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The Effect of Applying Picture Exchange Communication System on Autistic Bahdini Children's Verbal Speech

Yawer Jasim Omer [1], Sanan Shero Malo [2*]

[1] Dept. of English, Faculty of Humanities, University of Zakho, Kurdistan Region – Iraq.
[2] Dept. of English, Faculty of Humanities, University of Zakho, Kurdistan Region – Iraq. (snanan.malo@uoz.edu.krd)

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ABSTRACT:

The present study aims to study the effect of the picture exchange communication system (PECS) on autistic Bahdini children's verbal speech through a pre-experimental research design. Children with autism spectrum disorder have difficulty in communicating with people around them. Moreover, autistic children need a special care and attention to be able to communicate and share their feelings and needs .To conduct the current study, a sample of ten autistic children from Zakho Autism Centre was chosen, with the age varying from 3 to 11 years old. The data were collected from the sample adopted via pre and post-tests. The data were analyzed in terms of means via the Software SPSS through paired samples-test. The study analyzed the verbal speech difficulties encountered by such children. The results arrived that the program had a positive effect on autistic children's verbal speech. The scores obtained on the post-test showed a statistically significant difference compared to the pre-test scores. In other words, the program helped the children make a progress in their verbal speech. This study can help the trainers and teachers at Autism Centers to adopt such a program in their teaching and training with some modifications to fit the context of such centers.

Keywords: Picture Exchange Communication System (PECS), Autism Spectrum Disorder (ASD), Children's Verbal Speech.

1. Introduction

Autistic children are one of the groups with special needs who need special attention and care. There is no question that the global growth in this sort of children has necessitated specialized research, quick-to-learn therapeutic approaches, and the development of remedial education programs to assist parents, supervisors, and instructors in changing their behavior. A child with autism has fewer communication channels between him and the outside world. As a result of this lack of communication, they suffer from some social and emotional problems while communicating with ordinary people, such as avoidance, social isolation, and verbal and nonverbal communication. The biggest dilemma facing people with autism disorder and their families is the lack of capabilities and specialized centers which makes these families struggle with time to better adapt to their affliction the ways and means. The problem that will be tackled in this study is the language difficulty encountered by autistic Bahdini Kurdish children when communicating with other people around them. The point is that most autism centers do not take into consideration a systematic way of teaching those children, and they do not follow any specific program at such centers. Special educators who work with autistic children have the challenge of teaching acceptable social behaviors to children regularly. When conducting such activities, teachers continuously emphasize the need for self-monitoring awareness. This is a challenging skill to learn because of the features of autism (Koegel and Koegel, 1990). With little known about the development of self-management methods in autistic children, the study of the picture exchange communication system (PECS) and its impact on self-management may be a valuable tool for successful behaviour/classroom management. The present study aims at studying the effect of applying a picture exchange communication system (PECS) on autistic Bahdini children's verbal system in terms of single words, comprehension, and utterance length. The following research question is set for the current study.

Is there any statistically significant difference in the mean scores obtained from both pre and post-test at single words, comprehension, and utterance length?

The following hypothesis is derived from the research question and will be tested against the data analyzed.
There is a statistically significant difference in the mean scores obtained from pre and post-tests at single words, comprehension, and utterance length.

* Corresponding Author.

This study will be important to the people dealing with and teaching autistic children. The parents of such children will also get benefit from this study. Moreover, the study will present some strategies and techniques for the educators to use in their classes at autism centers when teaching and dealing with autistic children.

2. Theoretical Background

2.1. Autism

Rutter et al. (1976) stated that autism has three primary features shown in the handicap in social connections, the delay in verbal development, and the stress on symmetry. Whereas, Ornitz and Pynoos (1989) defined autism as a severe developmental disorder of behavior in children. It is associated with clear neurological signs, persistent neurological abnormalities, biochemical or metabolic changes, or genetic markers. It is due to several reasons that may occur before, during or after childbirth, which in turn are believed to lead to brain dysfunction that manifests as disturbances in interpersonal relationships, communication, language, and the response of subjects and objects, and in sensory behavior and movement (Orabi et al, 2007). According to Gilberg (1992), autism is considered as a crisis predominantly with low Intelligence Quotient (IQ) and abnormalities in social interaction and communication. Childhood Autism is a name under the International Classification of Diseases. It appears in the first three years' pervasive developmental disorder characterized by abnormal or disturbed growth, or both unusual in the following areas: social interaction, communication, and behavior. Autism is a developmental incapacity significantly affecting children (American Psychiatric Association, 2000). It marks verbal and nonverbal communication and social interaction. Its symptoms appear considerably before the age of three and negatively affect a child's performance (American Psychiatric Association, 2000).

