Abstract

This researcher explored the use of picture schedules. This was a qualitative study, which included interviews completed by persons who work closely with children with autism at Ewing school. Ewing school is a school for children with disabilities located in southeastern Ohio. The interviews were audio recorded for validity. The study includes 6 children with autism. All of the children were placed in a classroom where daily picture schedules were implemented. The picture schedules were also used in the children’s home. The researcher discovered that picture schedules were beneficial to children with autism. The results showed that picture schedules relieved anxiety, decreased negative behaviors, and increased time on task.
This thesis is dedicated to my grandpa.

Thank you for being an honorable man. I’ll miss you.
Acknowledgements

I wish to thank my advisor, Dr. Bauer, for endless support and knowledge.

I thank my principal Katie Keating, for making the research possible. I am grateful for the persons who completed my questionnaire. I am also very appreciative to Connie Golden for her great attitude and confidence in me.
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Chapter 1

INTRODUCTION

The picture exchange communication system (PECS) is a communication system that is frequently used with children with autism. It was developed for children with social-communication deficits. Research has shown that visual supports, specifically picture communication symbols, are effective in promoting the generalization and maintenance of acquired skills for following verbal directions for young children with autism (Anderson, Moore, and Bourne 2007). Picture schedules are used with children with autism to help them visually see what is going on throughout their school day. Picture schedules are also used in the home to allow children to be aware of the activities that are going to take place in the home setting. For example, a picture schedule used in the home will have activities such as set table, dinner time, clean up, take bath, brush teeth, etc.

The researcher has implemented picture schedules in her classroom. The classroom consists of 6 children all diagnosed with autism. Of the 6 children, 4 of them live in a special house for children with autism. The researcher also implemented the picture schedules into the autism house. The researcher has implemented picture schedules since the beginning of the school year (about 8 months). The staff working with the children, 1 on 1 aides, classroom aide, and home staff, were all trained by the researcher on how to use the picture schedules. The training took place in August of 2008 before the children started school.
For the purpose of this study, PECS is defined as an augmentative communication system developed to help individuals quickly acquire a functional means of communication (Bondy and Frost, 1994). PECS can be used in many various ways. In this study, PECS are used for the daily routine. The pictures are kept on a small durable plastic folder with Velcro. The person working with the child always has his or her picture schedule with them. The pictures used on the schedule are printed in color. They are pictures from a program called Boardmaker. Boardmaker is a computer program used to make communication boards, picture schedules, instruction sheets and more. It is one of the most commonly used programs in the field of augmentative/alternative communication. Boardmaker contains over 3,000 picture communication symbols in its picture libraries. These symbols can quickly and easily be pasted onto communication boards for use by children and adults whose speech is not readily understood by others.

The picture schedule has the 3 most current activities on the outside (what the child is doing now, what is coming next, and what is coming down the road). In the picture schedule (folder), the child’s entire day is laid out for them. As one activity is finished, the aide working with the child will say “good job we are done with (activity)” The child then takes the picture off the outside of the folder and places it in the inside pocket. Next, the aide points to the next picture and says; “now we have (activity), then (activity)”. The idea behind this strategy is that it will relieve the child’s anxiety of not knowing what is going on throughout the day. Children with autism tend to become anxious when they are unaware of the daily routine.

Many recent studies on picture schedules have focused on using them to increase verbal communication. The Picture Exchange Communication System (PECS) is one
such augmentation communication system designed to increase functional communication skills and potentially provide a bridge to speech acquisition. This study explored PECS used for one specific purpose of getting through the daily routine with less anxiety and negative behaviors. The researcher also wanted to explore whether picture schedules help increase time on task with children with autism.

Statement of the problem

Children with autism often times become anxious throughout the day without a dependable daily routine, which causes an increase in negative behaviors.

Purpose and Research questions

The purpose of this study was to explore the daily routine picture schedule phenomenon by answering the following questions:

1. Do daily picture schedules help relieve anxiety of children with autism?
2. Do daily picture schedules decrease negative behaviors of children with autism?
3. Will children with autism increase their time on-task with daily picture schedules?

Definition of Terms

Picture Exchange Communication System- augmentative communication system developed to help individuals quickly acquire a functional means of communication.

Autism- is a brain development disorder that is characterized by impaired social
interaction and communication, and restricted and repetitive behavior, all starting before a child is three years old.

Visual Support- is a visually perceived stimulus that can assist an individual in comprehending information or demands.

