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EVIDENCE-BASED PRACTICES FOR IMPROVING COMMUNICATION SKILLS OF STUDENTS WITH MODERATE-TO- SEVERE DISABILITIES

AMBER BARTLETT

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EVIDENCE-BASED PRACTICES FOR IMPROVING COMMUNICATION
SKILLS OF STUDENTS WITH MODERATE-TO-SEVERE
DEVELOPMENTAL DISABILITIES

A Thesis
Presented to the
Faculty of
California State University,
San Bernardino

In Partial Fulfillment
of the Requirements for the Degree
Master of Science
in
Special Education

by
Amber Francesca Bartlett
June 2018

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Approved by:

Dr. Jemma Kim, First Reader

Dr. Kathleen Phillips, Second Reader

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ABSTRACT

Communication deficits are often evident in students with moderate-to-severe developmental disabilities. For these students, basic communication needs, like asking to use the restroom, requesting food or expressing discomfort are a challenge. Frustration caused by communication deficits can lead the student to express interfering behaviors, which may interrupt student learning. This paper identifies and describes evidence-based practices (EBPs) used to increase functional communication skills for students with moderate-to-severe developmental disabilities. This review focuses on functional communication training (FCT) and the picture exchange communication system (PECS) and their use to increase functional communication skills. The study also explains how to implement FCT and PECS and the results and challenges that may take place during the implementation process. This is an informative paper intended for special education teachers who work with students with moderate-to-severe disabilities.

Keywords: functional communication skills, developmental disabilities, evidence-based practices, picture exchange communication system, functional communication training

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DEDICATION

I dedicate my master's project to my beautiful family; Reed, Levi, and Haven.

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CHAPTER ONE

INTRODUCTION

Problem Statement

Individuals with developmental disabilities with limited functional communication may express themselves in various ways. Literature has noted that children who express challenging behaviors use those behaviors to communicate (Dunlap & Fox, 2011). These behaviors may cause high-stress situations for educators and caretakers. Furthermore, the challenging behavior can delay academic success, social connections and daily living skills (Gregg, 2017). This is not the result in all cases of students with communication deficits, but the relationship between communication difficulties and challenging behaviors can exist (Matson, Boisjoli, Mahan, 2009; Nungesser & Watkins, 2005; Roben, Cole & Armstrong, 2013).

Therefore, teaching students with developmental disabilities a functional way to communicate is important. These students can be taught communication skills without the student resorting to challenging behaviors (Pinto, Simpson & Bakken, 2009). Students with deficits in communication need a way to communicate their wants, needs, thoughts, and feelings. In recent years, research has helped guide educators to the most beneficial and research supported practices, referred to as evidence-based practices (EBPs). The National Professional Development Center on Autism Spectrum Disorder (NPDC,

2014) have now identified twenty-seven evidence-based practices. According to the Individuals with Disabilities Education Act, 2004 (IDEA) and the Every Student Succeeds Act, 2015 (ESSA) educators must implement EBPs in their classrooms (Hsiao & Petersen, 2018).

Educators need to promote functional communication skills in students who lack them. Educators can address students' communication needs by identifying evidence-based practices to increase functional communication skills for students with developmental disabilities. Educators will support the current laws, IDEA, and ESSA, which help ensure that students with developmental disabilities have ways to communicate with others.

Purpose of the Study

It is important to teach communication skills to students with developmental disabilities since these students often have deficits in this area. Students with limited verbal skills and functional communication skills can exhibit behaviors that interfere with their learning and the learning of their classmates. However, their behaviors are a way for them to express their needs (Lalli, Browder, Mace, & Brown, 1993). Teaching these students communication skills can help alleviate these challenging behaviors. Also, navigating through daily interactions requires communicative skills. The way in which most people communicate daily is through speech vocalization, body movement and/or expressions, but this may not be the case for a student with developmental disabilities. Although an individual with developmental disabilities may not

communicate like most people, this does not lessen his or her need and right to communicate (Pinto et al., 2009). Students who lack functional communication need to learn how to use an EBP that will encourage communication skills.

The purpose of this paper was to identify evidence-based practices that promote functional communication skills in students with developmental disabilities. This study explored results of current EBPs used to increase functional communication skills for students with developmental disabilities. This took place through an extensive literature review on current findings. This study answered the following questions: 1). What are the current evidence-based practices that promote functional communication skills in students with developmental disabilities? 2). When educators use functional communication skills, what are the results and what type of behaviors do they address? 3). What are the challenges in implementing evidence-based practices for functional communication skills?

Methods

The research for this paper used the OneSearch database provided by CSUSB. OneSearch is an electronic database that has access to an extensive amount of resources and accesses scholarly journals and online books. The OneSearch library system partners with the following databases that this study used to acquire information: SAGA journals, Educational Resource Information Center (ERIC), Wiley online library and EBSCOhost. The use of the online search engine allowed for easy and quick access to thousands of scholarly

journals and electronic books. The search used the broad terms: functional communication skills, evidence-based practices, and the same terms with the phrase “in special education.” Adding specific search terms such as developmental disabilities, moderate to severe, communication training, picture exchange communication system, functional communication training, and autism narrowed the search. The OneSearch electronic search system allowed me to narrow the search to only full online text articles and online books only. The search parameters specified articles only from the last ten years to ensure that they were current.

This resulted in a list of articles and books. Their abstracts were read and scanned for keywords associated with the study topic. Priority headings included words like functional communication skills, evidence-based practices, PECS, FCT and developmental disabilities. Articles pertinent to this study were printed, read thoroughly, and the key information highlighted that specifically related to and supported the study. Reference pages for key articles allowed me to find more articles and books that relate to my specific topic. The following websites were also used: Autism Internet Modules (AIM) <http://www.autisminternetmodules.org/>, The national professional development center on autism spectrum disorder (NPDC) <http://autismpdc.fpg.unc.edu/> and The IRIS center <https://iris.peabody.vanderbilt.edu/>. This study provides educational recommendations for educators and families of individuals with developmental disabilities.

The four major topics for this study are evidence-based practices, functional communication skills, functional communication training and the picture exchange communication system. The information provided in the following paragraphs gives a brief introduction to these topics.