Rutter (2005) defined autism as a developmental disorder and an imbalance in the systems that receive signals. The child receives the coming information with some influences and interact less with each other. Al-Zureikat (2004) also referred to autism as a developmental disorder that significantly affects verbal communication. Social interaction and educational performance and its symptoms are noticed before the age of three.

Autistic children continue to demand greater attention and help, not just from a human perspective but also from a societal and economic perspective. It is important to do research in response to an increase in global interest in the education of special needs in general, and autism in particular, and how to care for people with special needs. Further research and study are required at the centers. All kinds of communication (other than oral speech) used to convey thoughts, needs, wants, and ideas are referred to as AAC augmentative communication systems (Bishop and Norbury, 2005).

Childhood Autism is a name under the International Classification of Diseases. It appears in the three years pervasive developmental disorder characterized by abnormal or disturbed growth, or both unusual in the following areas: social interaction, communication and behaviour. Stereo typical and specific, this disorder occurs in males at a rate three or four times higher than in females. Autism is a developmental incapacity that significantly affects children. Marked on verbal and nonverbal communication and social interaction, its symptoms appear considerably before the age of three and negatively affect a child's performance (American Psychological Association, 2000).

These include disturbances in the following areas: development, children as a behaviorally defined disorder or syndrome sensory response to stimuli, language and speech, cognitive abilities, attachment and belonging to events and topics (Basari, 2008).

Ganz and Simpson (2004) also referred to autism as a developmental disorder that significantly affects verbal communication. Social interaction and educational performance and its symptoms are noticed at the age of three. The definition of autism given by Rutter et al. (1976) goes in line with the context of the present study because the sample of the children investigated in this study has the same characteristics, such as delay in verbal development, isolation, not appearing to listen, not using eye contact, and an imbalance in the systems that receive signals.

2.1.1 Language Problems with Autistic Children

The significance of language in human life cannot be overstated. People convey their feelings about others through verbal and non-verbal communication. However, not everyone is perfect. Autism is a condition in which some people have difficulty in creating and interpreting language. Communication problems are frequently the first signs of a possible Autism Spectrum Disorder (ASD). All examples are failure to begin gesturing, an apparent lack of interest in other people, or a lack of vocal response. Children with ASD have poor social interaction, deficient language, and communication abilities (Prizant et al., 2003). There is a mix of cognitive and social deviance in the case of autism.

Children with autism may be mute, or they only repeat some words they hear. Except for phonological elements, all parts of communication are difficult to access. Their articulation is clear enough phonologically, yet minor mistakes in stating the object are common. They also have weaker syntactic and semantic skills since they frequently echolalia or copy the phrase or sentence they hear (Indah and Abdurrahman, 2008). Furthermore, echolalia, pronoun, repetition, and prosody are some categories of ASD language (Rutter, 2005).To begin with, echolalia is when a person repeats a word or phrase that he/she has heard. Autistic children frequently repeat other people's phrases or words. Second, people with ASD frequently struggle with pronoun use.

They want to achieve consensus through repetition. Last but not least, the prosody in their speech is constantly flat and monotonous, and they have a hard time understanding what other people are saying, as seen by

their intonation pattern. Dewi (2014) divided autistic communication issues and their language development into five language disorder categories namely phonology, morphology, syntax, semantics, and pragmatics. Phonological disorder is the inability to use the spoken sound system. Syntactic disorder is the inability to regulate and integrate words to form a sentence, pragmatics disorder is the inability to build social interactions. Furthermore, semantic incapacity is defined as the inability to grasp and follow verbal instructions.

2.1.2 Verbal impairments

According to Dewi (2014), verbal communication refers to how people express themselves verbally. The unit of sound generated and combined to create words is referred to as speaking. When children communicate or interact socially, they attempt to convey information. Children's ideas, feelings, and intentions are primarily expressed through verbal communication. As a result, it is employed in communication. It refers to children's ability to pronounce sounds in a language or communicate what they are thinking about.

According to the American Psychiatric Association (2000), there are three types of verbal impairment: phonological disorder, syntactic disorder, and pragmatic disorder. The inability to use the spoken sound system is known as phonological dysfunction. The inability to regulate and integrate words to make a sentence is known as syntactic dysfunction. In addition, pragmatic is the incapacity to form social relationships.

