

# Communication Ability and Verbal Communication Apprehension of Senior High School Adolescents With Intellectual Disability: Research Based on Picture Exchange Communication System (PECS) and Measure of Elementary Communication Apprehension (MECA)

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The purposes of this study are: firstly, to determine the effect of Picture Exchange Communication System (PECS) on the verbal communication skills; secondly, to determine the verbal communication apprehension before and after PECS treatment; thirdly, to determine the difference on verbal communication apprehension as revealed by sexes. All on senior high school students with intellectual disability. Experimental design for verbal communication skills used Analysis of Covariance with Randomized Completely Block Design (RCBD) based on six phases of pre- and post-test. Senior high school student from class X-XII ( $n = 13$ ) became sample of this research. Questionnaire used was in the form of the Measure of Elementary Communication Apprehension (MECA) questionnaire while the data analysis used Analysis Covariance for verbal communication skill, t-paired test for verbal communication apprehension, and verbal communication apprehension between sex were analyzed by t-test with a 5% level of significance. The results showed that: (1) PECS can improve the verbal communication skills between phases of PECS with the effectiveness as follows: 105.14%, 18.49%, and 43.11%; (2) PECS have not affected the verbal communication apprehension of senior high school adolescents with intellectual disability ( $t_{calc} = -0.305 < t_{table} = -1.771$ ); and (3) There is no significant differences in verbal communication apprehension of senior high school adolescents with intellectual disability based on sexes ( $t_{calc} = 0.232 < t_{table} = 2.342$ ).

*Keywords:* Picture Exchange Communication System, verbal communication ability skill, verbal communication anxiety

Tujuan penelitian adalah: pertama, menentukan pengaruh *Picture Exchange Communication System* (PECS) terhadap ketrampilan kemampuan komunikasi verbal; kedua, menentukan perbedaan kecemasan komunikasi verbal sebelum dan sesudah perlakuan PECS; ketiga, menentukan perbedaan kecemasan komunikasi verbal antar jenis kelamin. Seluruhnya pada remaja tunagrahita jenjang SMA. Desain eksperimen untuk data ketrampilan komunikasi verbal menggunakan analisis Dwi Ragam dengan rancangan dasar RAK (Rancangan Acak Kelompok) berdasarkan enam tahapan pra dan paska uji. Siswa SMA dari kelas X-XII ( $n = 13$ ) menjadi sampel penelitian ini. Skala yang digunakan berupa skala *Measure of Elementary Communication Apprehension* (MECA) sedangkan analisa data menggunakan Analisis Dwi Ragam (*Covariance*) untuk ketrampilan kemampuan komunikasi verbal, uji t Contoh Berpasangan untuk kecemasan komunikasi verbal, dan kecemasan komunikasi verbal antar jenis kelamin diuji dengan uji t dengan tingkat kebermaknaan 5%. Hasil penelitian menunjukkan bahwa: (1) PECS dapat meningkatkan ketrampilan komunikasi verbal antar tahapan PECS dengan efektivitas berturut-turut: 105,14%, 18,49%, dan 43,11%; (2) PECS tidak berpengaruh terhadap kecemasan komunikasi verbal remaja tunagrahita jenjang SMA ( $t_{hit} = -0.305 < t_{tabel} = -1.771$ ); dan (3) Tidak ada perbedaan tingkat kecemasan komunikasi verbal remaja tunagrahita jenjang SMA antar jenis kelamin ( $t_{hit} = 0.232 < t_{tabel} = 2.342$ ).

*Kata kunci:* *Picture Exchange Communication System*, kemampuan komunikasi verbal, kecemasan komunikasi verbal

The existence of human as social means that cannot be separated from communication to other humans. Communication is process of delivering and transferring message, so there must be the primary factor which is language, through verbal language or non-verbal language (Nurmala, Maulana, Ikom, & Prasetyo, 2016). In fact, not all people can communicate fluently and there are some problems happening in communication, such as anxiety in communication (Aswida, Marjohan, & Syukur, 2012). According to John and Foss (2009), communication apprehension is a part of concept group which consists of social avoidance, social apprehension, interaction apprehension, and social aversion.

Some children with intellectual disability have problems with beginner language skill, such as imitation which needs special training and also children who have a problem with their hearing which will affect their speaking development and language skill (Nida, 2013). Children with intellectual disability show fluency but they have limited vocabularies. Children with intellectual disability also have a problem in concluding the main topic of discussion (Astati, 2001).