Evidence-Based Practices

Laws and policies established over the past few decades have led to a shift towards the use of evidence-based practices in special education (Denzin & Giardina, 2008). Evidence-based practices started in the field of medicine in the early 1990s (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996), and now have influenced other fields such as special education (Odom, Collet-Klingenberg, Rodgers, & Hatton, 2010). An evidence-based practice (EBP) is a program, strategy, or instructional approach proven effective by credible research. A program, strategy or instructional approach is labeled an EBP when multiple high-quality research studies determine it has positive effects on student progress in the classroom. Multiple high-quality research studies showing positive effects on student progress in the classroom confirm an EBP as effective. When implemented with fidelity, the use of EBPs in special education has proven to improve students' performance in multiple areas including, communication, behavior, and learning (Cook, Tankersley, & Harjusola-Webb, 2008). It is essential for special educators to identify EBPs and understand how to best implement them to meet the needs of their students.

Functional Communication Skills

Communication is functional when it helps an individual express their wants, needs and feelings, or to interact with peers in social situations. Examples of functional communication skills are, asking for help, requesting objects, and rejecting items or tasks. Instruction should take place in various settings, such as at school, home, work and in the community for students with developmental disabilities who are learning functional communication skills. Students need to use the learned communication skills with a variety of communicative partners, such as their teacher, other staff, their peers, family members, their boss and community workers (Tincani & Bondy, 2014).

Functional Communication Training

Two of the twenty-seven evidence-based practices listed by the National Professional Development Center (NPDC) are functional communication training (FCT) and functional behavior assessment (FBA). FCT is an effective way to decrease problem behaviors and replace those inappropriate behaviors with appropriate communication skills (Bird, Dores, Moniz, & Robinson, 1989). Over thirty years ago FCT was first conceptualized by Carr and Durand (Durand & Moskowitz, 2015). FCT derived from research done on functional behavioral assessment (FBA). The intention of a FBA is to identify why a student exhibits a problem behavior (AIM, 2018). After an FBA is conducted, the educator can determine the function of the challenging behavior then proceed into FCT.

Picture Exchange Communication System

The National Professional Development Center (NPDC) adopted PECS as one of 27 evidence-based practices in 2008. Numerous peer review studies and high-quality research published in scientific journals showed PECS effectiveness. PECS is an augmentative and alternative communication (AAC) system that provides a way for individuals with developmental disabilities to improve spontaneous functional communication skills (Bondy & Frost, 1993). PECS is a behaviorally-based intervention that teaches the student to use picture cards as symbols to communicate with others (Frost & Bondy, 2002).

CHAPTER TWO

EVIDENCE-BASED PRACTICES

Criteria for Identifying Evidence-Based Practices

Research supporting EBP must meet rigorous standards (Cook & Cook, 2011). The National Professional Development Center on Autism Spectrum Disorder's (NPDC) website (<http://autismpdc.fpg.unc.edu/>) uses specific criteria to qualify and identify an EBP:

- Two high-quality experimental or quasi-experimental group design studies.
- Three different investigators or research groups must have conducted five high-quality single subject design studies.
- Combination of evidence: One high-quality randomized or quasi-experimental group design study and three high-quality single subject design studies conducted by at least three different investigators or research groups (across the group and single subject design studies).

Concerns

The use of EBP does not suggest that they will work for every student (Torres, Farley & Cook, 2012). It is critical that the educator assesses the student's needs to determine the most appropriate intervention. When an EBP is implemented with fidelity, the number of students who do not respond positively

is low. With any practice, including an EBP, educators should continue to monitor student progress, collect data and make modifications to best meet the needs of their student (Cook et al., 2008).

Many interventions, instructional programs, and educational or behavioral strategies are not identified as evidence-based practices. Although an intervention may produce positive outcomes when used with a student, it may not be labeled as an EBP due to lack of research. It takes a significant amount of time and knowledge to conclude an evidence-based review. This results in a long-time frame for the identification of new EBPs in special education (Cook & Odom, 2013). It is beneficial for educators to first review the current list of twenty-seven EBPs on the NPDC website before deciding to try a new intervention for a student.

Confusing terminology is another area of concern. Educators have difficulties differentiating between what is an EBP and other programs labeled in a way to make one believe they are an EBP. When searching for a new intervention or program to use in the classroom one may come across terms such as recommended practices, scientifically based, and best practices. These titles can cause confusion and offer educators false assumptions that they are in fact evidence-based practices (Cook & Cook, 2011).

Another concern is educators' lack of the proper training and support needed to understand how to implement an EBP. Educators may question the use of EBPs because they have implemented other practices that have worked in

the past (Cook & Cook, 2011). IDEA and ESSA indicate that it is important that educators are trained to use EBPs to increase performance for students with disabilities (U.S. Department of Education). Districts are responsible for providing educators with training and the materials needed to successfully implement an EBP. Educators may experience a disconnect between their past practices and the practices that the lawmakers want the school districts to use (Cook et al., 2008). Laws and practices are put in place to increase student success, but bridging the gap between laws on EBPs and implementing EBPs is a concern. Educators may decide not to use EBPs in their classroom because they believe they know best when it comes to implementing practices in their classrooms.

Educators may feel that legislators are overlooking their professional wisdom when they pass laws that require them to use new practices (Cook et al, 2008). Educational reform has failed in the past due to not involving educators or considering their expertise when writing new laws and policies (Spillane, Reiser, & Reimer, 2002). “The problem with implementation is not unique to EBP and likely underlies the generally disappointing outcomes associated with most school reform efforts” (Sarason, 1990 as cited in Cook & Odom, 2013, p. 138).

Educators still do not consistently implement EBPs with their students, even though the data confirms positive outcomes for students when educators use EBPs. “Traditionally, educators have used sources such as personal experiences, tradition, and expert opinion to discern what works in the

classroom” (Cook & Cook, 2011, p.71). Because educators are comfortable with the use of these traditional instructional practices it may deter them from exploring and implementing EBPs in the classroom.

