

# *The Use of Artive Application to Improve Children's Communication Skills*

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**Abstract**—Artive application is used as an intervention medium because it can stimulate children who have communication barriers to be able to communicate with their surrounding environment. The artive application is the latest break through technology from artists, which combines classical art with digital art. Artive is an artwork that can be accessed using a smartphone and offers extensive experience. Researchers in the world of education develop the Artive application by looking at its function that is focused on communication in children within the scope of learning. The purpose of this research is to help children with communication barriers to communicate what is desired to the surrounding environment. The method used is an experiment with the approach of Single Subject Research with A-B-A design. The target behavior in this study is that children can show what they want. The data obtained were analyzed through descriptive statistics, and displayed through graphs. Based on the results of the study, it is known that the use of artive application can improve communication skills in children. This is indicated by the increase in the mean of the target behavior. Thus, it can be concluded that the use of Artive application can improve children's communication skills with communication barriers.

**Keywords**—Artive application; communication skills; children with communication barriers

## I. INTRODUCTION

Communication is the exchange of verbal and non verbal messages between communicators and communicants to change behavior [1]Communication becomes the link between humans and other creatures that involve feelings and thoughts. Humans can meet their needs; by conveying goals and desires that are felt then processed through the mind. Communication has a very large and important function in human life. William I. Curtains in [2] states several functions of communication; namely as a tool of social communication; as a medium for delivering and channeling feelings or emotions; as well as a useful tool for creating and building relationships. Communication tools can be in the form of language and speech. Language is a communication tool that is very important for humans; because human language can interact with each other. Language can also increase knowledge and understanding of a desired information; so that more languages are mastered; the more

knowledge or information obtained. While speaking is a linguistic symbol which is a verbal expression of the language used by individuals in communication.

Concerning children with special needs; not all children with special needs have the same obstacles; including barriers to communication. It is what must be understood by people around children to be able to represent an effective form of communication to meet the needs of children in interacting. In children with communication barriers; delivery or channeling messages through verbal communication will be hampered because there is no interaction between communicants and communicators. For this reason; an alternative communication is needed so that the child can express what he wants. Alternative communication is a method or technique that can replace verbal communication in individuals who have obstacles in communicating verbally. One system that can be developed is through Augmentative and Alternative Communication (AAC) which is a tool used in communicating to children with special needs which consists of three components; namely communication techniques; symbol systems; communication skills [3]

The use of AAC is based on two types of communication. Communication without using a tool known as Unaided Communication and communication using tools or called Aided Communication. in the process. [4] states that "unaided communication describes ways in which information can be exchanged using the body rather than any aids or tools. When children or adults use communication aids or tools we call this aided communication. "In other words; the use of AAC can be adapted to the conditions and needs of individuals; communication with or without tools as a medium still has deep functioning and meaningfulness.

One of the media used as an alternative communication tool in this study is the application of Artive which; if associated with the above communication methods; then the use of Artive is included in aided communication. According to the creator of the application ; the Artive is as follows: "This is the new technology for linking classical with digital art." The digital layer opens the door to a whole new world of possibilities. Artists can take a journey in time and explain what lies behind; enhance the artwork or tell a story. Any smartphone or tablet can unlock this new world and offer an

extended and emotional experience. Briefly it can be explained that Artivive is a breakthrough technology from artists who combine classical art with digital art. Artivive works of art that can be opened using a smartphone. In this case children with communication barriers can communicate without having to speak; children are invited to interact through the Artivive application; showing what they want so that people around can know the intentions and desires of children without children trying to explain it verbally. The use of this application also refers to the child's ability to move; visual abilities; auditory; social; emotional and child pleasure factors.