Mulyani and Garnida (2016) explained that children with intellectual disability are part of special need children, being those who have deviation or problem in the intelligence aspect causing their language development and their communication are predicted to also have problems. Language and speech development have relation with cognitive development, so that communication development of children with intellectual disability (language and speech) will be along with their cognitive development: with a problem where is language and speech development is not in rhythm with their chronological age (CA) development but it is more in rhythm with their mental age (MA). To bridge it, for example, through the use of the Picture Exchange Communication System (PECS) method or through the development of alternative communications (such as gesture or gesture) can be implemented.

One of the talk therapies for children with intellectual disability is Picture Exchange Communication System (PECS) therapy, which is one of the systems being the Augmentative and Alternative Communication (AAC) system used by people with special needs who have interference in communicating to replace or complete the ability limited communication (Bondy & Frost, 2011). PECS user-students are those whose language development is not well-developed and they are not willing to communicate with others (Murwati, 2013). PECS is not only used in children but can also be used in adults with disabilities with lack of communication. One

of them being the intellectual disability (Stoner, Beck, Bock, Hickey, Kosuwan, & Thompson, 2006).

Sulzer-Azaroff, Hoffman, Horton, Bondy, and Frost (2009) also pointed out that PECS can be used on individuals with limited communication problems: intellectual disability, autism, down syndrome, cerebral palsy, and others. Sulzer-Azaroff et al. (2009) added that PECS can improve communication skills or speak in public. One of the studies discussed by Sulzer-Azaroff et al., conducted by Chambers and Rehfeldt (2003), was conducted on four people with intellectual disability who experienced language disorders with age ranges between 19-40 years. It was found that adults with intellectual disability may acquire some speech skills after attending PECS training, seen from two out of four respondents being able to follow PECS until completion with a total percentage of almost 100% in each PECS phase. Other studies discussed by Sulzer-Azaroff et al., namely the research by Rehfeldt and Root (2005), was conducted on three people with intellectual disability who have communication disorders with the age range between 20-34 years. This study found that at the time of pre-test, that no enthusiastic respondents asked for some drawing items to start general communications. After the test all respondents could match the word for the image with 89% accuracy, with only one respondent able to name the image correctly (100%) and read the words well (89%).

### Picture Exchange Communication System (PECS)

**Theory and definition.** PECS was first designed by Andrew Bondy and Lori Frost in 1985 and published in 1994 in the United States of America. In the beginning, PECS was used for pre-school students with autism and other disorders related to communication disorder. Students who used PECS were those whose language development was not good and those who did not have desire to communicate with other people (Tien, 2008). In further development, PECS method had expanded and could be used for a variety of subjects of different ages (Murwati, 2013).

PECS method means that it focuses on the use of visual aids as a way of helping child in exercising the ability to communicate (Sukinah, 2011). Septiari, Suarni, and Jampel (2015) added that PECS is a picture exchange communication system with desired goods or objects. When a child ask for something by pointing then teachers, therapists, or parents will not provide it before the child show image as a tool in its communication capabilities. PECS is implemented by giving an image to other people so that others understand that

the child want an object (including a person or activity), to provide an opportunity to the child to express themselves spontaneously and easily understood by others.

PECS is a technique which combines deep knowledge of speech therapy by understanding communication where students can not translate the word, lack understanding in communication, with the purpose of it being to help students in understanding the function of communication and developing communication ability (Tien, 2008). All individuals who completed six phases of PECS instruction are able to communicate using pictures and sentences. In addition, they are also able to respond to questions and make requests (Stoner, Back, Bock, Hickey, Kosuwan, & Thompson, 2006).

In PECS, mastery of labeling skills is not a requisite. Moreover, because it is picture-based, PECS is less complex and more cost efficient compared to other training approaches (Bondy & Frost, 2011; Charlop-Christy, Carpenter, Le, LeBlanc, & Kellet, 2002). Another unique feature of PECS is that it gives emphasis on developing – through constant reinforcement – the skill of initiating communication (Bond & Frost, 2011).

PECS is a picture composition which helps students with socialization and communication problem (Bondi & Frost, 1994). It is also an approach to communicate using pictures or visual symbols (Bondy & Frost, 2011). Murwati (2013) adds that using PECS does not mean giving up that the child will not talk but with the help of pictures and symbols then the understanding of language that conveyed verbally can be understood clearly. Indeed at this phase child initially introduced with non verbal symbols but in the final phase of PECS method, children are motivated and encouraged to speak.

