related to AAC device use, AAC devices were an integral and vital component of their children's communication" (p. 61).

Assistive technology can aid individuals' communication skills. However, a vital component of being an active participant within your environment is taking skills that are learned and generalize them in different contexts. In studies, such as Hanser & Erickson, (2007), Schlosser & Blischak, (2004), and Mechling & Cronin (2006) their focus was to determine if students' communication skills would generalize to everyday interactions. Even though each study consisted of different communication needs, all relate in the way one would generalize learned skills.

Mechling and Cronin (2006) conducted a study to determine if computer-based video instruction could enable students to order food using their assistive technology. Students learned how to use their devices by watching a laptop computer and following directions. Students were then taken to fast food restaurants and had to order their food. This would prove that students could take information learned in a classroom setting and generalize it out within their community. The conclusion of this study was that students that use assistive technology and have moderate to severe intellectual disabilities are able to order food as well as generalize skills learned. Some of the participants in the study required more modeling or promptings to accomplish the task. In the end, participants were successful.

Similarly, Hanser and Erickson (2007) investigated the effectiveness of integrating word identification and communication interventions to students with complex communication needs and use assistive technology. Within the study, the ability for the students to generalize skills learned was also noted. Three students between the ages of seven to 13 participated in the study. Participants were unable to use speech to communicate. When participants used a form of assistive technology, they were able to communicate up to two messages per minute and based on the *Peabody Picture Vocabulary Test* (PPVT-III; Dunn & Dunn, 1997) had an age equivalent of at least five years old. The research consists of 75 scripted lessons to improve students word identification, icon sequencing, expressive communication, word generation, and developmental spelling in regards to communicating with their assistive technology. Within this study it also stated the following:

from the beginning, the emphasis is on generalization and the transfer of known skills to the unknown. Learners' progress through a carefully sequenced set of 75 lessons that support mastery over time rather than mastery of each element as it is introduced. The structure of the program is designed to help learners begin to think like readers, spellers and *Unity* users (p. 1).

The results indicated that all participants made gains and were able to show how students generalized decoding, encoding, and icon sequencing skills through the intervention. Exact numbers varied between the participants. However, all areas increased except one individual decreased in the intervention based on the number of words generated on the device.

Schlosser and Blischak (2004) conducted research to determine the results of speech and print feedback on the spelling performance of students with communication needs. The

participants were taught to spell words with their speech-generated devices. Four participants were chosen between the ages of eight and 12 years old. In order to meet the criteria for the study, all participants had to have less than three months of experience with the speech-generated device, no visual or hearing impairments, typing skills and mild to moderate autism and have poor spelling skills. Based on the results of the study, it was determined by Schlosser and Blischak (2004) that students were able to perform independent spelling with their speech generated devices in a variety of circumstances. However, two participants had difficulty generalizing new words.

Hanser & Erickson, (2007); Schlosser & Blischak, (2004); and Mechling & Cronin, (2006) investigated students' abilities to generalize skills learned through their assistive devices, and the results were that students can generalize and participate within their environments. Students have a variety of abilities and each child is different when looking at the potential to generalize skills.

Humans are social beings and require the need to communicate within our environment. Assistive technology is capable of giving individuals with complex communication needs the tools to be successful.

Manual Signing

When individuals are not capable of communicating through oral language, other methods need to be addressed. Sign Language is a technique that can be beneficial to individuals with complex communication needs. Sign language can facilitate an outlet for students with complex communication needs as well as "...act as a language bridge for children with various types of language delays or impairments" (Toth, 2009, p. 86). Students having complex

communication needs require an outlet to communicate their wants and needs. Sign language benefits some students who have communication needs as well as various disabilities.

Toth (2009) investigated the use of sign language as a communication tool for students diagnosed with a disability and resulted in communication deficits. A variety of disabilities were targeted for the pilot program which included Autism, Down Syndrome, and students with a learning disability. There were 38 participants and ranged in ages from zero to six years old. The participants were involved in a pretest and posttest to determine results as well as questionnaires, journal entries, and video recordings. Throughout the study, students watched DVDs in which different signs and the spoken word were given. The evaluator was responsible for noting children's responses and if the child was paying attention to the sign, voice, or imitated the model on the DVD. After participants watched the DVDs, the evaluator asked a variety of questions and videotaped their responses.