Echolalia- repetition or echoing of verbal utterances
Chapter 2

INTRODUCTION OF LITERATURE REVIEW

Increasing Communication

The Picture Exchange Communication System (PECS) is an augmentative communication system designed to increase functional communication skills. One reason picture schedules were developed was to provide an effective communication system for nonverbal children. Researchers have conducted a number of studies examining the effectiveness of visual supports. A visual support is a visually perceived stimulus that can assist an individual in comprehending information or demands. This includes the use of pictures, especially for children with autism. The 2002 study examined the effects of Picture Exchange Communication System (PECS) on the spontaneous communication skills of a 6-year-old girl with autism across her home and school environments (Kravits, Kamps, Kemmerer, and Potucek, 2002). Kravits et al. showed that intelligible verbalizations increased.

There have been several informational reports which show that a large number of children who learn PECS also develop spoken language. Bondy and Frost (1994), indicated positive outcomes for 85 children who were taught to use PECS. The children of their study showed an increase in spoken language. Schwartz, Garfinkle, and Bauer (1998) reported that children who initially had a limited spontaneous vocal repertoire continued to have increased spontaneous language following PECS training. In addition, Charlop-Christy, Carpenter, Le, LeBlanc and Kellet found that the development of speech may also arise from the paring of the phrase spoken by the adult (e.g., “I want
juice”) with the pictorial communicative act of handing a PECS sentence strip to a communicative partner. Charlop-Christy et al. demonstrated the efficacy of the PECS protocol with 3 children with autism, the emergence of speech, and the collateral gains in social-communicative behaviors.

Some researchers have even indicated that the communication deficits associated with the disability of autism are its most significant deficit (Rutter & Schopler, 1988). This is why many researchers agree that visual cues are extremely important when teaching children with autism. Preis (2006), found that the generalization of commands was 26% more effective under the condition in which pictures supported the verbal command. Preis (2006), also found that children with autism prefer visual and tactile input to auditory input. Many researchers agree with Preis, and have found similar results in their studies.

Many studies have shown that PECS has benefited communication skills. However, there is at least one study out there that rejects this outcome. According to Howlin, Gordon, Pasco, Wade, and Charman (2007), their study failed to demonstrate any increases in spoken language or scores on language tests and the children continued to show significant impairments and abnormalities in communication. This could have been because of the participant’s profound physical and cogitative impairments.

**Behavioral Changes**

PECS has not only been shown to increase communication, it has also been credited to many changes in adverse behavior. Frea, Arnold and Vittimberga (2001), report a reduction in aggression and an increase in choice-making behavior following PECS training. These results are similar to Dooley, Wilczenski, and Torem (2001). They
reported a dramatic decrease in problem behaviors and increase in compliance during transitions following PECS on a 3-year old boy with a diagnosis of pervasive developmental disorders (PDD).

One major problem of students with a developmental disability is their inability to transition from one activity to another. The students then have to rely on teachers or peers to help them transition. This causes them to miss instructional time and opportunities to engage socially with peers. Spriggs, Gast, and Ayres (2007), did a study that looked at using picture activity schedule books to increase on-schedule and on-task behaviors. They found that students maintained high levels of independent on-schedule and on-task behaviors with the picture, and an increase in on-task behavior with appropriate scheduled materials correlated with a decrease in non-scheduled behaviors (Spriggs, Gast, & Ayres, 2007).

An adverse behavior that some children with autism sometimes demonstrate is extended television watching. A lot of times children with autism watch television and then repeat what they have heard from the TV. This is called echolalia. Echolalia is repetition or echoing of verbal utterances. Anderson, Moore and Bourne (2007), found in their results that there was a reduction in television watching and an increase in play for their participants after working with PECS.

One research study on PECS demonstrated the efficacy of the PECS protocol with 3 children with autism, the emergence of speech, and the collateral gains in social communicative behaviors and concomitant decreases in problem behavior (Charlop-Christy et al., 2002). This study showed that PECS could be taught in a short amount of time to children with autism. These children can improve their use of communication by
using pictures to express their wants and needs to others. This also resulted in decreased challenging behaviors because they were able to communicate more effectively. A 70% greater reduction was observed for 10 of the 12 problem behaviors, and four problem behaviors were eliminated (Charlop-Christy et al. 2002).

**PECS vs. Sign Language**

Some research has been done to compare PECS and sign language. Sign language is another beneficial way to teach children with developmental disorders to communicate. Tincani (2004), found mixed results when comparing PECS to sign language training for two participants. One of the participants used more requests with PECS than sign language, although the reverse was true for the other participant. The results of Tincani (2004), do not replicate those of Sundberg and Sundberg (1990), who found better response acquisition with sign language training. PECS training may be more appropriate for learners without hand-motor imitation skills, including many children with autism.