Laws

Two federal education legislations, The Individuals with Disabilities Educational Act (IDEA) and the Every Student Succeeds Act (ESSA), emphasize the use of practices that are evidence-based. IDEA makes a free and appropriate public education available to children with disabilities and ensures special education services and related services to those individuals. IDEA governs the provision of services to school-aged children with disabilities. President Obama signed the ESSA legislation on December 10, 2015, reauthorizing the Elementary and Secondary Education Act (ESEA) from 1965. ESSA replaced the No Child Left Behind Act (NCLB), which was passed in 2002 (U.S. Department of Education). One specific difference between NCLB and ESSA is that ESSA reduced the federal government’s role in making decisions and gave more power to the individual state and district (Darrow, 2016). The U.S. Department of education clearly states that ESSA supports the use of evidence-based practices in schools.

Resources

Educational websites are an asset and help teachers to identify EBPs. The National Professional Development Center on Autism Spectrum Disorder

(NPDC) (<http://autismpdc.fpg.unc.edu/>) has collected substantial research through literature review to identify EBPs for students with autism spectrum disorder (ASD) (Hsiao & Petersen, 2018). The NPDC website has a link to a list of twenty-seven EBPs. The NPDC website also provides educators with a link to the Autism Focused Intervention Resources and Modules (AFIRM) (<http://afirm.fpg.unc.edu/afirm-modules>). AFIRM helps the user learn the process of planning, implementing and evaluating EBPs when used with individuals with ASD. The website also has free materials to download.

Current list of 27 Evidence-Based Practices (NPDC):

1. Antecedent-based intervention (ABI)
2. Cognitive behavioral intervention (CBI)
3. Differential reinforcement of Alternative, Incompatible, or Other Behavior (DRA/I/O)
4. Discrete trial teaching (DTT)
5. Exercise (ECE)
6. Extinction (EXT)
7. Functional Behavior Assessment (FBA)
8. Functional communication training (FCT)
9. Modeling (MD)
10. Naturalistic intervention (NI)
11. Parent-implemented intervention (PII)
12. Peer-mediated instruction and intervention (PMII)

13. Picture Exchange Communication System (PECS)
14. Pivotal response training (PRT)
15. Prompting (PP)
16. Reinforcement (R+)
17. Response interruption/redirection (RIR)
18. Scripting (SC)
19. Self-management (SM)
20. Social narratives (SN)
21. Social skills training (SST)
22. Structured playgroup (SPG)
23. Task analysis (TA)
24. Technology-aided instruction and intervention (TAII)
25. Time delay (TD)
26. Video modeling (VM)
27. Visual support (VS)

The Autism Internet Modules (AIM) website, designed by the Ohio Center for Autism and Low Incidence (OCALI) (<http://www.autisminternetmodules.org/>), offers direct instruction through videos, case studies, and step by step information about how to implement specific EBPs. AIM is free to use and is easy to navigate. It has current and complete information organized in well-developed modules. Each module addresses a specific topic, strategy or intervention to meet the needs of students with autism spectrum disorder (ASD). Once logged

into the site the educator goes to the area labeled “Autism in The Classroom” to access information on classroom interventions. The educator then chooses a topic and an introduction and pre-assessment starts the module. When finished with a module the educator will have a greater understanding of the topic and how to implement it.

Another resource special educators can access is the IRIS Center (<https://iris.peabody.vanderbilt.edu/>). Funded by the U.S. Department of Education’s Office of Special Education Programs (OSEP), The IRIS Center provides educators with instructional resources. The goal of IRIS is to improve education outcomes for students with disabilities by providing access to information on current evidence-based practices. IRIS uses STAR Legacy Modules to offer detailed and precise information on topics that pertain to teaching special education. The modules guide the educator through topics such as assistive technology, behavior management, accommodations and many others. The modules use case studies, videos, text, interviews, and interactive activities to present the material. On the IRIS website, a link under the resources tab opens the section on EBPs and allows quick access to information about EBPs. This helps inform educators on topics related to improving the education of students with developmental disabilities.

The last highlighted resource is What Works Clearinghouse (WWC) (<https://ies.ed.gov/ncee/wwc/>). WWC is a resource that provides information and answers questions about EBPs. In 2002 the U.S. Department of Education

established and funded WWC. WWC reviews high quality research on educational programs and practices. The information WWC provides helps educators make evidence-based decisions on what programs they should explore for use in the classroom. In recent years WWC has added information on EBP for students with disabilities. The website still has limited information on practices for students with learning disabilities but is trying to include resources for this population. This website has become a resource that supports educators and provides information on interventions. Although it has a long way to go to become a comprehensive source of information in the field of special education, WWC has started to provide much needed guidance for special educators.

CHAPTER THREE

FUNCTIONAL COMMUNICATION SKILLS

Introduction

Functional communication refers to the most basic form of communication skills. Students with developmental disabilities who exhibit communication delays should receive instruction to add functional communication to their daily interactions. Functional communication skills help students express their needs and wants in a simple and meaningful way. The instruction helps students express their needs by using phrases such as “I need a drink of water,” “I need help putting my shoes on,” “I want food,” or “I want a break.” These expressions allow students to state their needs in a simple but meaningful way. The first step is to decide what the appropriate functional communication system is for the student. An evaluation will determine if verbal expression is an option. If the student is capable of imitating sounds or portions of words on command, then teaching functional communication through verbal speech is the best option. The speech pathologist, an augmentative and alternative communication evaluation team and the teacher can work together to determine the appropriate communication system (Clark, 2016.)

Modes of Communication

“Many children with developmental disabilities fail to develop speech” (Choi, O’Reilly, Singafoos & Lancioni, 2010). The severity of the impairment often gets in the way of verbal language development. If the student has significant deficits and cannot produce verbal sounds, then an alternate means of communication must be provided (Clark, 2016). An augmentative and alternative communication (AAC) system can be an alternative to speech to increase functional communication skills. There are different AAC modes of communication used to teach a student functional communication. Some examples of basic AAC modes are teaching gestures, sign language, using objects as symbols, picture boards, PECS, written or typed messages, speech-generating devices (SGD), single button voice-output devices, multiple-button voice output devices or a dynamic-display voice-output device such as a tablet or iPad.