The use of the Artivive application as a medium for implementing AAC can be said to be a breakthrough. However; the use of both high technology and low technology tools in AAC is very widely used and has the same purpose; namely the creation of communication. In its application it has the same results; namely individuals who have communication barriers can communicate with their environment by implementing alternative communication. Some of the research results that can be referred to are research conducted by [6] regarding the use of augmentative and alternative communication methods to improve self-help ability in children with autism (single subject research in 3 individuals with autism aged 4-6 years in Bandung's character developmental and learning center). The results of this study indicate that the ability of self-development of children who become subjects increases after being given intervention by using PECS tools. Besides; peers; the community and especially the repetition of learning at home by parents play a role in improving the self-help ability of autism children.

Subsequent research conducted by [7] regarding the use of alternative I-talk communication systems to improve the communication skills of cerebral palsy students is also a study by raising AAC as an alternative method of communication. The results in this study indicate that based on the results of the analysis there is an increase in the subject's communication skills after using an alternative communication system I-Talk. Academics do not only do the use of AAC as a medium of communication; A medical officer conducting research uses AAC for his patients. This research was conducted by [8] with the title of the influence of augmentative and alternative communication on communication and depression of aphasic motor patients. The results of this study indicate that AAC significantly affects the depression of patients on stroke with motor aphasia; but does not significantly influence the functional ability of communication. It means that AAC can be used as a way of communicating with someone who experiences communication barriers.

Referring to the presentation and the results of the research above; this study will look at the use of Artivive application as one of the methods developed in AAC to improve communication skills of children who experience communication barriers.

**II. METHODS**

**A. Research Design**

The method used was the experimental method; because this research was conducted to see the consequences of a treatment. In line with the above statement; [9] says that the experimental method; namely "a method that aims to obtain the data needed by seeing the results of whether or not there is a result of a treatment (treatment)"

To support efforts to improve communication skills in this study used an experimental design with a single subject research; better known as the Single Subject Research (SSR). SSR refers to research strategies that are deliberately developed to document changes in subject behavior individually. The single subject research design used

is ABA; which is a research design that has three phases namely the first baseline (A1); intervention (B); and the second baseline (A2) which aims to study the magnitude of the effect of a treatment given to individuals by means of compare baseline conditions before and after intervention.

**B. Research Variable**

Communication in this study acts as a dependent variable and the Artivive application acts as an independent variable. Communication skills of children with communication barriers are taken to be the problem under study given the importance of communication to build interaction with their environment. To improve the communication skills of children with communication barriers; an alternative communication tool was used; namely the Artivive application; which is an application or tool that can stimulate children to communicate what they want. This application can be accessed through a gadget so that anyone can easily use it. This research was conducted when the child carried out learning in the campus area. The target behavior was children can express their desires when they want to do an activity. Communication in this study acts as a dependent variable and the

**C. Location and Research Subject**

This research was conducted at one of the private universities in Bandung with one subject subject who was a student with communication barriers

. Research Instruments and Data Collection Techniques  
The research instrument is "a tool used to measure natural and social phenomena observed" [10]

**TABLE I RESEARCH INSTRUMENT**

Subject Name :				
Observer :				
Target Behavior : express desire				
Phase : A1-B-A2				
Session	Date	Start-Stop Time	Target behavior Frequency	Total Events
Information: *) criteria for achieving target behavior The subject is said to indicate if the subject: - Directs the index finger to one of the objects - Directs his hand to one of the objects - Move his head to one object - Move his body towards one of the objects **) Circle one				

The researcher used a test to collect data. The test used is a test of learning outcomes. Purwanto [11] stated that "learning outcomes test is a test used to assess the results of lessons that have been given by teachers to students or teachers to students for a certain period of time". The procedure performed consists of preliminary observations and observations during the study. The analysis carried out in the field of behavior modification is analysis in conditions and analysis between conditions.

D. Guide to the Use of the Artivive Application

Step 1

Open the official Artivive web by typing www.Artivive.com on browser applications such as Google Chrome; Mozilla; and other relevant browsers.



Fig. 1. Step 1

Step 2

Log In by entering your email address and password if you have registered. If not; please register first using the email address and password that will be used. Wait until the account is approved by the admin from Artivive.