According to Basari (2008), normal children virtually never have any linguistic difficulties to consider when acquiring their first language; however, this will not be the case with autistic children. Autistic children must be trained to reach a given degree of speech proficiency within stipulated durations and efforts. They occasionally acquire some words, but only meaningless words, and some examples of their speech include: "hhh", "wow", and "bolat". Hence, their words are not well-organized enough to form meaningful words in any sequence of words.

Lovass (2000) discovered what was causing the autistic children's anomalies. Accordingly, there are several techniques to make communication therapy endeavors truly effective: (1) echolalia must be suppressed at first, (2) self-destructive acts must be suppressed by electric shock therapy, (3) attentiveness is required; eye and face contact must be prompted or reinforced, (4) the frequency of spontaneous vocalizations must be increased; this must co-occur with attentiveness, and (5) the repertoire of sounds must be gradually increased. Added to that, verbal language instruction consists of three basic discriminations: (1) stimuli (nonverbal) – response (verbal), (2) stimuli (verbal) –response (nonverbal), and (3) stimuli (verbal) –response (nonverbal) (verbal).

2.2. Comprehension and production of speech

In language acquisition, the processes of speech production and understanding are intertwined (Steinberg et al, 2013). Although speech comprehension is not always followed by speech production, procedures are necessary in the production of words. People do not always create words in their conversations while interacting with others. They can sometimes merely perceive or think without expressing themselves verbally. According to Howlin, et al. (2007), the processes of speech generation are divided into three categories: conceptualization, formulation, and encoding the conceptualization stage, also known as the message level process as an initial step. This process entails the speaker's thinking conceptualizing what he or she intends to say. The speakers grasp a purpose and pick appropriate material from memory throughout the conceptualization process. The formulation stage is the next step. It entails converting this mental model into a verbal form. As a result, after conceptualization, the formulation process takes place. Lexicalization and syntactic planning are the two main components of formulation. In lexicalization, people must choose what they wish to communicate. Syntactic planning, on the other hand, requires people to arrange individual words together to construct a phrase. Encoding is the final step in the process. This procedure entails converting words into sounds. The noises are produced in the proper order and define how the articulator system's muscles should be manipulated" (Naber et al., 2007).

Speech comprehension is involved in all of the processes listed above. Speech production is based on speech understanding (Steinberg et al., 2013). It indicates that comprehension of speech is crucial in the production of language. It is the ability to comprehend the meaning of words. The neurological system for speech comprehension and production emerges from cortical activity in sensory and motor regions (Sleeper, 2006) because people' neurological systems are involved in both speech comprehension and production there will be disruption, such as a language problem, as a result of brain injury. This is in keeping with Sleeper's (2006) assertion that brain injury causes a multitude of speech deficits or language problems.

2.3. Picture Exchange Communication System

Picture Exchange Communication System, henceforth **(**PECS) is an augmentative communication system that uses pictures of items to obtain tangibles and needs (Kasanen, 2020). PECS is a procedure that consists of six steps (See Table 1) and is intended for early communication training (Sulzer et al., 2009). The picture exchange communication system (PECS) is a pictorial system that was developed for children with social-communication deficits (Bondy and Frost, 1994). It was first used at the Delaware Autistic Program. The goal of PECS is to teach children with autism a fast, self-initiating, length of the verbal and functional communication system. PECS begins with the exchange of simple icons but rapidly builds a "sentence" structure. Frost and Bondy (2009) classify the PECS program into six phases.

Table 1: Phases of PECS program

Phase number	Phase name	The goal
One	Physical exchange	The child is taught to hand a flashcard to a communicative partner and name it.
Two	Expanding spontaneity	The child is taught to go to the flashcards, get one and name it then place the card in his or her hand to receive reinforcement that the distance between a child and flashcards should keep
Three	Picture discrimination	The trainer should name one of the pictures and the child is taught to discriminate among multiple pictures
Four	Sentence structure	The child is taught to build a sentence structure
Five	Responding	The child is taught to respond to some important actions.
Six	Commenting	The child is taught to respond to the question what is your name, your age, where do you live and what is your favorite thing.

