ABSTRACT

Autistic children have the right to education. Diagnosis to find out the learning media preferred by autistic children’s learning to run smoothly. The purpose of this research is to design and implement learning media as a tool for special education teachers to diagnose learning media that are favored by autistic children. The design learning media must pay attention to the characteristics of multimedia, special learning methods, and teaching aids that are favored by autistic children. In this research, the learning applied methods are Applied Behavior Analysis (ABA) and Picture Exchange Communication Systems (PECS). There are 4 types designed media, namely audio, video, animation, and static images. The experiment was carried with three research subjects aged 9-11 years. Then the data of the experiments are managed and analyzed based on qualitative method. The results show that the response and average focus of students while using the media are very good in the media video and animation. Besides, children prefer the bananas compared to the elephants. Learning media that have been built are proven to be able to diagnose media that are favored by autistic children.

Keywords: Special Education, Learning Model, Multimedia Learning, Qualitative

I. INTRODUCTION

Education is the right of all people including those who have special needs such as mental retardation, learning difficulties, hyperactivity, impairment, speech impairment, visual impairment, physical impairment, gifted children, and autistic children. Autism spectrum disorder refers to a class of neurodevelopmental disorders characterized by deficiencies in social interaction and communication, as well as the presence of repetitive behaviors, activities and interests (Golombek, Toth, & King, 2010).

Calculation, especially the initial calculation, provides the basis for developing mathematical understanding and is very predictive of subsequent mathematical achievement (Geary et al., 2013). To count from 1 to 10 and more is a challenge for many students with significant cognitive disabilities, even through high school years (Bashash, Outhred, & Bochner, 2003). In developing an understanding of numbers, students with significant cognitive disabilities need experience, practice, and the opportunity to review numbers several times through repetition with variations (Greer & Ericson, 2019). Then the learning media are needed to support the learning process for autistic children.

There are several studies on multimedia-based applications that have been developed to help autistic children understand in learning and improve their abilities. Multimedia in Education for Special Education (MESE) to arithmetic have been developed by (Munir, Kusnendar, & Rachmadhani, 2016), to reading skill (Fauzia, Rohendi, & Riza, 2016), and memorizing (Munir et al., 2018). A multimedia developed by Lin et al. (2013) is being an online standard and comprehensive assessment tool for early identification of the characteristics of language learning for autistic children. Game-based virtual reality and augmented reality has a positive impact on cognitive
improvement in mathematics subject (McMahon et al., 2020; Bridges et al., 2020). Computer Multimedia Assisted play a positive role in the selection of suitable computer assisted annotation modes for students of different English levels (Han and Niu, 2019). Research conducted by Wynkoop et al. (2018) improved living skill of students with autism by using video modelling interventions. Then the research conducted by (Daouadji, Amina, & Fatima, 2018) developed a game for autistic children called medius by involving two methods of communication and learning namely the Picture Exchange Communication System (PECS) and Applied Behavior Analysis (ABA). This game teaches geometric shapes and colors. The information obtained can determine the preferences, habits, and characters of autistic children involved in the experiment. Furthermore, Noor et al. (2017) it concerns the development of visual perception diagnostic games as a tool for special education teachers to diagnose visual perception problems designed for autistic children. Based the study above, it can be proven that interactive multimedia can be used by autistic children as a therapeutic or learning media. However, no one knows the type of learning media that are favored by autistic children. In line with research by Noor et al. (2017), researchers intend to create learning media for autistic children in order to diagnose their focus and interest in audio, video, animation and static images that are packaged in academic learning of reading and arithmetic according to characteristics of autistic children. The method used in this study is the Applied Behavior Analysis (ABA) and the Picture Exchange Communication System (PECS). The ABA and PECS methods are effective for autistic children regardless of their type of autism (Daouadji, Amina, & Fatima, 2018).