**PECS Phases.** Bondy and Frost (2011) explained that there are six phases in PECS method. Pictures in the PECS method are pictures often found or used in daily life, such as plate, glass, toys, fruits, drinks, foods, and facial expressions. Several example images used in PECS method are shown in Figure 1.

The PECS methods are: (1) Phase I, with the purpose to make students able to observe the given item/object; (2) Phase II, students are able to change communication partner and able to give the picture on their communication partner's hand; (3) Phase III, it is expected that the students are able to ask the object that they want by moving to communication board then choosing certain picture which represents their will and give the picture to the their teacher or their communication partner; (4) Phase IV, with the purpose to make the students able to ask the object that they want by moving to communication board then choosing cer-

tain picture that represent their want and giving that picture to their teacher or to their communication partner with also aiming for the child to be able to request objects with or without a picture of the object accompanied by the use of a multi-word phrase while opening a compilation of drawings, then take a picture "I want" or "I want", then the image is placed on the sentence board, then the child takes image of the desired object and placed to the right of the symbol "I want". At the end of this phase, it is expected the child can use 20-50 images in communicating with various partners; (5) Phase V, the child is able to spontaneously request the desired object through the image and can answer with the question image "What do you want?"; and (6) Phase VI is the last phase of the PECS method so it is expected that in this phase the child is able to comment, express feelings, likes and dislikes.

### Communication Skill

Communication is at the heart of various aspects of life. The ability to communicate is fundamental to the fulfillment of basic needs such as establishing relationships and self expression (Ronski, Sevcik, & Adamson, 1999). Communication aims at establishing a common ground between speaker and listener, which is easier achieved with the aid of language (Bhatia & Gajam, 2013). Communication can also be seen as a dynamic process between individuals who use symbols to share their private thoughts (Samovar, Porter, & McDaniel, 2010).

**Definition of Communication Skill.** Sardiman (2011) stated that the term "communication" derived from the word '*communicare*' means 'participate', 'notify', 'belong together'. Furthermore, Sardiman argues that communication is closely related to interaction:

"The interaction term with regard to communication or relationship. In the process of communication, known by the existence of elements of communicant and communicators. Relationship with the communicant and communicators are usually due to integrate something, better known by his message. Then pass it on to the need for a medium or channel. So the elements involved in the communication are the communicators, communicant, messages, and media."

According to Cangara (2011), there are two codes in communication skills, one of which is verbal code. The verbal code language is a set of words that have been drafted are structured so that it becomes the set

of sentences that have meaning. Languages in creating effective communication has three functions, namely to know the attitude and behavior, to develop science and inheritance of cultural values, as well as to draw up a systematic ideas.

**Basic communication skill (making request and responding to question).** Communication skill is a basic skill must have by student to understand the material. Good communication skill will facilitate student to discuss seeking information, analyze and evaluate data and create reports (Levi, 2009). Furthermore according to Wahyuni (2015), communication skill is a very basic ability to interact and express the idea to others to be easily understood. Good communication skills are likely to reduce the anxiety to speaking.

One of the benefits of communication skill was easing someone to discuss. Someone in discussion perform various actions, such as asking, answering, commenting, hearing explanation, and disproving (Yamin & Ansari, 2009). The communication skill used in the PECS method are asking and responding to question (by answering or commenting). Requested in this case is taking and submitting a picture, as well as exchanging names while responding to a question. Also requested is some pictures, responding to questions: "What do you want?", "What do you see?", as well as spontaneous comments.

## Communication Apprehension

**Communication apprehension theory.** First concept of communication apprehension (CA) sees CA as

apprehension related to oral communication. McCroskey (1984) defined CA as "an individual level of fears or anxiety associated with either real or anticipated communication with another person or people." McCroskey (1984) added that apprehension in communication causes someone to be afraid, nervous, and uninterested in conversation and being uncomfortable when doing face to face or group conversation; the person who has communication apprehension has communication problem resulting in them pulling their self away and avoiding communication.

In the next stage, in McCroskey and Daly's research (1984) defined communication apprehension is someone's anxiety or apprehension level which related with real communication or communication anticipated by the others. This definition explains that CA conceptually has two approaches; the first is approach focusing on oral communication, while the second is approach focusing on CA as conceptualization of characteristic. On the second approach, CA is stated as trait which is something permanent and it is a part of someone's personality, and stated as a visible condition.