2.4. **Previous studies on PECS program**

Hen-Schwartz et al. (2000) referred to two studies in which the use of the Picture Exchange Communication System (PECS) program for preschool children with severe disabilities has been documented. They stated that the first study analyzed the PECS acquisition data for 31 preschool children indicating that young children with severe communication delays and disorders can learn to use PECS quickly and efficiently. The second study followed 18 preschool PECS users for a year. The results of language samples taken at snack time and during free-choice activities indicated that PECS use is suitable for untrained settings.

Another study conducted by Charlop-Christy et al. (2002) aimed at knowing the effect of PECS program on the emergence of verbal expression in play and in academic settings and its impact on increasing the outcome of language among children. The study sample consisted of three children suffering from developmental delays, and linguistic and communication disorders. The results arrived at in the study showed a noticeable progress in speech and linguistic expression. It was also accompanied by a progress in communication and behavior modification among the children who participated in the study. Charlop-Christy et al. (2002) focused on the side of linguistics before the side of modifying behaviour but in this study, the researcher believes that behaviour modification should be a priority for specialists before teaching them linguistically.

Similarly, Dalhoum (2007) carried out a study to investigate the effectiveness of the PECS in developing language communication skills for autistic children in Amman. The sample consisted of 20 autistic children divided into two groups, an experimental group and a control group. A communication scale was used with both. Linguistically, the study results revealed the PECS program's effectiveness in increasing the linguistic output of autistic children in the experimental group than in the control group. Ayyash (2018) also did a study on linguistic and non-linguistic communication using the PECS program. The study used a sample of 8 children (males and females) in the experiment. The study indicated a progress in the behavior and communication of the children and obtained better scores on the test in their verbal communication. Many studies focused on modifying both behavior and language at the same, such as Charlop-Christy et al. (2002) and Ayyash (2018) whereas the current study focused only on verbal communication.

The present study tries to fill a gap and use the PECS program in a way different from other studies. That is to say, this study has used PECS program for verbal communication. It focused on acquiring language rather than acquiring sign language through pictures; in other words, the researcher did not use the PECS box or file that the child is supposed to carry with him to communicate with others.

3. Method

The present study aimed at using the PECS program to enhance autistic children verbal communication. It hypothesizes that PECS program will improve autistic children verbal communication at single words comprehension and utterance length. It has adopted a pre-experimental research design and quantitative approach for data collection. The study has also used PECS program as a model to investigate its effect on ten autistic children's verbal communication achievement (age varied from three to eleven years old) chosen from Zakho Autism Centre. This age group has been chosen for these two reasons (a) Autism appears considerably at the age of three and negatively affect a child's performance (American Psychiatric Association, 2000). (b) Children at this age make use of the PECS program in a good way. Furthermore, the study is limited to a sample of the children chosen from Zakho Autism Center (a town located on Iraqi-Turkish border, Kurdistan Region of Iraq). These children are previously diagnosed with autism by psychiatrics, and have problems with uttering words and verbal communication. The study also used a pre and post-tests for data collection.

In applying the program, the researcher has relied on the help of some trainers at Zakho Autism Center for applying the program since autistic children do not

respond easily to people unfamiliar to them. Three tasks on different language items were prepared and given to a jury to check the suitability and validity of the tasks for conducting this study. Based on the jury's feedback and comments, some changes were made to the questions, such as eliminating and amending some points. The items of the first task included 20 flashcards on common single words which are important for their verbal communication, whereas the items of the second task included 10 items, each consisted of four multiple choices, and the child was required to choose the right naming card among the four options. The third task included 5 direct questions without flashcards and the child is supposed to answer them directly (see Appendixes 1, 2). Each task was provided with instructions on how to be administered to the children. In administering the task, the examiner is required to read the item to the child, and waits for the answer (See Tables 2, 3, 4). The parents of these children were also informed of the teaching program, and they enthusiastically agreed upon the participation of their children in this study. They were also told that their names would be confidential and used only for research purposes.

Table 2: Vocabularies Task

Task 1 Vocabularies

Task instructions

1. Each vocabulary will be presented by the examiner to the child through a picture. Then, the child is going to name the object in the picture.
2. The researcher will document the child's answer by ticking in the column provided as a correct or wrong answer. Moreover, the answers will also be recorded.