Common AAC modes are sign language, PECS, and SGD (Mirenda, 2003). Sign language is not used by most people so this mode of AAC may not be the best practice to teach functional communication. PECS is a successful AAC to use inside and out of the classroom setting. The use of picture icons to communicate makes this AAC easily interpreted out in the community. PECS is also one of the twenty-seven EBPs. “Speech generating-devices (SGDs), also known as voice output communication aids (VOCAs), are portable electronic aided AAC devices that usually combine digitized or synthesized speech with

static visual symbols” (Mirenda; Ogletree & Oren, 2006). For students who have little to no verbal expression, a (SGD) is an option to teach functional communication. “Of the various AAC modes available, both speech-generating devices (SGD) and picture-exchange systems are viable alternatives for children with developmental disabilities who fail to develop speech” (Lancioni, O'Reilly, Cuvo, Singh, Sigafoos & Didden, 2007; Mirenda).

Common Steps in Teaching Functional Communication

Along with the use of an AAC, there are four areas to focus on when trying to build functional communication skills. First, offer the student repeated opportunities to engage in communicative interactions. Motivating the student to participate in a communication session may be necessary. The student may be motivated by a favorite toy, activity, food or preferred object. Second, prompt the student to produce correct responses. The prompt can be verbal or physical. Modeling the desired communicative response is also helpful. Reinforcing the correct response with prompts will increase the desired outcome. Next, is fading prompts to produce more independence. When the student participates in a communicative action, the listener needs to be very responsive. This step helps maintain the student’s communication skills. The use of these four steps paired with a mode of communication, for example, PECS has produced successful results and has increased functional communication skills (Russell et al., 2014).

Generalization

For students with developmental disabilities to use functional communication skills effectively, they need to be able to demonstrate the use of these skills with various partners in multiple environments. For example, the educator can provide opportunities outside the classroom for the student to practice the learned communication skills. A community trip to a restaurant or store may provide opportunities for this to occur. The student could order food at a fast food restaurant or ask for the location of the restroom at a department store. When using functional communication skills outside the learning environment, the educator will be able to observe if communication is interpreted by others successfully (Reichle, York, & Sigafoos, 1991 as cited in Tincani & Bondy, 2014). The use of functional communication in real life situations will help the student become fluent with the skill across settings. A student who can express their wants, needs, and feelings in this manner are developing functional communication skills.

AAC systems can be incorporated into evidence-based communication intervention programs for students with developmental disabilities (Russell, et al. 2014). Learning to use functional communication skills with the support of an AAC may improve daily interactions, increase independence and reduce frustration for students with developmental disabilities. There are nine EBPs that are appropriate to teach or support functional communication. They are:

1. Functional Communication Training (FCT)

2. The Picture Exchange Communication System (PECS)
3. Modeling
4. Prompting
5. Reinforcement
6. Social Skills Training
7. Technology Aided Instruction
8. Video Modeling
9. Visual Supports

FCT and PECS are the two EBPs examined in this study. These two have proven to increase communication skills for students with developmental disabilities and are affordable. Additionally, FCT is useful for decreasing challenging behaviors and PECS is easy to use in multiple learning environments. Since it is possible to use the other seven EBPs in combination with the implementation of FCT and PECS, they are not reviewed in this study.

CHAPTER FOUR

FUNCTIONAL COMMUNICATION TRAINING

Steps to Implementing Functional Communication Training

AIM has identified 13 necessary steps to implementing functional communication training with fidelity (AIM, 2018). These include:

1. Identifying the interfering behaviors
2. Completing a functional behavioral assessment
3. Identifying a replacement behavior as a substitute for the interfering behavior
4. Designing and implementing data-collection procedures
5. Manipulating the environment to elicit the interfering behavior
6. Planning opportunities for generalization
7. Prompting learners to use replacement behavior
8. Not reinforcing the interfering behavior
9. Providing reinforcement
10. Shaping the response
11. Fading the use of prompts
12. Increasing the time between the replacement behavior and reinforcement, and
13. Monitoring learner progress

These are the steps to implement FCT. First, the educator needs to identify the challenging behavior. Some examples of behaviors an educator may witness are self-injurious, grunting or reaching. An individual with developmental disabilities could also exhibit behaviors such as hitting or screaming. The behavior may also be less noticeable, for example, the student could use a slight motion or reach towards an object (AIM, 2018). These types of actions are interfering behaviors because they interrupt the individuals learning. Identifying the interfering behavior is the first step in FCT and is essential to implement the practice with fidelity and for the student to benefit.

The second step is conducting a functional behavior assessment (FBA). During an FBA the educator will learn why the student is exhibiting the interfering behavior. An essential aspect of the FBA is the educators' collection of data. The data collected during this step helps determine the purpose a behavior serves for the individual. The data will also provide valuable information to help the educator prepare an effective replacement skill or more appropriate behavior for that student (AIM, 2018).

The third step in the process of completing FCT is to identify a replacement behavior that the student can use instead of the interfering behavior. Keep in mind what form of communication is best for that student (Carr & Kemp, 1989). It is important to be familiar with the student's individual issues. For example, are they nonverbal, do they use PECS, does the student prefer sign language. Establish a simple replacement behavior that is easy to teach and

which the student can learn fast and use right away. The form of communication or replacement behavior must be simple for the student to use. If the student finds the replacement behavior difficult to accomplish they may become frustrated, which could lead to more interfering behaviors. “The learner has little incentive to use a replacement behavior if it is less efficient than the interfering behavior.” (AIM, 2018).

The student receives a reinforcement when they display the replacement behavior. The educator needs to be aware of the student’s environmental surroundings since it is important to use the replacement behavior across all settings. For example, if the student is a middle school student mainstreamed in an art class who needs to communicate their need to use the bathroom, holding up a picture of a toilet is not the most appropriate form of communication in this setting (Durand & Merges, 2001). This use of a less appropriate form of communication may lead to unwanted attention and teasing. Alternatively, having the student learn the sign for restroom may work. The special education teacher would also have to communicate this information to the general education teacher. Not everyone knows sign language, so it is necessary to have an open dialogue with general education teachers about what modifications are taking place. Another option is to place an object at the corner of the student's desk to signal “I need to use the restroom.” The student needs to gain the attention of the communicative partner before they make a request. So,

practicing gaining the partner's attention is important in the beginning stages of teaching FCT (AIM, 2018).