**Definition of communication apprehension.** Communication apprehension according McCroskey and Daly (1984) is someone's anxiety or apprehension level which related with communication anticipated by the others. West and Turner (2009) stated that communication apprehension is someone's anxiety or someone's negative feeling in communication. It is similar to Sellnow's statement (2005), being that apprehension in communication can be meant as someone's fear or anxiety related to communication with others. Powell

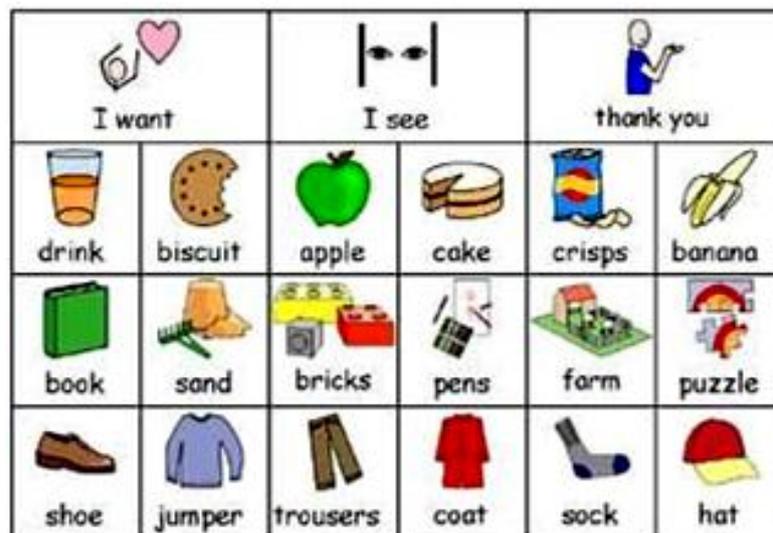


Figure 1. Example images of PECS.

and Powell (2010) explained communication apprehension as someone's anxiety level associated with a communication situation, either real communication or communication which will be done by someone to another person or people.

**Communication apprehension aspects.** The first aspect of communication apprehension is public speaking communication apprehension (McCroskey, 1984), a problem in communication in public communication. The second aspect, speaking in meetings communication apprehension is a problem in communication in meeting situation. The third aspect, speaking in small group discussion communication apprehension as a problem in communication in group discussion. Then, the fourth aspect, dyadic interaction communication apprehension which meant a problem in communication in face to face communication.

**Factors causing communication apprehension.** According to McCroskey (1984), there are some factors which cause communication apprehension:

The first is genetic factor. This factor explains that the cause of someone has communication apprehension is affected by genetic. Someone's attitude is affected by learning process received from the parent. It means someone will adopt values adopted or directly relegated by the parent, for example someone who is not taught to give opinion freely by the parent will relegate that lesson to the next generation.

The second is environment factor. This factor explains that the cause of someone having communication apprehension is because of environment. The environment is like family, peer, and society in their living environment. Someone in an environment with communication apprehension will also have apprehension in communication.

The third is reinforcement factor. This factor states that as often as someone gets reinforcement in doing communication with surroundings. Someone who get positive reinforcement from surroundings can decrease their apprehension in doing communication. Someone who is seldom given opportunity by surroundings to communicate and is not given stimulus to do communication, will develop apprehension in doing communication. Reinforcement is learning process where someone is actively learning and developing communication skill can decrease communication apprehension better than someone who does not.

The fourth is communication situation factor as a cause of apprehension. Someone who is able to communicate well in an informal situation, such as talking to friends, is not sure to be able to communicate well in formal situation. Formal situation is situation where

someone communicates to public, usually causing apprehension.

The fifth factor is assessment factor. It is when someone believes that an assessment is able to create, rise, or drop their pride. Commonly, assessment can drop someone's pride. Someone who communicates in front of public usually has unsure negative feeling, causing apprehension due to being assessed.

The sixth factor is skill and experience. It is believed that someone who has little skill and experience in communication has apprehension. Wide knowledge about communication is needed and a lot of training in communication will give someone a skill to begin, continue, and end a discussion well.

### **PECS and Communication Apprehension**

Chambers and Rehfeldt (2003) conducted a research on four adults with intellectual disability who experience language disorders within the age range 19 to 40 years with an IQ level between 18 to 27. It was found that in early stages, none of the respondents can request goods using pictures or signs, but all respondents can distinguish two or three images which mean all respondents have the skills taught at the Phase 3. Two of the four respondents successfully completed the PECS training with 100% accuracy though it took longer time. Two other respondents also showed an increase during the request by hand, but one of them was unable to continue PECS's training because the respondent had to be hospitalized.