Pomegranate	هنار	Bicycle	پایسیکل	Onion	پیڤاز	Seven	حه فت
Chair	كورسیك	Cat	پشیك	Comb	شه	Green	كه سك
Key	كلیل	Fish	ماسی	Water	ئاڤ	Pen	قه له م
Banana	موز	Guitar	گیتار	Spoon	كه فچك	Meat	گوشت
Jacket	چاكیت	Monkey	مەیمینگ	Telephone	تێله فون	Chicken	مریشك

Table (3): Comprehension Task

Task Instructions

1. Each item in this question consists of four options representing different pictures referring to different objects.
2. The examiner is going to name one of the pictures, and ask the child to recognize the correct picture.
3. The researcher will document the child's answer by ticking in the column provided as a correct or wrong answer. Moreover, the answers will also be recorded.

N.	Items				N.	Items			
1	Dog	صه	Elephant	فیل	6	Pizza	پیتزا	Egg	هیك
	Cow	چێل	Horse	هەسپ		Bread	نان	Tea	چا
2	Car	ترومبێل	Bicycle	پایسكل	7	Orange	پرته قال	Grapes	تری
	Train	شه مه نده فر \قطار	Bus	پاص		Pineapple	ئەنەناس	Fig	هژیر
3	Apple	سێف	Watermelon	شتی	8	Glass	گلاس	Salt	خوێ
	Ball	تەپه	Apricot	خوخ		Dish	سێنیك	Brush	فرچه
4	Cheeps	چیپس:	Juice	عه صیر	9	Red	سور	Yellow	زەر
	Cake	كێك	Gum	علك		Blue	شین	Black	رەش
5	Camera	كامیره	Scissors	مەقەس	10	One	ئێك	Three	سێ
	Mobile	موبایل	Television	تێلەڤزیون		Five	پێنج	Nine	نەه

Table (4) sentence level

N.	Items	
1	What is your name?	ناڤێ تەچیه؟
2	How old are you?	ژیێ تەچه نده؟
3	Where do you live?	تو ل كیرێ دژی؟
4	What do you like?	تو حه ز ژ چ دكەی؟
5	What is your teacher's name?	ناڤێ ماموستا ته چیه؟

3.1. Administering the test

The pilot test

According to White (2007), before conducting a test, the materials should be tested to verify their acceptability or efficacy and the test takers' reactions to such materials. He went on to say that the findings of such a test will shed light on the behavior of autistic testees. The pilot test was administered to two children included a pre-test, then after two weeks, the post-test was administered. The results of the two tests were consistent and some changes were made to the way the questions are directed to the children to make the test runs more smoothly during the main test.

The pre-test

After making some changes to the tasks, the pre-test was administered with the help of the trainers at the Autism Center. The researcher had made it clear to the trainers on how to test the children and direct the questions to the children. The test was administered to each child separately from other children to see the progress of each child. The reason behind the participation of the trainers as examiners is that autistic children do not respond easily to the people they are not familiar with. Besides, the researcher himself had examined some children, and also observed the children's behavior in the test. The test lasted four days, and the time spent on each test varied from one child to another according to the child's behavior and age. The researcher videoed the children's answers and behaviors by using IPhone12 device during pre and post-tests. Then, the process of scoring started as follows, first, the researcher watched, heard, and paid attention to the video and audio recordings of the test from the headphone. Second, the researcher transcribed them. Sometimes, the researcher paused the video and audio recording when he wrote utterances that were said by the subject. Third, after transcribing the whole video and audio recording, the researcher checked off the script. Finally, the children's answers were analyzed, and kept as a backup copy in a safe place.

The experiment

After conducting the pre-test, the teaching based on the PECS program was started according to some modifications made to the program to get fit to the context of the children participating in the experiment. The PECS program is well known by its simplicity and uncomplicated technicalities such as using visual tools that reinforce the autistic children's verbal communication. To make the best use of the PECS, the program was divided into several intervention sessions to further support the autistic children. Moreover, the content selected for this study was clear and suitable for the autistic children under study.

The teaching course lasted 16 weeks, and consisted of five sessions per week, each session of 30 min. The teaching sessions were conducted from 9:30 a.m. to 12:00 p.m. in a special room, provided with facilities to help the trainers run the sessions successfully in a comfortable environment (see Table 5). The researcher also used an IPhone 12 to record the sessions. The items included in the teaching program focused on the words and vocabulary they are familiar with, especially those included in the tasks.

Table 5: Time and number of training sessions based on PECS program.