In step four the educator incorporates a data collection process that is useful for organizing and understanding student data. The second part of this step is to apply the data collection procedure. All educators who work with the student should become familiar with the data collection process and know how to collect the data. The data helps identify student progress and any modifications that need to take place. Modifications are necessary if: 1. The student continues to use the interfering behavior more often than the replacement behavior. 2. If the educator must prompt the student too frequently to get them to use the replacement behavior. 3. If the student has difficulty using the replacement behavior across settings. The collected data will indicate how effective FCT was and will help the educator verify if the replacement behavior has decreased the use of the interfering behavior (AIM, 2018).

Creating an environment that brings out the interfering behavior in the student is the fifth step in FCT. This process will put the student in frequent situations that give them the opportunity to choose the replacement behavior. A few examples of what could trigger the interfering behavior are a task, an object or a setting. The educator wants to teach the replacement behavior in the same environment where the interfering behavior emerges (AIM, 2018). For example, if the interfering behavior takes place during computer time the educator will try

to reproduce the atmosphere and activity to allow the student a chance to practice the use of the replacement behavior in that setting.

During step six the educator will plan opportunities for the student to generalize the use of the replacement behavior. Encourage the student to practice the use of the replacement behavior in different settings and in multiple situations (Mancil, Conroy, Nakao & Alter, 2006). For example, the setting can be at home, in a public place, or even at a job site. This practice will help the student become comfortable with the use of the replacement behavior outside of the school setting. When working on generalization it is important to include different communication partners. The student needs to be able to use the replacement behavior with the teacher as well as with parents and a variety of people they interact with (AIM, 2018).

In step seven the educator will use prompts when needed to get the student to use the replacement behavior. Prompts help the student perform the given activity and will alert the student to use the replacement behavior (AIM, 2018). Prompts take place before the task takes place. It is important to identify the level of prompting the student needs. They may require a verbal prompt, a visual cue or even hand over hand, depending on the individual's needs. Adjust prompts as necessary so the student gets the most benefit.

During the eighth step the educator should try not to reinforce the interfering behavior. If the student exhibits dangerous behaviors, the educator will ensure the safety of all but will try to reduce attention towards the interfering

behavior. In step nine when the student exhibits the replacement behavior they receive immediate reinforcement from the educator and all individuals who work with the student. The reinforcement must be consistent so the student does not go back to the use of the interfering behavior. In the beginning stages of implementing FCT, this stage is crucial because the student needs to form the connection between performing the appropriate behavior and the reward. The tenth step is to shape the response the student gives. For example, at the beginning stages of FCT, the educator may teach a verbal student to request a drink by stating one word “drink”. Over time, as the student becomes more familiar with the process, the teacher will encourage the use of more detailed language. For example, “I want a drink”. Keep in mind that shaping the response should only take place if the teacher is confident that the student will be successful (AIM, 2018).

During step eleven the educator will begin to fade the use of prompts. Early on in FCT, the level of prompting may be more intensive. For example, the prompt may look like hand-over-hand support to get the student to achieve the replacement behavior (AIM, 2018). As the student becomes more familiar with the expectations, they may require less intense prompting to display the replacement behavior. For example, the educator may shift from a hand-over-hand prompt to a motion over the student’s hand to cue the progression. Fading prompts is a gradual process and over time the educator should notice an

increase in student independence when using the replacement behavior (Durand, 1990).

In step twelve the educator should increase the time between when the student displays the replacement behavior and giving the reinforcement. This is different from the beginning stages of FCT when the student receives immediate reinforcement after they exhibit the replacement behavior. By step twelve the student should be able to use the replacement behavior successfully, and therefore would not require immediate reinforcement. This step encourages the educator to increase the time between the demonstration of the replacement behavior by the student and the delivery of the reinforcement (AIM, 2018). Creating distance between the communicative partner and the student will allow the student to find the communicative partner before they implement the replacement behavior. The increase in distance will naturally allow for more time before delivery of the reinforcement.

The last step in FCT is to monitor the students' learning. During this step, the educator and all individuals who work with the student will continue to collect data. The data will help determine the student's progress when using the replacement behavior. The data will help the educational team decide which reinforcements and prompts to use and will indicate any needed adjustments. Progress monitoring data is also used to keep track of the student's use of the replacement behavior in different settings (AIM, 2018). It will also reflect the frequency of prompts needed for the student to be successful when using the

replacement behavior. The data collected through monitoring student progress will help with instructional decisions.

Results to Implementing Functional Communication Training

Functional communication training teaches an individual a form of communication that serves the same purpose as the present interfering behavior. The teacher teaches the specific communicative response to the individual. The student then uses this response when they make a request or ask for attention. The communicative response, in turn, replaces the challenging behavior (Durand & Moskowitz, 2015). The individual who expresses a challenging behavior learns an appropriate way to express themselves instead of acting out by throwing a tantrum, screaming or in some cases causing self-injury (Durand & Merges, 2001).

There is substantial evidence supporting the success of FCT as an intervention for challenging behaviors (Carr & Durand, 1985). Even with evidence supporting FCT as an EBP, full implementation may not take place. One reason may be that the educational staff and parents lack confidence when it comes to implementation. This can be a result of minimal training with the practice. The educational staff and parents may question if the student can be successful or capable of change (Durand & Moskowitz, 2015). These concerns may deter a teacher or parents to decide not to implement FCT.

Challenges to Implementing Functional Communication Training

Another challenge educators may face is finding the time needed to go through all the steps of FCT with fidelity. The first step is to conduct a functional behavioral assessment (FBA) which is a necessary part of the process. The FBA will help the educator identify the problem behavior. Observing the student throughout the day and data collection is also part of the FBA process. A staff member may help with data collection, but the teacher is responsible for making sure the staff member has received training and is collecting data with fidelity. Keeping track of observations and collecting efficient data can be a demanding process for educators and staff.