Results of the study varied. Based on some of the participants' ages, the study found that children less than three years old could not attend to the task for long periods of time. Through the study, "it was affirmed that children, despite their ability or disability, strive to communicate. Given the means and the opportunity to explore another medium, such as the visual and gestural languages of American Sign Language... children respond" (Toth, 2009, p. 93). Children benefit from visually seeing as well as manipulating words themselves resulting in the ability to communicate.

Goldstein (2002) conducted a similar study to Toth (2009) when looking at the benefits of sign language. The study focused on nine experiments assessing sign language communication treatments with children with autism. Overall, Goldstein (2002) came to the

conclusion that sign language participants made more growth with learning speech. The majority of individuals who benefited from using the sign language instruction were those participants who had more limited communication. Consequently, using a sign and speech approach can lead to “jump-starting early vocabulary learning” (2002, p. 386).

Tincani (2004) carried out a report comparing the Picture Exchange Communication System (PECS) and sign language when attempting to increase a student’s request for preferred items. The study examined two children with autism and little to no communication unless gesturing for an item of interest. Both children were instructed in PECS and sign language. The results varied depending on individual. One’s best practice was PECS and the other had more success with sign language. Tincani (2004) then determined “...learners who have moderate hand-motor imitation skills, sign language training may be equally, if not more, appropriate” (p. 159). Another important aspect of this study that was beneficial to both participants was an increase in speech otherwise known as communication. When determining why students increase oral language when using Sign Language the results are unclear; however, it could be in response to manipulating ones hands triggers vocalization. Sign language can be an outlet for individuals with complex communication needs.

There are many positive advantages to using augmentative and alternate communication (AAC) to facilitate communication. Throughout the numerous studies by Stoner et al. (2006), Tincani (2004), Goldstein (2002), and Toth (2009) the positives seem to outweigh the barriers of augmentative and alternate communication (AAC). Augmentative and alternate communication can be viable ways for individuals with communication needs to communicate. An array of methods and techniques can be utilized for the needs of students with multifaceted disabilities. Picture Exchange Communication System (PECS), assistive technology, and sign language have

been proven to assist in attaining communication. As previously noted by Stoner et al. (2006), not all AAC's will be beneficial to all individuals with communication needs. An individual needs to think of the person's strengths and needs to find the best suited augmentative and alternative communication system.

Methods

Context

Research for this study took place in a Summer District Based classroom, which resides in Webster Leigh High School. The classroom consists of 11 students with moderate to severe intellectual disabilities who are transported to Webster Leigh from six surrounding districts. The socioeconomic status of my classroom consists of mostly middle to lower class students from both single and two parent families. A speech pathologist will be interviewed within the classroom setting as well as the parent of a student with complex communication needs. Observations were conducted in their classroom setting.

Participants

Tom is a 16 year old Caucasian male with Multiple Disabilities and attends a self-contained high school classroom. Tom has limited functional speech and is a very happy and caring young man. Currently, Tom uses an assistive communication device to help him communicate for others to understand him. Due to Tom's disability, his speech is difficult to recognize. He has had access to his assistive technology device for three years. However, he is unwilling to use it unless prompted and would rather use his oral speech. Tom has had instruction in using PECS, assistive technology and sign language throughout his education. He is familiar with all three forms of augmentative and alternative communication. Nevertheless, he

would rather use his inaudible speech to communicate. All names throughout the study are pseudonyms to ensure participants confidentiality.

Sarah Riley, a speech pathologist for Summer, has worked in the field for 30 years. Currently, she is an itinerant speech teacher in which she serves the Webster Leigh District Based Classroom where Tom attends group and individual lessons. Mrs. Riley and the classroom teacher co-teach lessons together utilizing PECS, assistive technology, and sign language. Sarah has certificates in Speech and Language nursery school to grade 12 and Special Education birth to grade 12.