Rehfeldt and Root (2005) conducted a research on three intellectually disabled adults who experience communication disorders within the age range 20-34 years with IQ level range from 21-30. The study found that, at the time of pre-test, there were no enthusiastic respondents asking for some picture items to start communication, but at post-test, all respondents could match the word for the image with 89% accuracy; only one respondent can name the image correctly (100%) and read the words well (89%).

Stoner et al. (2006) conducted PECS's training from Phase 1 to Phase 4 on five intellectually disabled adults who did not have verbal communication skills within age range 22 to 30 years and IQ range between 20 to 49. The results found that, three respondents showed an increase in Phase 4 (sessions were repeated up to 10 trials) while the other two showed limited ability.

A research conducted by Rogers (2011) on three adults with intellectual disability who have problems in communication within the age range 38 to 52 years found that, after training, the first respondents had an

average of 80%, five days after training became 88%, 16 days after training became 75%, and 22 days after training became 75%. In the second respondent, three days after training, in averaged 100%, 23 days after training became 88%, and 59 days after training became 88%. The third respondent, in the initial assessment, received a 75% percentage in the first four sessions, on seven sessions; respondents' average became 70%, on eight sessions decrease to 38% and increase to 69% in the last two sessions.

The study of teaching stimulation with image media conducted by Sumiatin (2014) in children with intellectual disability within IQ 50-70 and age range between 6-12 years who have limitations in various aspects found that, after being given the stimulation of image media teaching, 70% of respondents had good achievement and 30% had enough or quite good achievement. From the result of t-test, it was resulted that the influence of teaching image media stimulation toward children learning achievement of intellectually disabled ( $p = .001$ ) in a Tuban Regency special school.

In previous research, more researchers used participants with an age range of late adolescence to adulthood and also less participants compared to this research. This research used 13 adolescent with mild intellectual disability by age range 12-21 years and ranges of IQ 50-70. In the training process, researcher applies six phases of PECS method in four times/days meeting with 60 minute duration. Contrary to previous research, six phases PECS method applied more than four times/days even doing it to 22 days. Considering the discussions and related researches, the researcher proposed the following hypotheses:

*Hypothesis 1:* PECS influences verbal communication ability of senior high school adolescents with

intellectual disability.

*Hypothesis 2:* There are differences of verbal communication apprehension of senior high school adolescents with intellectual disability before and after PECS treatment.

*Hypothesis 3:* There are differences of verbal communication apprehension of senior high school adolescent with intellectual disability before and after PECS treatment between a different sexes.

## Method

### Design

This research used experimental design for verbal communication skill used Analysis of Covariance with Randomized Completely Block Design (RCBD) based on each phases PECS of pre- and post-test value. Testing the difference in verbal communication apprehension used a pretest-posttest design with MECA questionnaire that aims to determine the level of verbal communication apprehension in adolescent with intellectual disability by rating it twice (before and after PECS treatment).

### Participants

Participants of the research were high school students from a special school in Salatiga chosen using purposive sampling technique which amounted to 13 adolescents with mild intellectual disability (ten male students and three female students), with three students from class X, five students from class XI, and five stu-

Table 1  
MECA Scale

Aspect	Example of Indicators	Item		Total
		F	UF	
Public Speaking CA	How do you feel after you get up to talk in front of the class?	12, 19,8	9, 13, 14	8
Speaking in Meetings CA	How do you feel about talking to all of the people who sit close to you?	16,18		2
Speaking in Small Group Discussion CA	How do you feel about talking when you are in a small group?	7,15,20		4
Speaking in Dyadic Interaction CA	How do you feel when you talk to teachers or your principal?	1, 10,17	2, 3, 4, 5, 6, 11	6
Total		11	9	20

Note. F = Favorable, UF = Unfavorable

dents from class XII. Participants were within age range of 15-21 years and IQ range of 55-70.

**Measure and Materials**

Data collection used MECA (Measure of Elementary Communication Apprehension) scale by Garrison and Garrison (1977). This scale consists of 20 items used on children with disabilities, such as visual impairment, emotional distress, deafness, and intellectual disability. This scale uses the Likert scale concept using facial expressions with a range of five answer options. Vali-

dity test results showed 20 valid items with the reliability test results showing the coefficient of *Cronbach's Alpha* = .859 and score corrected item-total correlation ranging from .316 - .670. The blueprint of MECA scale is presented in Table 1.

The results of MECA questionnaires ranged between values of 20-100, with the degree of verbal communication apprehension level as follows: (1) Values between 75-100: levels of verbal communication apprehension is high; (2) Values between 50-75: levels of verbal communication apprehension is moderate; and (3) Value between 20-50: levels of verbal communication apprehension is low. The Likert Scale is shown in Table 2.