Adkins and Axelrod (2001), compared sign language and PECS training for a child with pervasive developmental disorder. The participant exhibited fewer trials to criterion and more generalized responses in the PECS condition.

**Other Benefits**

Increased communication and decreased adverse behaviors are not the only benefits of PECS. The duration of the child’s peer interactions significantly increased (Kravits et al. 2002). Using photographs, researchers have taught daily living skills (Mechling & Gast, 1997), shopping for groceries (Morse & Schuster, 2000), and participation in family activities (MacDuff, Krants, & McClannahan, 1993).
It is hard for children with autism to complete a morning routine. For example, children with autism have difficulty brushing their teeth, getting dressed, and going to breakfast. MacDuff, Krants, and McClannahan (1993), found that all 4 boys of their study were able to display complex home-living and recreational repertoires for an hour, during which time they frequently changed tasks and moved to different areas of their home.
Chapter 3
METHODS

There have been a variety of research studies that have focused on children with autism and the use of picture schedules. Most of these studies have looked at younger children who are diagnosed with autism. The main focus of many of the studies was whether or not picture schedules increased verbal communication. There have not been many studies done on children who are severely autistic. This researcher explored the picture schedule phenomenon with older children who have been diagnosed with severe autism. All of the children in the study are severely autistic and range from the age 9-14. None of the children were able to make it in a public school setting. The children in the study are involved in an intense program. The children involved in the study all use picture schedules at school and in the home setting. They are on the gluten/casein free diet, and follow the DAN protocol for supplement use. The intense program also involves metal testing every 6 months.

A qualitative research study was conducted at Ewing school. Ewing school is a small school in a rural school district. Ewing school is located in Marietta, Ohio. This building houses approximately 15 school age children with disabilities. This building also houses 3 preschool classes, and an adult habilitation room. The total population of the school is approximately 75 students. Permission for this study was obtained from the human subjects review board, the superintendent of Ewing school (Susan Tilton), and the principal of Ewing school (Katie Keating). Parental permission of all the students was also required.
Sources of Data and Scope of Study

The students were chosen to participate in the study through convenient sampling. Each student has a 1 on 1 aide with them at all times during school hours. The students also have a classroom aide that works with them throughout the school day. The 4 children involved in the study who live at the autism house have 1 one 1 home staff working with them during non-school hours. Questionnaires were designed to be given to the aides and home staff. The questionnaires were designed to obtain information pertinent to the study. Each aide was given the open ended questionnaire and asked to answer the questions honestly. The questionnaires were open ended to acquire more personal input. The researcher didn’t want to persuade the answers to the questionnaires in any way. The major points of the information sought were picture schedules relieving anxiety, decreasing negative behaviors, and increasing time on-task. Each aide and home staff was asked to answer if picture schedules helped with these specific points and then asked why or why not they felt picture schedules helped or didn’t help in these certain areas.

Administration of the questionnaires

The materials needed were the questionnaires and pencils. The researcher provided these materials to the 1 on 1 aides and the classroom aide. The 1 on 1 aides and classroom aide was approached and asked complete the questionnaire. The questionnaires were completed after school. The classroom aide and 1 on 1 aides were all given the questionnaire in a quiet secure place to achieve confidentiality. The 1 on 1 aides all completed the survey in the office. A brief explanation of the research was given before the 1 on 1 aides and classroom aide began completing the questionnaire. Questions were
encouraged to help with any confusion. The home staff was also given the questionnaire in addition to the one on one aides and classroom aide.

The home staff was given the questionnaires at the autism house. The questionnaires were also given to the home staff in a quiet secure place. They were given before the children arrived at the house. The home staff was provided with an explanation and was also encouraged to ask questions to assist with confusion. All of the questionnaires were done on a volunteer basis. The questionnaires were not required by the researcher. There was no penalty if someone did not want to complete a questionnaire.

A total of twelve questionnaires were completed. Each questionnaire was analyzed and data was collected by the researcher. Answers to the questionnaire were coded for similarities. The researcher examined the similarities and themes were developed.
1. Do daily picture schedules help relieve anxiety of children with autism? Why/Why Not?

2. Do daily picture schedules decrease negative behaviors of children with autism? Why/Why Not?

3. Will children with autism increase their time on-task with daily picture schedules? Why/Why Not?
Human Subjects Approval

You are approved for your project by the HSC.