Mrs. Ina Baxter is a parent of a 19 year old Caucasian female with little to no functional speech. Her daughter is diagnosed with autism and attends a self-contained high school classroom. According to Mrs. Baxter, her daughter can say “hi,” and “bye” unprompted and is able to imitate other phrases when requested to do so. Her daughter has an assistive communication device that has been used for a year and a half. However, she is reluctant to use it unless asked to. Her daughter has had instruction in using PECS, assistive technology and sign language throughout her education. She is familiar with all three forms of augmentative and alternative communication. However, she would rather keep to herself.

Research Stance

As a researcher, I worked with my current 12:1:4 Summer District Based Classroom. I took on the role of a privileged, active observer. According to Mills (2011) a privileged, active observer is one who observes their students during a time the observer is not directly involved in the lesson. I am presently a graduate student at St. John Fisher College where I am working on my Masters Degree in Literacy Education. I hold degrees in elementary education grades one to

six, special education grades one to six, and early childhood education in the areas of general and special education birth to grade two.

Method

Throughout the study, I assessed how implementation and uses of augmentative and alternative communication techniques assist students with complex communication needs. The study focuses on three areas of assistive communication in which I observed how a student implements the different forms: PECS, assistive technology and Sign Language. I observed Tom in small group and in one-on-one lessons with the speech pathologist, Sarah, for a total of three observations at a half hour each. Tom was asked a variety of questions in which he had to communicate his responses. I observed what method Tom used and what prompts, if necessary, he required to be successful.

To close the study, I interviewed the speech pathologist, Sarah, who works closely with Tom as well as is a parent that has a student with complex communication needs who uses all three forms of communication. During the interviews the adults were asked how in their opinion augmentative and alternative forms of communication can benefit students.

Quality and Credibility of the Research

In conducting this research, it is imperative to guarantee the quality and credibility of the study. Credibility defined by Mills (2011) is the ability to take into account the complexities that present themselves within a study and to deal with patterns that are not easily justified. In order to ensure credibility during this study, I applied certain techniques. I was a part of peer debriefing with a critical colleague who helped me to reflect through the process (2011).

Throughout the process, I collected a variety of data such as audio recordings, interview notes,

email, reports, and artifacts. In addition, my data was triangulated. Triangulation is when a researcher evaluates a variety of data sources and different methods with one another to cross-check data (Mills, 2011). I collected information using diverse methods, including observations with Tom, interviews with a parent of a student with complex communication needs, and emailed questions to a speech pathologist who works with a variety of students. In addition, I analyzed a variety of artifacts such as a written report based on Tom and his communication written by a speech pathologist. Lastly, I conducted member checks to ensure the participants' credibility and approval of the research.

I also ensured transferability throughout my research. Transferability refers to the researcher's beliefs that everything studied is context bound and that the goal of the research is to not develop statements that can be generalized to large groups of people (Mills, 2011). Throughout the study, I collected detailed data that is relevant to the study and vivid in detail.

Dependability is also an area to ensure within this research and refers to the stability of the data (Mills, 2011). In order to guarantee dependability, I worked with my critical colleague. We worked together analyzing my data and findings, and she provided written feedback to ensure further insight into my research. I used triangulation to cross-check my data through a variety of methods such as interviews and observations.

Lastly, I guaranteed confirmability, which Mills (2011) refers to as the objectivity of the data that has been collected. I ensured confirmability by constantly referring back to my original research question. This helped me to stay on topic as well as determine further questions looking deeper into augmentative and alternative communication. With continuing the practice of

triangulation through a variety of methods and cross-checking the research, it ensured confirmability.

Informed Consent and Protecting the Rights of the Participants

Before beginning my research, it was essential that I collected informed consent and protect the rights of the participants. This was a qualitative study in which I observed small group and one-on-one lessons in addition to conducting interviews. I gave an assent form to Tom and a consent form to his family discussing the study and asking for permission to work with Tom. Informed consent forms for use with adults were also given discussing the study and getting permission to conduct interviews. For the purpose of the study and to guarantee confidentiality of all participants, it was important that participants understood that all names were assigned pseudonyms. All names were removed from artifacts to ensure confidentiality.