Selecting a communicative response that will take the place of the challenging behavior exhibited by the student may take some trial and error. The communicative response is specific to the student and easy for them to use. The teacher and staff may collaborate on the most appropriate communicative response for the student. A student may use one of the following to assist them with a communication response: a picture card, a verbal statement, assistive technology or another type of augmentative system (Walker & Snell, 2013 as cited in Durand & Moskowitz, 2015). If the communicative response is too difficult for the student to use they can resort back to their use of the challenging behavior. Another aspect of FCT is to not give the student attention when they display the challenging behavior. As a teacher, this may be difficult. An instinct may be to give the student attention when they display the challenging behavior,

but when implementing FCT the teacher should not do so. Additionally, the teacher must make sure the individual who exhibits the challenging behavior is safe while also keeping the other students safe.

When using FCT with fidelity the student will increase the use of an appropriate replacement behavior and decrease the use of the interfering behavior. FCT is appropriate for all students of all ages and with various functional levels. FCT assists in developing appropriate functional communication skills which in turn may help decrease challenging behaviors for students with developmental disabilities (AIM, 2018).

CHAPTER FIVE

PICTURE EXCHANGE COMMUNICATION SYSTEM

Every student has the right to communicate their thoughts and needs. Having a way to communicate is essential to everyday living. Sign language, gestures, pictures, written words, speech or the use of a communication device are all ways to communicate. The ability to express one's needs, develop relationships, share information, and participate in social interactions are all ways an individual can benefit from the use of communication (Schlosser & Sigafoos, 2006). Individuals with severe disabilities often struggle to learn and use communication skills (Dawson & Osterling, 1997). If a need is evident the educator and their team are responsible for providing ways for the student to communicate effectively.

One evidence-based communication intervention used in the classroom is the Picture Exchange Communication System (PECS). PECS is an increasingly popular and easily implemented way to teach an alternative form of communication (Sulzer-Azaroff, Hoffman, Horton, Bondy, & Frost, 2009). A significant amount of literature cites PECS as a proficient EBP that encourages functional communication for individuals with developmental disabilities (Flippin, Reszak, & Watson, 2010).

Steps to Implementing Picture Exchange Communication System

Once an educator decides PECS will meet the needs of their student, the educator should receive training to implement the practice. There are specific guidelines to follow to be successful. The IRIS center states that the PECS system consists of six systematic phases:

- (1) how to communicate
- (2) distance and persistence
- (3) picture discrimination
- (4) sentence structure
- (5) responsive requesting
- (6) commenting

PECS training teaches individuals to initiate communicative exchanges with the use of picture icons. PECS training consists of six steps also referred to as phases. The educator moves through the phases as an individual increases their ability to use PECS: 1. The student will learn to use picture icons to represent an object. The educator will teach the learner to look at, reach for, pick up, and hand the picture to the communicative partner (Frost & Bondy, 2002). 2. The learner hands the picture icon to a communicative partner to retrieve a preferred item. The educator creates opportunities for the student to initiate communicative interaction. The educator teaches the learner to gain the attention of the communication partner until they have met their desired outcome. 3. The student will select a picture icon that is among several other icons to acquire the

desired item. The student will try to discriminate between the pictures for the desired item, then walk over to the communicative partner to complete the exchange. 4. The student will put a sentence strip together to form a communicative phrase or a phrase to describe the surroundings. 5. The student will be asked the question “what do you want?”. 6. The student will use picture icons to reply to questions or given instructions (Ganz et al., 2012).

Understanding the six phases and becoming comfortable with them will allow the educator and student to have the best experience possible. Accessing the AIM module online and going directly to the section on PECS will provide an educator with detailed information on how to start the process of how to use PECS successfully in the classroom.

As the educator and their staff implement the phases of PECS with a student, they should be collecting data. The results from that data will determine if the individual is ready to progress to the next phase (Frost & Bondy, 2002). One important aspect of PECS is that it depends heavily on direct reinforcement. For example, if a student wants a pencil they will give the communicative partner the picture icon of a “pencil” and in return they receive a pencil. This interaction helps the individual associate the picture icon with the corresponding item, which in turn reinforces the communication exchange (Ganz et al., 2012). This type of exchange mimics “the naturally occurring reinforcement of verbal speech in typically developing children” (Bondy & Frost, 2001).

PECS is an appropriate system to use for various individuals with disabilities and communication impairments. PECS is often used with students diagnosed with autism spectrum disorders (Magiati & Howlin, 2003; Tincani, Crozier, & Alazetta, 2006). PECS is appropriate for all ages of individuals with developmental disabilities and severe communication deficits. Some educators may assume PECS is only for young individuals with communication deficits but that is not the case.

Implementing Picture Exchange Communication System with Adults

Conklin and Mayer (2011) investigated the effects of implementing PECS with adults with developmental disabilities and severe communication deficits. The purpose of the study was to find out if adults with developmental disabilities who lack functional communication skills can learn to use PECS. The three individuals ranged in age from 23yrs-38yrs. Participant one has severe developmental disabilities and was using hand gestures to communicate. Her expressive language consisted of 20 words. Participant two has cerebral palsy and had no verbal skills, and uses only hand gestures to communicate basic needs. Participant three has Down syndrome and is nonverbal. To state what he wants he points and gestures. All three participants had no formal education and their communication skill level ranged from a 1yr old to a 1yr, 3-month old. All three participants completed a total of 20 PECS training sessions and each lasted 15 minutes.

The results from the study indicated that “all participants increased their independent initiations” (Conklin & Mayer, 2011, p. 155). The results also confirmed that participation in PECS training had increased the individuals’ ability to make requests, led to improvements in choice making and independence, and decreased problem behaviors. After completion of twenty 15-minute PECS sessions, all three completed a 6-month post-intervention follow-up. Participant one had increased her use of PECS from 37 to 85 picture icons and could generalize the use of PECS in a fast food restaurant setting. Participant two also showed improvement in her use of picture icons, increasing from the use of only 7 icons to the use of a total of 20 icons. She also could use single picture icons and could put together a sentence using the “I want” icon. Participant three continued to use single picture icon exchanges and increased his icon usage from 4 to 12. In all cases, the participants were initiating exchanges, and they all showed growth in the follow up meeting. The study showed that adults with developmental disabilities can learn to use PECS and it can lead to an increase in the ability to initiate communication exchanges (Conklin & Mayer, 2011). Educators can feel confident that the use of PECS will encourage communication exchanges for individuals with developmental disabilities of all ages.