Dr. Stewart

Quoting Rachael suddenlink <rachaels@suddenlink.net>:

> Dr. Stewart,
> 
> Here it is.
> 
> Rachael Schumacher
> ---- Original Message ----
> From: Human Subjects Committee
> To: Rachael Schumacher
> Sent: Thursday, February 19, 2009 12:06 PM
> Subject: Re:
> 
> Please correct any spelling and grammar errors in your review and
> letter to parents. In the parents letter please include that they
> have the option to not participate. If they sign the letter this
> would be your informed consent. Resend these corrections and I will
> approve your proposal.
> 
> Dr. Stewart
> 
> Quoting Rachael Schumacher <rachaels@suddenlink.net>:
> 
> Rachael Schumacher's long review form
> 
> Dr. Bauer's research class
> 
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Chapter 4

RESULTS

The purpose of this study was to explore the daily routine picture schedule phenomenon. The researcher wanted to see if picture schedules helped relieve anxiety in children with autism, decrease negative behaviors, and increased time on task. In order to achieve this, parents were approached and given a permission form. The research project was explained and all the parents agreed to sign the permission form. The one on one aides and home staff have been using pictures schedules since the beginning of the school year (about 8 months). The picture schedules were used daily to maintain consistency. When one on one aides were absent, substitutes were shown how to use the picture schedules with the child they were working with.

After permission was granted, the 1 on 1 aides of each student, classroom aide, and house staff of each student was asked to complete the questionnaire. The questionnaire consisted of 3 open ended questions pertaining to anxiety, negative behaviors, and time on task. Instructions were given to the 1 on 1 aides and the classroom aide before the students arrived. Instructions were given to the house staff on an individual basis. They were told that the research was being conducted for a college class and were encouraged to complete the survey honestly. They were also told not to write their name on the questionnaire to achieve confidentiality. This also allowed a sense of security in order to encourage their complete honesty.

On average, it took the 1 on 1 aides, classroom aide, and house staff about 10 to 12 minutes to complete the questionnaire. They were told if they had any questions, they
could ask at any time. When everyone was finished, they were thanked for their cooperation and time.

The questionnaire was completed by 3 males and 9 females. Once all 12 questionnaires were completed, results were sorted by question. The answers were coded by the researcher to identify similarities. After the researcher established similarities, themes were developed.

The purpose of this study was to explore the daily routine picture schedule phenomenon by answering the following questions:

1. Do daily picture schedules help relieve anxiety of children with autism?
2. Do daily picture schedules decrease negative behaviors of children with autism?
3. Will children with autism increase their time on-task with daily picture schedules?

The questionnaire began by asking if picture schedules help relieve anxiety of children with autism. The question then asked why/why not they felt this way. 11 of the 12 questionnaires reported that picture schedules do help relieve anxiety. Many of the questionnaires stated that picture schedules relieve anxiety because the children always know what is going to happen next. 1 of the questionnaires stated that in some cases it helps relieve anxiety if a preferred activity is coming up. However, if an activity is coming that they don’t care for, it might cause them to still be anxious.

When asked if daily picture schedules decrease negative behaviors of children with autism, 11 of the 12 questionnaires reported that picture schedules do help decrease negative behaviors. The one-on-one aides, classroom aide, and home staff were why/why not they felt this way. Many of the questionnaires stated that picture schedules help with transitions and because of this negative behaviors are decreased. Another answer that
occurred frequently was that negative behaviors were decreased because anxiety was decreased. 1 of the questionnaires pointed out that it can go both ways. The response on the questionnaire stated, “It can go both ways. If their next activity is one that they enjoy then it helps greatly with behaviors. However, if the activity is one they don’t enjoy it could increase anxiety.”

100% of the questionnaires said that children with autism increase their time on-task with daily picture schedules. One questionnaire stated the children increase their time on-task because after time they understand what is expected of them. A couple of the questionnaires declared that the questionnaires reinforce what the student should be doing.
92% of the questionnaires stated that picture schedules do relieve anxiety in children diagnosed with autism. 8% stated that picture schedules relieve anxiety only in some cases.

92% of the questionnaires stated that picture schedules do decrease negative behaviors. 8% stated that picture schedules may decrease, but it can also increase negative behaviors.
100% of the questionnaires stated that picture schedule do increase time on task for children who are diagnosed with autism.
The major themes from the research indicated.

**Picture schedule relieve anxiety because children are always aware of what to expect.**

- helps them to be able to understand what they are currently doing and what they are supposed to do next (1 on 1 aide).
- helps them anticipate what will happen next (1 on 1 aide).
- yes, they know by the pictures what they are doing and what they have to come (home staff).