Data Collection

As discussed earlier, several types of data were collected. I performed privileged observations with Tom and Sarah, the speech pathologist. I observed how Tom used communication through one-on-one speech as well as small group lessons. Additionally, throughout each observation, field notes were taken in which I was able to refer back to and determined how each observation went. I conducted an interview through email with Sarah, the speech pathologist, on what her feelings were towards the benefits of the different modes of communication. Another interview was conducted based on a parent's feeling towards the three modes of communication, PECS, assistive technology and Sign Language. Finally, speech pathologist reports were analyzed to determine Tom's communication strengths and needs as well as how the different modes of communication benefited him.

Data Analysis

Numerous steps were taken as the data was collected and analyzed throughout my research. First, after each observation, I typed my handwritten field notes and observations from the day. The next step I took in preparing my data is that I listened to the recording from my interview and typed what was said and discussed. I made copies of all speech and language reports and the emailed the questionnaire. I used the copies of the emailed questionnaire, speech and language reports, typed field notes from observations, and transcript of the parent interview to begin coding and identifying reoccurring themes.

I went through my data and took notes on reoccurring patterns, highlighting the significant details. Initially, I had thirteen categories as I coded the data, and then reduced it to the following three themes: positive impacts of augmentative and alternate forms of communication, negative impacts of augmentative and alternate forms of communication, and consistency among adults with expectations for students using augmentative and alternate forms of communication. I then went through the data on new copies and highlighted the specific information in different colors that represent the three themes.

After I had determined the specific themes and color coded the data, I took the data regarding each theme and placed it into a graphic organizer web. Within each of these webs, I added subcategories specific to the individual themes such as with negative impacts I had the subcategories of cumbersome, expensive, and programming.

Findings and Discussion

After careful examination and analysis of the data collected throughout my research, three themes emerged from the data. The themes included positive impacts of augmentative and

alternate forms of communication, negative impacts of augmentative and alternate forms of communication, and consistency among adults with expectations for students using augmentative and alternate forms of communication.

Positive Impacts of Augmentative and Alternative Forms of Communication

The first major theme that emerged in my research was the positive impact augmentative and alternative forms of communication can have on individuals with complex communication needs. Through observations, student work, interviews with a parent and speech pathologist, positives to the different augmentative and alternative forms of communication emerged as a primary area of focus.

The degree to which student, parent, and speech pathologist found the positives of augmentative and alternative forms of communication varied, with parent and speech pathologist verbalizing the most positives. In agreement with the National Joint Committee for the Needs of Persons With Severe Difficulties (1992) assistive technology can be a vehicle for communication which is an individual's basic right (American Speech-Language-Hearing Association [ASHA], 1991). Through observation, including group activities, one to one speech and community outings, Tom was able to communicate to his peers, staff and individuals within the community. Throughout the study, Tom was observed in order to collect data. For example, one positive was the development of participation when Mrs. Riley was asking the class review questions on a previously learned topic, Tom immediately raised his hand and when called on, he used a previously learned sign to answer the word "change."

Another example of Tom's communication through augmentative and alternative forms of communication was when he used his Dynavox or assistive technology. Tom was asked by

peers how his evening was, and he responded using his device to say, “Last night I went to my grandma’s house. It was fun. I had chicken for dinner. It was ok. I went to bed at my bedtime. I took a shower to take care of myself” (field notes, June 15, 2010). Based on knowledge from others that have worked with Tom, using his Dynavox unprompted is a great gain for his communication. He began to take initiative to communicate his thoughts, ideas, and feelings. A third example of Tom’s communication was through the use of PECS during a speech group activity. Tom volunteered to read the next sentence. The words had a PECS icon below. When Tom came to a word that was unknown, he used the picture cue to help determine the unknown word, which resulted in his ability to become self-reliant. Tom’s success with PECS is in agreement with Sulzer-Azaroff et al. (2009) that PECS assists in communication when individuals have complex communication needs. Tom showed that he benefited from all three forms of communication: PECS, assistive technology, and sign language.