Phase number	Phase name	Week	Total sessions	Total time spent on each session in minutes
One	Physical exchange	2	10	300
Two	Expanding spontaneity	2	10	300
Three	Picture discrimination	2	10	300
Four	Sentence structure	2	10	300
Five	Responding	4	20	600
Six	Commenting	4	20	600
Total time and sessions		16	80 sessions	40 hours

The Post-test

After 3 days of the end of the training program, the post-test was administered with the same sample of tasks. The children were divided into groups of two to conduct the test. The test lasted 5 days. The whole test was videoed and recorded by the researcher with an IPhone 12. In the scoring process, the same procedure of the pretest was followed for the post-test. On the post test, the children achieved a good progress in the post-test and scored means higher than those scored in the pre-test. That is to say, PECS program had a positive effect on the children's achievement at verbal communication.

4. Data Analysis

The quantitative data collected on both pre and post-tests were analysed using Software SPSS *Paired-Samples T Test.* Furthermore, data were analysed according to each task, and as follows:

The study Research Question

Is there any statistically significant difference in the mean scores obtained on both pre and post-test at single words, comprehension and length of utterance?

Below is the analysis of the results obtained by the autistic Bahdini children as follows:

Table 6: Means, Standards Deviation, and P-Value for the Pre-test and Post-test in Task 1 (Vocabulary)

Test	N	Mean	Std. Deviation	P-Value	Level of significance
Pre-test	10	37.00	16.193	0.000	
post-tests	10	83.00	15.670		P <0.05

Table (6) shows that there is a good progress in the children's learning achievement. Comparing the mean scores obtained on pre-test and post-test indicates that children scored a mean higher than the one scored on the pre-test. Based on that, the P-value obtained on this task is 0.000. Since it is less than the level of significance of 0.05, there is a statistically significant difference in the tests conducted on task one in favour of the post-test.

It can be seen from Table (7) that the mean score obtained from post-test is higher than the one obtained from the pre-test. That is to say, there is not much progress in the children's achievement at comprehension. It can also be seen that the P-value of these tests is 0.272. Accordingly, there is not any statistically significant difference in the mean score because the P-value is more than the level of significance 0.05.

Table 7: Means, Standard Deviation and P-value obtained in Pre-test and Post-test in Task 2 (Comprehension)

Test	N	Mean	Std. Deviation	P-Value	Level of significance
Pre-test	10	70.00	13.540	.272	
post-tests	10	81.00	26.226		P >0.05

Table 8: Means, Standard Deviation and P-value obtained in Pre-test and Post-test in Task 3 (sentence level)

Test	N	Mean	Std. Deviation	P-Value	Level of significance
Pre-test	10	16.33	11.969		P <0.05
post-tests	10	63.00	31.753	.002	

The mean scores obtained on both pre and post-tests in Task 3 are shown in Table (8). It is clear that the children achieved better learning due to the use of the PECS program. The P-value of these tests in Task 3 is 0.002. That is to say, the mean score obtained from the post-test is statistically significant different from the one scored on the pre-test because the p-value is less than the level of significance 0.05.
Why has the p-value been obtained for either the pre-test or the post-test and not for both?

1. Discussion of the results.

Tien (2008) found that the PECS program helped autistic children improve their communication abilities. Likewise, the PECS program was also proved to be successful by Sulzer, et al. (2009). Similarly, the findings of this research are in line with those of Preston and Carter (2009).The findings of the Boucher et al. (1998) research revealed that autistic children obviously displayed substitution, deletion, assimilation and phonological problems; the same language disorders found in the communication patterns of the children at Zakho Autism Center. Another trait of autistic children's verbal communication that Boucher describes is their flat, emotionless voice, as well as their rapid speaking and their inaccuracy in stress allocations. A single word at a time is taught to the youngsters in the PECS curriculum, which worked successfully with the children. The children in the current study achieved better learning in one-word pronunciation.
It is obvious that autistic kids have made progress in their pronunciation of these words as seen in Task 1 (Vocabulary). This suggests that children pronunciation has been improved due to different factors. First, the PECS training program was well-prepared, and the instructors were well-trained. Second, the vocabulary list was chosen by the researcher in collaboration with the trainers at the Autism Centre. Since children with autism are visual learners, the words were real from authentic situations. Another factor that contributed to the program's success is the support of parents who assisted their children put what they had acquired at the centre into practise at home. Based on the analysis, it can be seen that autistic children made a good progress in vocabulary.