**Picture schedules do decrease negative behaviors because they help decrease anxiety and stress.**

- helps with stress and confusion so behaviors are better (classroom aide).
- produces less anxiety and stress for the kids (1 on 1 aide).
- helps greatly with behaviors (1 on 1 aide).
- helps with the anxiety of transitions (home staff).
- yes, it relieves their anxiety (1 on 1 aide).
- absolutely, they don’t fret about their next activity (1 on 1 aide).

**Picture schedules increase time on-task because children know what is expected of them.**

- they will just know automatically what’s expected (1 on 1 aide).
- the schedules reinforce what the student should be doing (classroom aide).
- it can act as a reminder (home staff).
- they understand what is expected from them (1 on 1 aide).
- gives them ideas about what they are going to be doing (home staff).
Chapter 5
DISCUSSION

Picture schedules are a widely accepted tool used with children with autism. More research is being conducted about their effectiveness. At Ewing School, picture schedules are used daily in the autism classroom. Over the past school year (8 months) this researcher has implicated picture schedules consistently.

Interpretation of data

The data showed that picture schedules do help relieve anxiety, decrease negative behaviors, and increase time on task. The most positive result was related to increased time on task. Of the 12 individuals given the questionnaire, all 12 said that picture schedules do increase time on task with children with autism. 11 of the 12 individuals said that picture schedules helped to relieve anxiety. The results were also similar with decreasing negative behavior, 11 individuals said that picture schedules did decrease negative behavior.

This researcher was glad to discover that picture schedules are a positive influence on children with autism. The study showed that picture schedules not only work with younger children with autism like most of the studies previously done. It proved that they do help older children who are diagnosed with severe autism. The children that were involved in the study range from 9 – 14 years old. All of the children are also diagnosed with severe autism.

Conclusions
Many other researchers have found that picture scheduled increase spoken language. This researcher didn’t find an increase in spoken language in the researchers study. This can most likely be caused by the age and severity of the children used in this study.

However, from the study, the researcher concluded that picture schedules help relieve anxiety in children with autism. Picture schedules help relieve anxiety by always letting the child know what is happening, going to happen next, and what is to come later in the day. Children with autism, who use picture schedules, have a decrease in anxiety because they are never unaware about what’s coming throughout their day.

Because anxiety is decreased, there is a decrease in negative behaviors by using picture schedules. The children are always aware about what is going to happen throughout their day. This helps decrease many negative behaviors. Children with autism don’t like the element of surprise. They do much better with a consistent schedule. Having a consistent picture schedule has helped decrease negative behaviors. The researcher’s findings were similar to the findings of Frea, Arnold, and Vittimberba (2001). Frea, Arnold, and Vittimberba (2001) reported a reduction in aggression and an increase in choice-making behavior following PECS training.

Picture schedules also help increase time on task by letting the child know what is expected of them. For example, the child uses the picture schedule to see that they have the math center. However, right after the math center is a sensory break. This helps keep the child on task because they know that if they can get through the math center a more desired activity is soon to come. Using picture schedules with children who have autism keeps them on task by giving them a visual reminder of what is expected of them.
The researchers finding were similar to Spriggs, Gast, and Ayres (2007). Spriggs, Gast, and Ayres (2007) did a study that looked at using picture activity schedule books to increase on-schedule and on-task behaviors. They found that students maintained high levels of independent on-schedule and on-task behaviors with the picture, and an increase in on-task behavior with appropriate scheduled materials correlated with a decrease in non-scheduled behaviors.

Future Implications

One thing the researcher would change about the study is to provide a larger test group. The researcher would interview other classrooms in the county who use picture schedules. The study would then show whether or whether not other classes experience the same positive experiences from using picture schedules. The researcher would also interview different people throughout the school to see if they notice a difference in the children as well. This way the researcher would not only have the input of the individuals who work directly with the children, but also others throughout the school. For example, the researcher might interview the principal, other teachers, other aides the work in the building, lunch workers, and the therapy department.

Another future implication that the researcher would consider is the age group. It would be beneficial if the researcher used a younger group and an older group of children diagnosed with autism for the study. The researcher could then compare the two groups and see which group benefits more. The researcher could also do many comparisons between the two groups. For example, if the benefits of both groups were the same, if it took the same amount of time for each group to learn how to use picture schedules, and whether one group or the other has more behavioral changes.
This researcher will continue to use picture schedules as a daily routine for the children in her class. The researcher will also use pictures in other aspects of the school day. For example, pictures can be used during snack time. This will give the children more independence. They can choose from a group of pictures what they want for snack instead of their one on one aide just getting them something.
References


Picture Schedules