Table 2  
*Likert Scale MECA*

Favorable	Unfavorable
 = 5	 = 1
 = 4	 = 2
 = 3	 = 3
 = 2	 = 4
 = 1	 = 5

**Experimental Procedure**

The experimental procedure using PECS (Bondy & Frost, 2011) which is composed of Phase 1 to 6, namely: (1) Phase 1: Teaching the Physically Assisted Exchange; (2) Phase 2: Expanding Spontaneity; (3) Phase 3: Simultaneous Discrimination of Pictures; (4) Phase 4: Building Sentence Structure; (5) Phase 5: Responding to "What do you want?"; and (6) Phase 6: Commenting in Response to a Question-Differentiating Responses to Question. One of the advantages of PECS is that it does not require skill prerequisites to apply this the-

Table 3  
*Assessment Results of PECS Phases*

R	Treatment Phases													
	1		2		3		4		5		6		Total	
	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
T <sub>1</sub>	1	4	4	6	6	11	11	12	12	14	14	20	48	67
T <sub>2</sub>	1	4	4	6	6	10	10	12	12	14	14	20	47	66
T <sub>3</sub>	1	4	4	6	6	11	11	12	12	14	14	20	48	67
T <sub>4</sub>	1	4	4	6	6	11	11	12	12	14	14	20	48	67
T <sub>5</sub>	1	4	4	6	6	11	11	12	12	14	14	20	48	67
T <sub>6</sub>	1	4	4	3	3	11	11	12	12	14	14	20	45	64
T <sub>7</sub>	1	4	4	6	6	11	11	12	12	14	14	20	48	67
T <sub>8</sub> *	1	4	4	6	6	11	11	12	12	14	14	20	48	67
T <sub>9</sub> *	1	4	4	6	6	11	11	12	12	14	14	20	48	67
T <sub>10</sub>	1	3	3	5	5	8	8	12	12	14	14	20	43	62
T <sub>11</sub>	1	4	4	6	6	8	8	12	12	14	14	20	45	64
T <sub>12</sub>	1	3	3	5	5	10	10	12	12	14	14	20	45	64
T <sub>13</sub> *	1	4	4	6	6	11	11	12	12	14	14	20	48	67
Total	13	50	50	73	73	135	135	156	156	182	182	260	609	856

Note. R = Respondent; T = Senior high school adolescents with intellectual disabled; X = Pre test; Y = Post Test; \* = female.

Table 4

*Verbal Communication Skill Test Results of Senior High School Adolescents with Intellectual Disability between the Phases of PECS's Treatment*

	Treatment Phases					
	1	2	3	4	5	6
Mean	2.55	4.86	9.97	12.49	14.80	21.18
W = 2.769	(a)	(a)	(bc)	(bc)	(c)	(d)

Note. W = Honestly significant difference (HSD) at 5% level of significance. Numbers followed by the same letter indicate that the treatment phases are not significantly different, whereas the numbers followed by different letters indicate that the different treatment phases are significantly different.

Table 5

*t-Test Result of Verbal Communication Apprehension, Pre and Post PECS's Treatment*

Treatment	n	Mean	± SE	$t_{cale}$	$t_{table}$ 5%
Before	13	69.31	2.408	-0.305	-1.771
After	13	68.38	3.191		

rapy so the experiments could be performed by researcher and three students of Master of Science Degree in Psychology. Experiments was conducted as many as four times in meetings for four days with each meeting being of 60 minutes in maximum. On the first day, the researchers performed Phase 1 and 2 of PECS method and Phase 3 on the second day. Phase 4 and 5 were performed on the third day and continued with Phase 6 on the fourth day.

## Analysis

To see the difference in verbal communication skills, value of pre- and post-test of each phases of PECS treatment were analyzed by Analysis of Covariance (ANCOVA), the assessment result of pre-test (X) and post-test (Y) is presented at Table 3. Meanwhile, t-Paired test was conducted to see the difference apprehension levels in verbal communication in intellectually disabled adolescents before and after PECS's treatment. Further on, different levels of apprehension in terms of sexes were also tested with t-test using 5% level of significance.

## Results

### The Effect of PECS on Verbal Communication Skill Ability of Senior High School Adolescents with Intellectual Disability

The results of the PECS's treatment assessment from Phase 1 to Phase 6 on senior high school adolescent with intellectual disability are presented in Table 3.