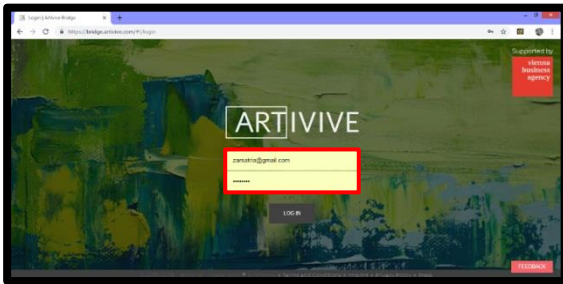


Fig. 2. Step 2

Step 3

If you already have an account on the official website of Artivive; we can enter the content of the image and video that we want by giving the name of the work project in the empty field and then selecting "Add Artwork" as a lock that we have made a name for our work. A note for trial / free users; the number of work projects is limited to only three files. In contrast to paid users who can store more than three files.

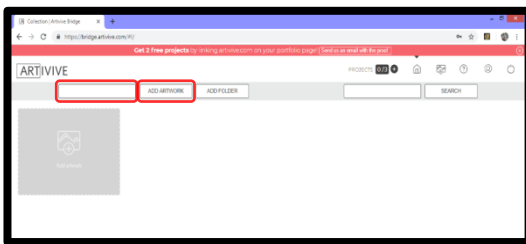


Fig. 3. Step 3

Step 4

Enter the image to be selected as the icon to be scanned by clicking "Select File" in the "Drop Image Here" box and enter the video content that will appear when the image is scanned by clicking "Select File" in the "Drop Video Here" box.

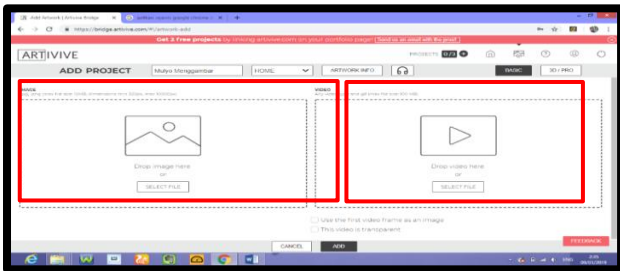


Fig. 4. Step 4

Step 5

After the image and video content to be used have been selected; then click the "ADD" button to upload and add our work files online via the Artivive web

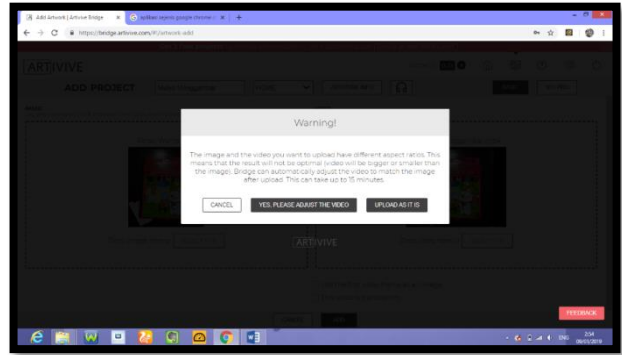


Fig. 5. Step 5

Step 6

If there is a warning about the difference in image and video size; then we can click on "Yes Please Adjust the Video" and if we will upload a file with a minimum size then click "Upload as It Is". Wait until the upload process is complete.