Communication Requests

Lund and Troha (2008) investigated the use of PECS with three adolescent participants with autism and severe visual impairments over the course of 30 PECS training sessions. They made two modifications to the PECS

process for the participants. They used tactile symbols and they used verbal prompts. However, verbal prompts were only used if the communicative partner considered it necessary. All participants showed an increase in functional communication over the course of the study. The participants' rate of improvement was similar to children without visual impairments. One participant became proficient at the use of PECS and could give the correct responses. The study found that the use of tactile symbols is an effective modification when implementing PECS and has positive results for individuals with visual impairments.

Increase in Verbal Responses

Some parent concerns are that the use of PECS will further delay vocal development (Schlosser, 2003). Ganz and Simpson (2004) examined the effect of the use of PECS on word vocalizations. The three participants produced ten words before the beginning of the study. Each participated in phases I to IV of PECS training. Vocalization started to occur during phase III and continued through phase IV. All participants vocalized at least two new words by the final phase of PECS. The results show that PECS can teach functional communication, but can also be a method to develop vocalization. Tincani Crozier & Alazetta (2006) reported similar findings in their study focused on the development of vocalizations when using PECS. The participants all went through phases I, II and III. The procedure differed from the previous study in that they incorporated a 3 to 5 second delay when presenting the reinforcement

during phase IV. The results revealed that the incorporation of a delay in reinforcement during phase IV can lead to the use of both PECS and vocalizations.

Research indicates that individuals with developmental disabilities can increase communication skills with use of alternative and augmentative communication (AAC) devices and programs (Ali, MacFarland, & Umbreit, 2011). PECS is a picture based AAC device (Ganz, Cook, Corbin-Newsome, Bourgeois, & Flores, 2005) that focuses on expressive communication skills. The student's skills increase throughout the six phases of PECS. The student starts phase 1 by making requests and then progresses to making comments by phase 6 (Flippin, Reszka, & Watson, 2010). AAC supports individuals with limited verbal communication skills by integrating symbols, devices, techniques, and strategies to encourage communication exchanges (Schlosser & Sigafoos, 2006).

Results of Implementing Picture Exchange Communication System

Students who have limited verbal skills can benefit from the use of PECS to communicate with others. One significant result seen in students who use PECS is the increase in initiation of communicative exchanges. When educators implement the stages of PECS with a student it helps the student begin to participate in social interactions (AIM, 2018). Use of picture icons allows individuals with disabilities to become more independent and communicate basic wants and needs to people around them. For example, showing a picture of a snack icon expresses the need for food. Another example is a student who uses

a picture icon of the restroom to indicate they need to go to the restroom. These picture exchanges allow the individual to clearly express their needs to anyone. The use of PECS can also increase unstructured requests in a natural setting, such as in a restaurant setting. The individual using PECS may also show an increase in their ability to make choices (Conklin & Mayer, 2011).

Schwartz and colleagues (1998) explored the use of PECS with thirty-one preschool children ages three to six years old. Participating children had diagnoses of autism, down syndrome and other developmental disabilities. PECS took place in a classroom setting with structured small and large group activities. PECS implementation took place in a series of steps. The study focused on the areas of, "basic exchange, distance and persistence, discrimination, sentence building, and PECS with peers" (Pinto et al., 2009, p. 104). Students had access to PECS picture icons and opportunities to use them throughout the day. They were also encouraged to use PECS by the teacher and staff (Pinto et al.) In the study, the children were successful using PECS in different settings and with multiple communicative partners. Results revealed an increase in spoken language after the use of PECS (Schwartz, Garfinkle & Bauer, 1998).

The use of PECS across different settings such as at home, during community outings or at a job site is part of the generalization aspect of this EBP. Studies and literature document PECS ability to increase functional communication, and to have a positive effect on increasing communicative

exchanges through pictures (NPDC). For this reason, educators should feel confident choosing PECS to use with students who have limited functional communication skills.

Limited communication skills may lead to the expression of challenging behaviors by students with developmental disabilities.

Researchers have looked at the relation between the ability to communicate and the expression of challenging behaviors such as self-injury and aggression (Bott, Farmer, & Rhode, 1997; Chung, Jenner, Chamberlain, & Corbett, 1995; Mancil, Conroy, & Haydon, 2009; Sigafoos, 2000). Studies have supported a decrease in challenging behavior after the student became successful with the use of PECS. In a study done on the effects of implementing PECS with adults with developmental disabilities, problem behaviors decreased as their functional communication skills increased. Picture exchanges that use a desired item can replace behaviors such as reaching and grabbing.

Challenges to Implementing Picture Exchange Communication System

Educators face some challenges when they decide to use PECS. They will need to participate in a PECS training so they fully understand how to implement this practice with fidelity. The training may be available through the district or accessed for free by reading through the online AIM module dedicated to PECS (<http://www.autisminternetmodules.org/>). Second, the educator will need to acquire materials. Materials include having access to pictures or symbols to use during the exchange. The use of the internet to access pictures

and symbols can be cost-effective. Some school districts may decide to purchase software such as Boardmaker (<https://www.boardmakeronline.com/>). This software allows the educator to access and prepare picture icons without spending time on the internet searching for pictures. After they have gathered the necessary materials, the educator will need to prepare them for the specific student. The teacher needs to have all preparations completed before they begin PECS with a student.

When an educator decides to use PECS with an individual, they should take a few things into consideration. PECS requires some fine motor development due to the individual picking up a picture icon as part of the process (Bondy & Frost, 1994). Individuals who use PECS may need Modifications, such as larger and thicker picture icon cards (Ganz, Simpson & Lund, 2012). Identify modifications before beginning the PECS process.

Educators may find PECS time consuming as they go through the ten steps. A teacher or staff member implements the stages of PECS. Depending on the needs of the student, two staff members may be necessary. The student should receive PECS training daily to help insure success. It may be difficult for the teacher to find time during the school day to dedicate to PECS.