The assessment of each phase of PECS's treatment showed that there is an increase in verbal communi-

cation skills of intellectually disabled adolescents in high school level. The mean differences of the phase treatment of PECS (first phase to sixth phase) of senior high school adolescent with intellectual disability is presented in Table 4.

Based on the result of Analysis Covariance, there is no improvement of verbal communication skills of senior high school adolescents with intellectual disability in Phase 1 and Phase 2; then there is an increase with the same verbal communication skill in Phase 3 and Phase 4 (the effectiveness of Phase 3 compared to Phase 2 is 105.14%); afterwards there is the tendency to increase in Phase 5 (the effectiveness of Phase 5 compared to Phase 4 is 18.49%). The improvement of verbal communication skills significantly occurred in Phase 6 (the effectiveness of Phase 6 compared to Phase 5 is 43.11%).

The t-Paired test is conducted to see the difference of apprehension level of verbal communication of senior high school adolescents with intellectual disability before and after treatment given. The result of t-Paired test of verbal communication apprehension of senior high school adolescents with intellectual disability is presented in Table 5.

Based on the result of t-Paired test, there is no difference of verbal communication apprehension level of senior high school adolescents with intellectual disability in the special school in Salatiga ( $t_{cale} = -0.305 < t_{table} = -1.771$ ). The mean value of pre- and post-test of senior high school adolescents with intellectual disability were in the range of moderate verbal communication apprehension (based on MECA questionnaire of Garrison & Garrison, 1977). The t-test results for verbal communication apprehension level of senior high school adolescents with intellectual disability between sexes are presented in Table 6.

Table 6

*t*-Test Result of Verbal Communication Apprehension of Senior High School Adolescent with Intellectual Disability between Sexes.

Sexes	<i>n</i>	Mean	$\pm$ SE	<i>t</i> <sub>calc</sub>	<i>t</i> <sub>table</sub>
Male	10	68,60	3.762	0.232	2.342
Female	3	67,60	2.742		

Based on the t-test result between sexes, the verbal communication apprehension level of the senior high school adolescents with intellectual disability is not significantly different ( $t_{calc} = 0.232 < t_{table} = 2.342$ ). The mean value of pre- and post-treatment rates of senior high school adolescent with intellectual disability among the sexes are in moderate verbal communication apprehension (based on MECA questionnaire of Garrison & Garrison, 1977).

## Discussion

### Verbal Communication Skills

Based on the result of Analysis Covariance, there was an increase of verbal communication ability of senior high school adolescents with intellectual disability after PECS's treatment. This result is in line with the research result of Rehfeldt and Root (2005), stating that there is improvement of communicating skill in three adolescents with intellectual disability who have communication problem with PECS's method. These results are also consistent with Stoner et al.'s (2006) research that stated that PECS is a technique that can be used to improve functional communication skills and extend previous findings in adults who do not have a functional communication system.

PECS is a method often used to improve verbal communication skill for disabled children (such as intellectual disability and autism) because the method uses some pictures to encourage children to start communication. Pictures used are pictures of items frequently encountered in daily life, making it easier for adolescents to understand and for the intellectually disabled who cannot read to interchange the names just by looking at the pictures. This is supported by Sukinah (2011), regarding PECS method as a mean that focuses on the use of visual aids and can be used as a way of helping children in exercising ability to communicate.

In the context of the study, the researcher saw that there are several possibilities to increase verbal communication skills. For example, some high school adolescents in the special school in Salatiga who attended

training could not read, so PECS training using images made it easier and funnier for adolescents to exchange names by just looking at pictures. This is supported by Stoner et al. (2006) who stated that PECS method is easy to learn and requires little help, increasing the independence of the participants and also giving the opportunity to demonstrate their ability to make decisions. In addition, Rusman (2009) also added that children with disabilities consider it easier to use visual learning and feel happy as it is easier to digest information that can be seen rather than just heard. Furthermore, according to Angraini's (2016), visual media plays a very important role in the learning processes, in facilitating understanding, strengthening memory, and fostering students' interest.

Furthermore, adolescents with intellectual disability who participated in PECS method training were classified as adolescents with moderate intellectual disability, still in a criterion of intellectual disability that could be educated within the IQ level of 55-69. All adolescents with intellectual disability are able to complete the PECS method for all phases (six phases). This result is in accordance to the research of Rogers (2011) namely that from the three study participants, only one participant (Participant 3) could achieve up to Phase 3 of PECS, whereas participants of Phase 1 and Phase 2 only reached Phase 2 and could not do Phase 3. This relates to intellectual level of participants, as Participant 3 was classified as moderate or pertained intellectual disability, while Participants 1 and Participant 2 belonged to severe intellectual disability.