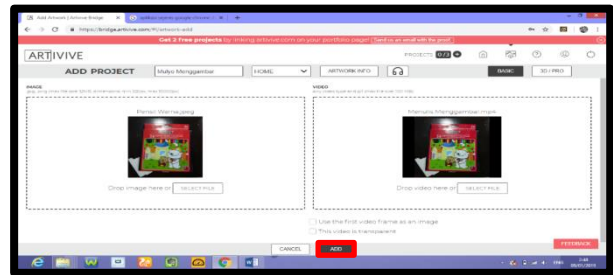


Fig. 6. Step 6

Step 7

The image file can already be used by scanning right in the part of the image that has been uploaded

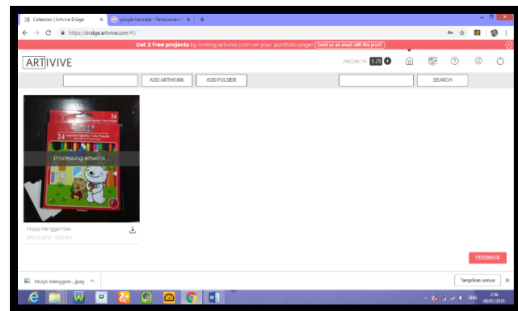


Fig. 7. Step 7

Step 8

Download your "Artivive" application on your smartphone through the Play Store.

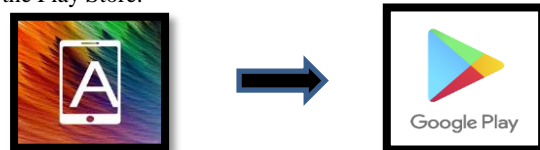


Fig. 8. Step 8

Step 9

Scan images that will be used using the Artivive application from your smartphone. Try to connect to the internet; so the videos in the picture can be viewed.

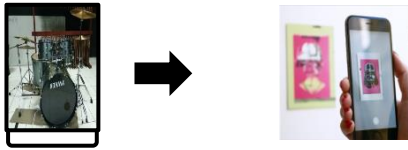


Fig. 9. Step 9

III. RESULT AND DISCUSSION

A. Research Result

In accordance with the target behavior in this study; namely expressing desire; the following is the data of research results relating to the target behavior:

Graphic 1

The ability to express desire on phase A<sub>1</sub>-B-A<sub>2</sub>

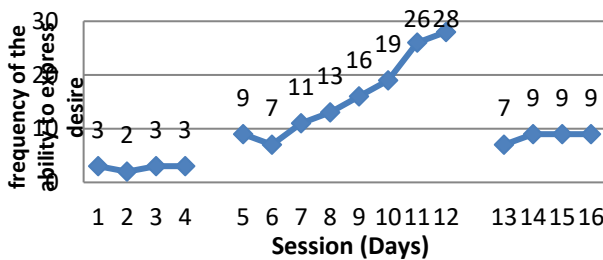


Fig. 10. Graphic 1

Graphics 2 Mean Level Frequency oo of the ability to express desire

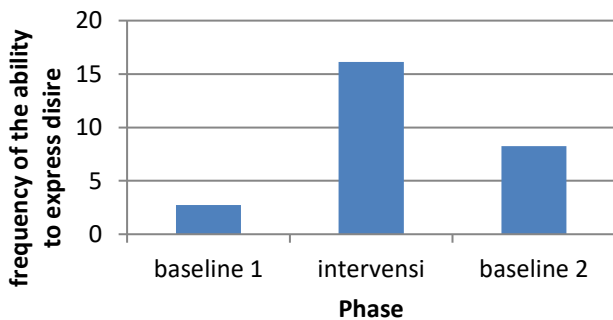


Fig. 11. Graphic 2

Data analysis in this study consisted of two parts; namely analysis in conditions and analysis between conditions.