In addition to my observations, I also interviewed the speech pathologist who is currently working with Tom. Mrs. Riley states, “I believe augmentative and alternative forms of communication have numerous positives for students with complex communication needs. The most important benefit to the different forms of communication is that it provides a way for individuals to get their message across and the ability to communicate with others” (personal interview, June 17, 2010). Similarly, Toth (2009) believed it facilitates and can, “act as a bridge for children with various types of language delays or impairments” (p. 86). “During Mrs. Riley’s interview she stated, “When students can communicate it gives them a sense of accomplishment and a feeling of being active participants within their day to day lives” (personal interview, June 17, 2010). Mrs. Riley’s quote is another example of a positive to augmentative and alternative forms of communication by encouraging student participation. Students are able to take

initiative for their own learning and an active part to their lives. Communicating is a human need and augmentative and alternative forms of communication (AAC) can help individuals with complex communication needs to communicate.

Another instance in which the positives of augmentative and alternative forms of communication seemed to be apparent was through an interview conducted with Mrs. Baxter. A positive to AAC is that individuals using augmentative and alternative forms of communication are able to be in control of his/her own wants and needs. Similarly, to Sulzer-Azaroff et al. (2009) AAC's assists and give the ability to communicate when one has little to no functional speech. The individual is able to determine what he/she wants and expressed it using augmentative and alternative forms of communication. Mrs. Baxter said, "The different forms of communication give my daughter the tools to communicate with others" (personal interview, June 18, 2010). Having the ability to communicate an individual's wants and needs is critical for the success of the individual.

Negative Impacts of Augmentative and Alternative Forms of Communication

Negative impacts when using augmentative and alternative forms of communication was the second theme that emerged. Even though the ability to communicate is critical for an individual's success, the negative impacts or views was also a critical component to keep in mind. Through observations, evaluating speech and language reports, interviews, and student work, negative impacts emerged as another primary area.

Through the analysis of Tom's speech and language report, an overlying negative impact emerged in regards to the variety of communication systems. According to Mrs. Riley, "Communication forms are cumbersome which results in Tom not transporting through school

and out in the community” (personal interview, June 17, 2010). Similarly, Mrs. Baxter said “My daughter’s assistive technology device is cumbersome and I think twice before bringing it in the community due to its weight” (personal interview, June 18, 2010). Mrs. Riley also said, “With how heavy the devices are and with PECS it is cumbersome in regards to you have to carry them wherever you go in order to communicate” (personal interview, June 17, 2010). Based on the data, augmentative and alternative forms of communication being cumbersome has led to a negative aspect. This negative differs from the research that has been conducted in the past. Through my findings the weight of the different devices is cumbersome however through the research of past studies this was not apparent. However, if the different modes of communication can lead to individuals not carrying their communication tools around the AAC’s will not benefit individuals in all settings. The weight of the object needs to be taken into consideration when determining the best mode of communication for individual students.

Another area in which negative views were apparent was in regards to how expensive assistive technology is. During Mrs. Riley’s interview she stated, “The cost of some AAC’s may impede the purchase and discourage others to follow through with the purchase” (personal interview, June 17, 2010). Mrs. Baxter states, “The device could break at any moment and the turnover rate to get fixed is very long, up to 6 months. How would my daughter communicate while the device was being fixed?” (personal interview, June 18, 2010). Based on this information, the implications are very important. In order for a student to communicate with assistive technology the cost of the device needs to be feasible. If students are not capable of communicating on their own and a specific AAC is used daily what happens when this device is not around? The individual loses their only mode of communication and due to the period of not using the device he or she has regressed and needs to relearn skills he or she had previously

mastered. With the information I found with my research the cost of the different devices needs to be taken into consideration however, in past research the cost was not portrayed as a negative aspect.