Senior high school adolescents with intellectual disability had the age range of 15-21 years (final adolescent category of entering early adulthood). This is in accordance with the statement of Apriyanto (2012), that in early adulthood, adolescents with moderate intellectual disability intelligence is reaching the normal age of 9-12 years, still included in the category of children who have language development (reaching 50,000 words). The biggest difference between PECS and other functional communication training approaches is the emphasis placed on teaching non-speaking communicator to initiate communication (Bondy & Frost, 2011).

## Verbal Communication Apprehension

Based on the results of the t-Paired test, there is no difference in verbal communication apprehension of senior high school adolescents with intellectual disability for pre- and post-PECS as well as between the sexes. The researcher sees several possibilities occurring, for instance: senior high school adolescent with intellectual disability in the special school in Salatiga are having enough vocabulary to converse in daily activities with parents, teachers, friends, or others. They seemed to be talking freely in and outside a classroom. This is in accordance with Lumbantobing's opinion (2006) that adolescents with intellectual disability have been able to master enough social and vocational skill for daily activities, and this ability may be lost or abruptly stopped without guidance and direction.

Adolescents with intellectual disability have received speech therapy or vocal learning at school starting from elementary level so that they can communicate well though their vocabulary is still limited. Teaching them does not require extra energy, in accordance to Somantei's (2006) assertion that the adolescents with moderate intellectual disability are capable of being educated and trained, while being easier to communicate with, able to take care of themselves; so they do not require extra supervision, only needing continuous training and education. Nida (2013) also adds that adolescents with intellectual disability can learn to speak in the same way as in regular children but they learn slower and require more encouragement in a natural way depending on their level of development.

Senior high school adolescents with intellectual disability follow all activities that have been designed by the school to increase vocabulary and experience in communicating; in addition, while also already having enough vocabulary for daily activities, with therapies at school. This is in accordance with Zulkifli (2009) that adolescents learn to master social skills, e.g., speaking or communication skills and organizing social activities; if these adolescents successfully carry out this developmental task, it will bring them better social adjustment throughout their lives. DeVito (2005) also adds that the growing strength of communication skills can help a person to think more balanced in communicating with friends or those of the opposite sex.

## Conclusion

The researcher responded to Hypotheses 1 which is previously written as that PECS can improve verbal communication skills of senior high school adolescents

with intellectual disability with the effectiveness of Phase 3 compared to Phase 2 being 105.14%; Phase 5 compared to Phase 4 being 18.49%, and Phase 6 compared to Phase 5 being 43.11%. Based on this, it can be concluded that PECS can influence the verbal communication skills of senior high school adolescents with intellectually disability.

From the result of Hypotheses Testing 2 and 3, the researcher found that there was no change of verbal communication apprehension of senior high school adolescents with intellectual disability before and after the PECS's treatment (mean of pre- and post-test are 69.31 and 68.38) as well as between sexes (mean of pre- and post-test are 68.80 and 67.60 in the range of moderate verbal communication apprehension).

## Limitations of Research

The research method of PECS on the level of verbal communication apprehension in intellectually disabled adolescents with intellectual disability is still lacking in many countries so it is difficult for the researcher to look for related references. As a rare study, the researchers tried to evaluate some of the deficiencies in this study.

First, the use of PECS method is relatively short, only lasting 60 minutes per meeting for four days. Although the results show that there has been an increase in verbal communication skills but there is no difference in verbal communication apprehension after the PECS treatment. There is a possibility if PECS is performed longer and morerepetitive, the verbal communication apprehension of adolescents with intellectual disability previously in the moderate category will decrease to low category.

Second, the use of MECA measuring instruments are still rare for adolescents with intellectual disability in Indonesia. This makes it difficult to find a reference for comparison. Even though the reliability and validity test has been done, the researcher feels that it was not optimal in achieving the result of the research.

## Suggestions

Suggestions for schools are to improve the verbal communication skills of adolescents with intellectual disability, where the schools need to consider incorporating PECS method training in the lesson plan; the provision of PECS method should be done repeatedly to increase verbal communication maximally. There is also the need to make communication book for every child so that children can use it at school or at home.

A suggestion for other researchers for further research is the need to develop other therapeutic models for apprehension verbal communication of intellectually disabled teenagers/adolescents.

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