Analysis in Conditions

Analysis of changes in conditions is an analysis of changes in data in a condition. Because this study used the A-B-A design; this analysis also consisted of three conditions

1. Length of Condition

TABLE II. LENGTH OF CONDITION

No	Target Behavior	Length of Condition		
		A1	B	A2
1.	Express desire	4	8	4

2. Direction Tendency

TABLE III. DIRECTION TENDENCY

No	Target Behavior	Direction Tendency		
		A1	B	A2
1.	Express desire	Stabilized	Increase	Increase

3. Level of Stability and Range

- a. Calculates the stability range of 15% (highest score x 0.15)

TABLE IV. CALCULATES THE STABILITY RANGE OF 15%

No	Target Behavior	Level of stability and range		
		A1	B	A2
1	Express Desire	0;45 (3 x 0;15)	4;2 (28 x 0;15)	1;35 (9x 0;15)

- b. Calculates the mean level (the number of values for each session in each phase divided by the number of sessions in that phase)

TABLE V. CALCULATES THE MEAN LEVEL

No	Target Behavior	Mean Level		
		A1	B	A2
1.	Express desire	2;75 (11:4)	16;12 (129:8)	8;25 (33:4)

- c. Using the upper limit (mean level + half of the stability range)

TABLE VI. USING THE UPPER LIMIT

No	Target Behavior	Upper limit		
		A1	B	A2
1.	Express desire	2;97 (2;75 + 0;225)	18;22 (16;12 + 2;1)	8;92 (8;25 + 0;675)

- d. Determine the lower limit (mean level - half of the stability range)

TABLE VII. DETERMINE THE LOWER LIMIT

No	Target Behavior	Lower limit		
		A1	B	A2
1.	Express desire	2;52 (2;75 - 0;225)	14;02 (16;12- 2;1)	7;57 (8;25 - 0;675)

d. Calculate the percentage of data points or percentage of stability (number of data points in range: amount of data)

TABLE VIII. CALCULATE THE PERCENTAGE OF DATA POINTS OR PERCENTAGE OF STABILITY

No	Target Behavior	Stabilized percentage (%)		
		A1	B	A2
1.	Express desire	100% (4:4) (Stabilized)	50% (4:8) (Variabel)	100% (4:4) (Stabilized)

4. *Changes (first data - latest data)*

TABLE IX. CHANGES (FIRST DATA - LATEST DATA)

No	Target Behavior	Changes Level		
		A1	B	A2
1.	Express desire	0 3-3 (=)	-19 9-28 (+)	-2 7-9 (+)

5. *Data trail (is a change from one data to another in a condition)*

TABLE X. DATA TRAIL

No	Target Behavior	Change level		
		A1	B	A2
1.	Express desire	(=)	/(+)	/(+)

**Inter-Condition Analysis**

The components for analyzing inte-conditions in this study consisted of:

1. *Changes in the direction and effect trends*

TABLE XI. CHANGES IN THE DIRECTION AND EFFECT TRENDS

No	Target Behavior	Direction And Effect Trends	
		B/A1	A2/B
1.	Express desire	/ (+) (-)	/ (+) (+)

The results of the analysis for the target behavior of the ability to express desire in the intervention condition (B) to baseline 1 (A1) indicate an ascending to horizontal direction. in phase B shows increasing data.

In phase A2 to B the level of direction tends to rise to ascending. these data indicate that the intervention has an influence on the subject; as evidenced after giving intervention the condition of the subject increased from before giving intervention in phase A1

2. *Change in Data Level*

TABLE XII. CHANGE IN DATA LEVEL

No	Target Behavior	Change in Data Level	
		B/A1	A2/B
1.	Express desire	28-3 25	9-28 -19

In this study it can be analyzed the data changes between conditions. In the case of intervention to the baseline 1 there is a

significant change in data; from a low level to a higher level with an increase of 25 points. This shows that the effectiveness of the intervention increases the target behavior of expressing desire.

Whereas from phase A2 to B there is a change in data data decline by 19 points; in phase A2 the data obtained is lower than the data in the intervention phase. but the A2 data remains higher than the A1 phase data and it can be concluded that the effectiveness of interventions to improve target behavior shows the desired object

3. *Overlap B / A1 (the number of data points B in the range A1: the number of data points in the condition B x 100%). Whereas A2 / B overlap (number of A2 point data is in range B: number of data points in A2 x 100%)*

TABLE XIII. OVERLAP B / A1 WHEREAS A2 / B OVERLAP

No	Target Behavior	Overlap	
		B/A1	A2/B
1.	Express desire	0 0 : 8 x 100%	50 2 : 4 x 100%

Whether or not an intervention influences the desired behavior change. On the target behavior reveals the desire that there is no overlap data in the intervention phase to baseline 1 (B / A1). In the A2 / B phase there is an overlap of 50%. The overlap data of 50% indicates that the intervention affects the desired behavior change.