It is also important to involve the caretaker in the PECS process. Convincing caretakers to implement PECS at home with their child may be a challenge. Some caretakers may not want the added responsibility and will not follow through with support at home. It's beneficial for communication exchanges

to take place at home and in the community so try to get the caretakers involved. Another reason caretakers may be reluctant to try PECS is because of concerns about their child becoming dependent on pictures instead of verbal expression. In some cases, children who use PECS to communicate begin to verbally express themselves (AIM, 2018). PECS does not decrease any present verbal expression, but it has appeared to increase the number of spoken words by students who use it. If a parent expresses a concern about their child using less verbal expression when using PECS, the teacher should provide the caretaker with the literature showing that PECS can encourage verbal expression. The evidence supporting the increase in verbal expression while using PECS may help the parent understand the practice and its positive outcomes. Another problem may be the student losing the picture icons. It is best to have multiple copies in case this happens. Finally, after the initial implementation of PECS, the teacher and staff must continue to monitor the student's progress and adjust when needed.

PECS is an example of a communication based EBP to help students build communicative responses. Communication is an important skill for everyday living. Many students with developmental disabilities have communication deficits. It is the educator's responsibility, along with their team, to address these needs and provide support. All students need a way to express their preferences, thoughts and develop independence. These communication skills may improve personal relationships. PECS is an effective practice to build

functional communication skills for individuals with significant communication deficits.

CHAPTER SIX

RESULTS

Findings

The purpose of this study was to identify current EBPs that are available for educators when addressing functional communication skills for students with developmental disabilities. The first section focused on the history of evidence-based practices, laws, and resources. Literature review found that functional communication training (FCT) and the picture exchange communication system (PECS) are EBPs which encourage functional communication skills for students with developmental disabilities. Students who learned functional communication skills decreased their challenging behaviors. Finally, this study discussed the challenges educators face when trying to implement FCT and PECS. This study builds on previous literature by incorporating case study findings and researchers' results.

The first EBP discussed in this study was FCT. When an individual has a significant communication deficit, that deficit may lead to challenging behaviors. The student uses these behaviors to get something, to express themselves, to ask for help or to avoid something. FCT is useful when addressing the communication and behavioral needs of a student with developmental disabilities. As previously discussed in this study, there are 13 distinct steps necessary to implement FCT with fidelity. The two primary areas of FCT are conducting a functional behavioral assessment (FBA) and choosing a

communicative response. An FBA establishes why the individual is exhibiting the challenging behavior. Following the FBA an appropriate communicative response takes the place of the challenging behavior (Mancil & Boman, 2010). To optimize success when implementing FCT the appropriate communicative response should be easy for the individual to produce.

The second EBP identified to help encourage functional communication skills is the picture exchange communication system (PECS). PECS is a form of augmentative and alternative communication (AAC) designed to increase functional communication for persons who have substantial communication deficits (Bondy & Frost, 2001). Through learning the six phases of PECS a student can increase communication exchanges, learn to make choices, and increase their interactions with others. The literature reviewed states that PECS has positive outcomes for increasing functional communication skills of individuals with developmental disabilities.

Conclusion

Communicating thoughts and needs is essential for everyone including individuals with developmental disabilities. When there is a documented communication deficit in a student's file, the teacher and their team are responsible for providing that individual with the necessary tools to support their communication needs. An augmentative and alternative communication program such as PECS would provide the needed support. If the student is expressing challenging behaviors as well as communication deficits, FCT would be a better

choice. FCT or PECS are both appropriate choices for a student that is lacking functional communication skills.

For a special education teacher to implement FCT or PECS with fidelity they will need teacher training and support from administration. One concern is that educators may not be receiving the training and materials needed to feel confident implementing FCT or PECS. Having access to a list of twenty-seven EBPs is a good start, but without educators receiving support from their school districts, implementation of these EBPs may be unsuccessful. Support can be in the form of teacher training, administrative support and by providing the necessary materials to educators. Educators need to understand an EBP before they can successfully implement it with students. Future research on how to decrease the time between an educator choosing an EBPs and implementing the EBPs could be beneficial.

The Individuals with Disabilities Education Act and the Every Student Succeeds Act support the implementation of EBPs in a school setting. EBPs are practices proven to be effective for most individuals. This study highlighted the importance of implementing EBPs, specifically FCT and PECS. This study also discussed how FCT and PECS increase functional communication skills, stated the results and behaviors addressed when using these EBPs, and identified challenges that educators may face when implementing FCT or PECS in their classroom. FCT and PECS work for improving functional communication skills and when present may decrease challenging behaviors. Special educators now

have access to a list of EBPs, however, the list may not be beneficial for educators if they are not properly trained and given the materials needed to implement the EBP. FCT and PECS have potential to increase functional communication skills for students with developmental disabilities. It is necessary to train educators and staff and provide materials to help them implement these practices so that the students will benefit.

It is the responsibility of the special education teacher and their team to provide all students in their class an individualized education that will teach them the skills they need to communicate, develop independence and achieve academic success to the best of their ability. In doing so, educators and their team must find practices that work to meet the needs of their students and that will be the most beneficial and successful. Researchers have completed numerous studies to establish and identify the current list of twenty-seven evidence-based practices. The implementation of FCT or PECS has shown a positive influence when it comes to increasing functional communication skills for students with developmental disabilities.

CHAPTER SEVEN

DISCUSSION

Implications

Recent laws promote the use of EBPs in the classroom setting. Over the past few years, interventions used specifically in the field of special education have been getting identified as evidence-based practices. As of April 2018, the national professional development center website identified a total of twenty-seven EBPs. NPDC has provided a useful resource for new educators as well as veteran educators. Their module on the twenty-seven EBPs offers very detailed information for educators who need it.

Functional communication skill acquisition is of great benefit for students with moderate-to-severe developmental disabilities. As identified in this study, functional communication training and the picture exchange communication system are effective methods for teaching students functional communication skills. Significant data shows that these two interventions meet the requirements of EBPs.

Research has also supported FCT and PECS having positive outcomes when implemented with fidelity. However, every student has unique needs and results may not be the same for every student. Some educational practices that educators use in the classroom are not identified as an EBP yet. This does not mean the educator should not use these practices. If the student is showing positive benefits, they should continue to use them. However, if the educator is

implementing a practice that is not producing positive outcomes they should try an EBP.

There is a need for continued research into educational practices related to functional communication skills. More interventions and strategies in the field of special education have the potential of identification as EBPs. The process to identify these interventions and strategies is long and time consuming but beneficial.

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