A third area of concern in regards to augmentative and alternate forms of communication is the programming of the different assistive technology. Through observation of Mrs. Riley's speech group, Tom was trying to find sunflower on his device in response to a question. He found the plants page and sunflower was not present. Mrs. Riley was able to program the word "sunflower" into his device so he could communicate his answer. What happens when a given word is not programmed that is needed? This implies that the student is unable to communicate their thoughts or ideas. If by chance the adult is able to program the student's device to show the word that was missing, most likely the thought has passed for the student and they are ready to move on. The learning opportunity has been lost. Through the interview and email, both adults stated similar concerns. In regards to Mrs. Baxter's daughter and programming she states, "if a word or phrase Lauren is trying to say is not in her communication system we are stuck! It is also difficult to program new information if you do not do it every day" (personal interview, June 18, 2010). Similarly, when a word is not within a communication device the learning opportunity has passed as well as the opportunity for the individual to communicate his/her wants and needs. Mrs. Riley equally said, "Regardless of what communication method a student uses it needs to be updated often with words and phrases that fit the individual" (personal interview, June 17, 2010). Likewise, McLean et al. (2007) reports that other parents have similar feelings towards their students' assistive technology. A mother stated that it was more demanding and difficult and she was overwhelmed. Programming takes a lot of time and can be difficult but is necessary for the success of the student.

Consistency Among Adults with Expectations for Students

A third theme that surfaced through my data analysis was consistency. Based on my observations of group and one-to-one speech lessons, I noticed differences among the way in which Tom communicated. During one-to-one speech, Mrs. Riley held Tom to a very high standard in which he knew that he had to get his thoughts across using any of the three forms of communication: PECS, assistive technology and/or sign language. Throughout group lessons Tom was more relaxed with his communication. When a paraprofessional asked him a question, he used his voice. He was asked to repeat himself where he verbally answered and then gave up when they did not understand him. When Mrs. Riley asked him questions in group lessons, he was more willing to take his time and use one or more of the communication techniques. Similarly, McLean et al. (2007) found that when special education and general education teachers work together collaboration consistency is critical for student success. When individuals are not held to the same standards in regards to communication by all surrounding parties the results on how one communicates will be different.

Mrs. Riley also informed me of the importance of family and school being consistent with an individual's communication. Students need to receive support from both family and staff in encouraging the use of different forms of communication. Similarly, Sulzer-Azaroff et al. (2009) determined that it is imperative communication is applied the same across all settings. Through the years Mrs. Riley has seen the differences among families and staff in regards to benefits the different modes of communication can have on individuals with complex communication needs. Mrs. Riley states, "the more informed, involved and invested families and staff are in the different forms of communication the more likely a student will enjoy communicating and see the importance" (personal interview, June 17, 2010). Families and staff

need to work together to show the student the importance of communicating. A student must communicate his wants and needs, which results in the individual receiving what they wanted. When an individual realizes that communication results in getting their wants and needs met the importance of communication becomes apparent to the individual.

An additional instance of the importance of consistency became apparent in Mrs. Baxter's interview. When Mrs. Baxter was asked what she would like to see in regards to her daughter using augmentative and alternate forms of communication she stated, "I want my daughter to communicate from the minute she wakes up to the moment she goes to bed. Home and school needs to be consistent and in the community. Everyone has to be on the same page" (personal interview, June 18, 2010). As Leu (2000) previously stated, "literacy is a social act." (p. 745). With this in mind, many implications can be made. Individuals who do not communicate throughout their day are not forming their own literacy and not becoming a part of social groups. If individuals are not capable of communicating, then they are not an active part of society and not getting their own wants and needs met. Mrs. Baxter states, "I feel that everyone being consistent is the most important aspect in regards to my child communicating" (personal interview, June 18, 2010). Taking a closer look into Mrs. Baxter's quote, she implies that when involved with a student with complex communication needs, all must work toward the same goals. Students must understand the importance in communicating to get their wants and needs met and can only get them met when they have communicated their need.

Implications

Through the research and findings, many implications are suggested for me as a teacher. First, it is clear that individuals must communicate. With students that have complex

communication needs, there are a variety of augmentative and alternative forms of communication to assist in communicating. In regards to PECS, assistive technology, and sign language there are positives and negatives to each. Secondly, there appears to be a common theme when getting individuals to communicate: everyone must be consistent. As Stoner et al. (2006) and my findings suggest, when using augmentative and alternative communication there is not one form of AAC that will solve complex communication needs, multiple forms of communication need to be used. If I motivate my students to want to communicate, then I must be consistent and take into consideration what recent research states. McLean et al. (2007) and Bailey et al. (2006) state that individuals must use a variety of methods to communicate.