**B. Discussion**

In this study the implementation of the Artivive application was chosen as one of the alternative communication media (AAC) that can provide a positive influence in improving the communication skills of the subject. Applications that contain learning content or daily activities in learning are packaged interestingly and simply so that they can be digested properly and understood by the subject. The use of the Artivive application is following the factors that must be considered in the AAC selection delivered by [11]; namely: 1) Accessibility; which is easy to understand and easy to read. The images used in the Artivive application use original photos from each of the available categories. Thus; it makes that easier for children to memorize each of the available images. 2) Learnability; AAC must be easy to learn. How to use the Artivive application by having one of the images or objects in question after that the researcher invites the subject to the desired activity. 3) Generalization; use symbols in general so that anyone who uses them can understand easily. Symbols used in the Artivive application are symbols that are familiar with children and able to be easily understood by children.

The application of the Artivive application as one of the devices used in AAC based on the results of the study has a positive influence in improving the communication skills of the subject. The problem in this study is that there are subjects who have obstacles in communication; so that in their daily lives on campus; students find it difficult to express their desires towards others. Likewise; people around him have difficulty understanding what the subject wants. This condition is what researchers found in the field so that the authors took this problem in this study.

Based on the results of the research that has been done; giving an intervention in improving the communication skills of the subject can be said to be successful. It is indicated by a significant increase in the subject's ability to communicate after giving intervention through the application of the Artivive application. One of the achievements was because the alternative communication process was carried out using interesting and appropriate applications in the classroom learning settings that were fun and made the subject feel comfortable; so that the subjects were also seen enjoying the process.

The results of this study are in line with previous studies conducted by [12] regarding the effectiveness of using augmentative and alternative communication (AAC) -based communication books in expressive language skills in exceptional grade VII autistic children in junior high school 1 Bantul ". Mangesti's research illustrates that by examining the results of data processing; overall it can be seen that the use of AAC-based communication books is effective or has a positive influence on children's expressive language skills.

In its application; the Artivive application has presented scenarios or stages that can be used as a reference for researchers or other parties who will use the application. Based on the research that has been done; besides of the advantages of this application. There are also some weaknesses of this application. These weaknesses include:

1. The free menu application can only be used as many as three themes to limit the subject to know or explore other menus that are possible to expand the opportunity for the subject to communicate.
2. This application can be used freely but paid. It can be an obstacle for parents or other parties who want to use the Artivive application to provide learning experiences to communicate for children with communication barriers.

Kangas & Lloyd [13] state that "alternative and augmentative communication (AAC) devices provide different means for individuals with speech or others". In other words; alternative and augmentative communication is a device that provides a means for individuals with language and speech disabilities to be able to interact and communicate with other individuals. Based on these opinions; the results of relevant research and the core results of this study; the application of Artivive can be one of the solutions used to communicate with children with communication barriers. With the positive results obtained from this study; it is expected that the Artivive application can be applied to children with communication barriers in other subjects.

#### IV. CONCLUSION

The Artivive application had a positive impact on increasing the target ability of the desired behavior. The intended behavior is the ability to express desires. The increase in the mean level indicates this.

In this study the intervention provided by the researcher through the Artivive application is how the subject can express his desires to those around him. With the application of the maknavive the subject

slowly shows a change in communication skills for the better. Subjects are accustomed to expressing their desires by showing the desired object to the lecturer or the people around him. Thus the results of this study can be concluded that the Artivive application can improve children's communication skills with communication barriers.

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