The findings in Task 2 indicate that the mean score show that the children already got good comprehension due to the role of the trainers in modifying the children's behavior before conducting the study. Aside from that, the researcher noted that most autistic children in the centre had a decent permeable strength in this portion even before the PECS training began. As a result of a variety of variables, the absorptive performance of autistic children at Zakho autism centre has achieved its pinnacle, including (1) altering the code of behaviour (keeping their attention and focus) and (2) making the auditory system safe before instructing them to talk.
As such, the results of the pre and post-tests for comprehension task were almost similar. The children could not provide another word for the same meaning; a case which is not found with normal children. Furthermore, a progress was made in the comprehension task, but not statistically significant (See Table 7). Hence the present study results are not in agreement with the results arrived at in the studies conducted by Bondy and Frost (1994) and Sulzer et al. (2009) which show the effectiveness of the PECS program on autistic children's comprehension.
As for Task 3, when autistic children were taught according to the PECS program for four months, children's learning at length of the utterance has been achieve. This shows that in this part, the PECS program has affected autistic performance positively with respect

to the structure of spoken sentences. Children with autism have also profited from the PECS in forming sentences. Such progress is due to teaching materials used in the program and clear technicalities adopted, such as the use of visual aids which encouraged children with autism. Another point which contributed to the success of the program was the different sessions through which the program was applied. According to the results of 3 tasks, the hypothesis is verified except at comprehension task.

The study has also found that reinforcement is a major factor to improve verbal autistic children's learning. The results arrived at in task 3 go in line with the results of studies conducted by Hen-Schwartz et al. (2000), Frost and Bondy (2009), Charlop-Christy et al. (2002), Dalhom (2007), and Ayyash (2018). Based on the results arrived at in the three aforementioned tasks, it can be noted that autistic children's speech and verbal communication had been improved noticeably due to PECS program.

6. **Conclusion**

The concluding remarks arrived at in the present study are shown below.

1. Using the PECS program had a positive effect on Kurdish Bahdini autistic children's verbal communication at the level of vocabulary, comprehension, and sentences. That is to say, apart from task 2, the children improved significantly.
2. The children improved their pronunciation behaviors due to the use of the PECS program.
3. The mean scores obtained on the post-tests for the three tasks from the highest to the lowest are vocabulary, sentence and comprehension respectively.
4. The results indicated that the PECS program is a great tool in providing autistic children with support needed in terms of verbal communication. It also provides them with a prominent value in their social development and the necessary means to communicate with others, whether in the family environment or at centres in order to be independent

7. Recommendations

In the light of the present study, it is recommended that:
1. In the first place, autistic children's parents should be aware of the level of autism their children have and consult autism centers to choose an appropriate teaching program for them.
2. Since PECS program proved its effectiveness in the present study, it is recommended to be adopted at autism centers with some modifications to fit the context of the children at those centers.
3. Since autistic children represent a part of the society, it is a good idea to get them meet and mix with the normal children on different occasions. This will make them more motivated and supported, which help to improve their verbal communication.
4. Since parents are more aware of their children's cases and interests, there should be a connection between autism centers and parents to find the suitable ways to teach such children.

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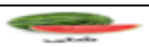
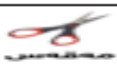
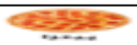
Appendix 1. Flash Cards of Task 1

N	Items	Flash cards	N	Items	Flash cards
1	Pomegranate		11	onion	
2	Chair		12	Comb	
3	Key		13	Water	
4	Banana		14	Spoon	
5	Jacket		15	Telephone	
6	Bicycle		16	seven	
7	Cat		17	Green	
8	Fish		18	Pen	
9	Guitar		19	Meat	
10	Monkey		20	Chicken	

Appendix. 2 Flash Cards of Task 2

No	Multiple Choices			
1	Dog		Elephant	
	Cow		Horse	
2	Car		Bicycle	
	Train		Bus	
3	Apple		Watermelon	
	Ball		Apricot	
4	Cheeps		Juice	
	Cake		Gum	
5	Camera		Scissors	
	Mobile		Television	
6	Pizza		Egg	
	Bread		Tea	
7	Orange		Grapes	
	Pineapple		Fig	
8	Glass		Salt	
	Dish		Brush	
9	Red		Yellow	
	Blue		Black	
10	One		Three	
	Five		Nine	

تاثير تطبيق برنامج ألتواصل عن طريق ألصور علي الكلام والتحدث لدي أطفال الكرد في منطقة بادينان المصابين بمتلازمة التوحد

الملخص:

الهدف من هذه الدراسة هو معرفة مدي تأثير برنامج PECS علي الجانب اللغوي للأطفال الذين يعانون من التوحد في منطقة البادينان. أطفال ألتوحد لديهم مشاكل تواصلية مع ألاشخاص الذين حولهم. علاوةً علي ذلك فان هولاء ألاطفال بحاجة الي عناية خاصة ليتمكنوا من التواصل مع محيطهم ومشاركة الاخرين بارائِهم. لأجراء هذه الدراسة تم إختيار عينة مكونة من عشرة أطفال تتراوح أعمارهم بين 3 الي 11 سنوات من مركز زاخو للتوحد إختار الباحث ألاطفال الذين تم تعديلهم سلوكيا و لديهم مشاكل لغوية. وتم جمع البيانات من العينة المعتمدة عن طريق الإختبارالقبلي أي قبل تطبيق برنامج (PECS) والبعدي أي بعد تطبيقه وتم تحليل البيانات عن طريق برنامج التحليل الإحصائي SPSSعن طريق إختبار paired sample t-test كما حللت الدراسة صعوبات النطق واللفظ التي يواجهها هولاء الأطفال.

وقد أظهرت النتائج التي تم توصل إليها في هذه الدراسة أن البرنامج كان له تأثير ايجابي علي لغة الأطفال المصابين بالتوحد. وبناءاً علي ذلك أظهرت النتائج التي تم ألحصول عليها في الاختبار البعدي وجود فروقات ذات دلالة معنوية في نتائجهم مقارنة بالاختبارالقبلي، بمعني أخر ساعد البرنامج ألاطفال علي إحراز تقدم في اللغة. علاوةً علي ذلك يمكن ان تساعد هذه الدراسة المدربين و ألمعلمين في مراكز ألتوحد علي تبني مثل هذا ألبرنامج في تدريبهم مع إجراء بعض ألتغييرات عليها ليتلائم مع طبيعة برامجهم اتعليمية والتدريبية.

كلمات الدالة: التواصل عن طريق الصور(بيكس) , متلازمة التوحد , الكلام.

كارتئكرنا پروكرامێ (پيكس) لسەر ئاخفتنا زاروكێن ئوتيزمێ ل دە ڤەرا بادينان

پوختە:

ئارمانج ژ ڤێ ڤە كولينێ ئەوە كارتێكرنا پروكرامێ (PECS)بهێتە دياركرن ل سەر زمانێ بچيكێن ئوتيزمێ ل دەڤەرا بەهدينان. بچيكێن ئوتيزمێ نەشێن دان وستاندنێ دگەل كەسێن دەوروبەرێن خوئەنجام بدەن. بو ئەنجام دانا ڤێ ڤەكولينێ گروپەك ژ 10 بچيكێن ئوتيزمێ هاتنە هەلبژارتن كو ژيێ وان دناف بەرا سێ تا يازدە ساليێ دا بون وئەف بجيكە هاتبونە راست ڤەكرن ژ لايێ لڤينا زێدە و ڤان زاروكا ئاريشێن ئاخفتنێ هەبون. پێزانين هاتنە كوم كرن ژ گروپێ دەست نيشان كرى ب رێكا تێستا بەرى ئەنجام دانا پروگرامى و پشتى ئەنجام دانێ و ئەف پێزانينە هاتنە شلوڤەكرنێ ب رێكا پروگرامێ SPSS ژێر خانەياt-test دا هەر وەسا شلوڤەكرن هاتە ئەنجام دان ل سەر زەحمەتييێن ئاخفتنێ ئەوێن بو ڤان زاروكا پەيدا دبن.

ئەو ئەنجامێن هاتينە دياركرن ب رێكا ڤێ ڤەكولينێ ديار دكەت كو ئەف پروگرامە كارتێكرنەكا باش هەبو ل سەر ئاستێ ئاخفتنێ بو ڤان بچيكێن ئوتيزمێ و لسەر ڤێ چەندێ ئەو ئەنجامێن ديار بوين پشتى ئەنجام دانا ئەڤى پروگرامى كو جێوازيەكا باش يامەى بەراوردى ئەنجامێن بەرى ب كار ئينانا پروگرامى ب مانايەكا دى ئەف پروگرامە هاريكاريا ڤان زاروكان كر كو زمانێ وان بەرەف باشيێ بچيت ژبەر هندێ ئەف ڤەكولينە دێ بيتە هاريكار بو ماموستا و ترەينەرا كو ديف چونا ئەڤى پروگرامى بكەن.

پەيڤێن سەرەكى: دان و ستاندن ب رێكا وێنان پروگرامێ(پێكس)، ئوتيزم، ئاخفتن.