Individuals need to be able to communicate their wants and needs. Ways in which individuals communicate varies from individual to individual. In agreement with the research of Stoner et al. (2006) my observations and interviews, all students have different strengths and needs and not one form of communication works. While most communicate verbally, others must find other ways to communicate such as with PECS, assistive technology, and sign language. In regards to assisting those with complex communication needs, I must use a variety of techniques. For example, Tom benefited from verbally hearing information, seeing it written with PECS, and visually seeing the signs to go along with the teachers verbal information. Multiple modes of information tend to result in a higher retention rate. A teacher must incorporate numerous modes of communication into all daily activities and lessons.

Given what I have learned through this research, it is imperative for me to have families involved in the process of getting individuals with complex communication needs communicating and have everyone involved consistently. Similarly, with Bailey et al. (2006), family's involvement and collaboration with school personnel is critical for the individual's

success. One thing I will do to promote family involvement is keep all people involved with student progress and have everyone's voice heard with concerns and needs for the individual. An example of this would be Tom's family receiving 10 week progress notes of his yearlong goals from his Individualized Education Plan(IEP).

Through this research, the largest implication is for the individual to accept the need and desire to communicate using a variety of augmentative and alternative communication. The student must determine what best fits his/her individual needs. A teacher can create a fun and meaningful learning environment where students want to be involved in the day-to-day activities and communicate their wants and needs. Students will feel that what they have to say is important.

Conclusions

Communicating one's thoughts, feelings, and ideas is part of being an active participant in society. If teachers want their students to be active communicators, then the pros and cons of the different modes of communication must be determined based on the individual's needs. Stoner et al. (2006) states that not all augmentative and alternate communication (AAC) will benefit individuals with communication needs and the individual needs to be kept in mind when determining what communication mode works best for that person. Stoner et al. (2006), Tincani (2004), Goldstein (2002), and Toth (2009) as well as myself came to the conclusion that the positives of augmentative and alternate communication outweigh the negatives. Even though there may be some negative ideas (cumbersome, expensive, and difficult to program) of AAC, the positives (gives the individual the ability to communicate, take their own initiative to

communicate and gives control to the individual of their wants and needs) and gains individuals make using the different modes of communication are far more important.

Looking back on this action research project, a few limitations became apparent. Based on the amount of time that this research was conducted in, my findings may lack depth from a lack of prolonged engagement. I would like to conduct this research over an extended amount of time such as a yearlong study. I would also like to conduct more observations in a variety of classrooms and conduct more interviews with varying people. Having my own students, staff, and parents involved, the results were as I had originally thought. Based on this information, I would like to further investigate if results would be the same with a larger scope of people.

Finally, after taking into account all of the implications that my research has brought to mind, I am left with additional questions to research in the future. First, what else can teachers do to motivate students to communicate their wants and needs? It is extremely important for individuals to express themselves as well as be a part of society. If students do not express themselves, it is likely that they will not form relationships with others, not express themselves, and/or resort to behavior modes of communication. A second question that arises is what are other modes of communication that I could incorporate into my classroom to benefit students with complex communication needs? It is clear that assistive technology, PECS, and sign language benefit students with complex communication needs however, are there other methods that would be beneficial to my students in meeting their communication needs? What extra steps do teachers need to take with students who would rather not communicate? How do you get everyone involved to understand the importance of communication and being consistent? With the combination of consistency, school, family involvement, and a variety of modes of alternative communication, students can be successful.

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Appendix

Research Interview Questions

Name: _____

1. In your experience with augmentative and alternate communication what do you see are the benefits?
2. In your experience with augmentative and alternate communication what do you see are the weaknesses?
3. What would you like to see when implementing augmentative and alternate communication into a student's daily activities?
4. When using augmentative and alternate communication what are obstacles that you have seen or foresee?

5. Taking a look at three specific augmentative and alternate forms of communication; PECS, assistive technology and Sign Language what do you believe are the pros and cons of each?

Pros

Cons

- a. PECS

- b. Assistive Technology

- c. Sign Language

6. Being a parent and/or speech pathologist what information do you feel is critical for a student's success in regards to augmentative and alternate communication?