In the example text, a good font to use is a round font that has enough space between letters. The appropriate font type can be Arial, Comic Sans, Verdana, Helvetica, Tahoma, or Trebuchet (Omar & Bidin, 2015). Text size must be large, font size 14 will be good. The text must be written clearly and can use Arial typeface with line spacing (Pavlov, 2014). Color for the learning field is considered important enough to note. Using bright colors do not disturb the children and give a calm and relaxed appearance (Castillo et al., 2016). Use soft and light colors, do not use bright colors, the letters and background must be contrasted, for example, the dark letters color of bright backgrounds (Pavlov, 2014). Autistic children are very sensitive to certain colors and they will respond very much like blue, dark yellow and green because these colors have a positive effect to motivate them (Cocks, 2008).

The most useful teaching method is when images, symbols and words are combined in a multimedia. Multimedia contains a variety of images, symbols and animated images to support children (Khan, 2010). The characters used in multimedia use animation so that it can create an attraction for children (Mower et al., 2011). The game uses real images which are in accordance with life (De Urturi, Zorrilla, & Zapirain, 2011). Then the images contained in the developed multimedia use the images that correspond to the real world. The images used can be animated pictures of the results themselves or in the form of photos, elements of small and inconspicuous symbolic images. Images and words used together to help them understand information, thus images must be easy to understand. If images and text are used together then images must be located on the left, make sure the image size is as large as possible (Pavlov, 2014).

The integration of sound-based technology in a computer-based virtual platform is an important component to enable multimodal interaction between children and autistic patients (Min, Theng, & Ann, 2015; Marchi et al., 2015a). Educational multimedia language learning on each question and statement is read aloud by the computer (Lin et al., 2013). Audiometric air conduction thresholds are measured for the left and right ears for octave spaced frequencies from 250 to 8000 Hz (Remington & Fairnie, 2017). The recording was taken at a 96 kHz sampling rate and 16 bit quantization (Marchi et al., 2015b).

User interface design is an important phase because children will be able to have a better understanding of learning material by using an appropriate user interface. The user interface design must meet the needs of children that are entertaining, interactive, using simple instructions, having little complexity, and consistent (Azahari et al., 2016). The user interface used for autistic children is clear and simple (Musika et al., 2014). Thus, the design should be as simple as possible without leaving an interesting touch on it (Kamaruzaman et al., 2016).

Today, computers are the most easily adapted technological devices available for autistic children. Various computer games have been developed to help them manipulate their disorder. The game is very effective in the field of therapy and education for autistic children (Christinaki, Vidakis, & Triantafyllidis, 2014). The game developed by Rahman et al. (2011) is one that teaches autistic children to read because each letter displayed simultaneously with a real picture that represents the letter. The LeFCA game produced four games for development, namely matching, showing and labelling skills, which are considered as the main skills needed for learning (Hulusic & Pistoljevic, 2012). Basically, children who are motivated will do better learning. Besides,
games are also an effective way to engage students and make them active in learning (Kamaruzaman & Jomhari, 2013; Riza et al., 2020).

Therefore, the purpose of this research is to design and implement audio, video, animation, and static picture learning media for autistic children with ABA and PECS methods on reading counting materials, as well as observing and analyzing the responses of autistic children to the learning media of audio, video, animation, and static images. This research applies a qualitative research approach.

Qualitative research is considered as an appropriate method for dealing with children (Dockett, Einarsdottir, & Perry, 2009) and individuals with special needs (Cocks, 2008). The stages of the research conducted were the design, development of instructional media, and implementation. The design stage conducts field studies and literature studies. The learning media stage develops Decide, Design, Develop, and Evaluate (DDD-E) model. Multimedia for autistic children is designed with multimedia features of autistic children. The media characteristics of autistic children are based on text, color, image, audio, user interface, and games.

II. DESIGN AND IMPLEMENTATION

The development of learning media models is carried out based on the study of literature. The model of learning media for autistic children can be seen in Figure 1.

![Figure 1](image1.png)

In term of learning media, we build four types of media summarized in the following Figure 2.

![Figure 2](image2.png)
The following is an explanation of the media scheme in Figure 2:

(1) **Audio:** This audio media is about two people who have mutual dialogue between women and men. They talk about reading material. The theme of the location is the forest and the object used is elephant. The applied learning model is ABA. The initial stage is material about descriptive texts about elephant. There are two descriptive texts. In the first descriptive text, there will be a dialogue between women and men who tell a brief story about elephant descriptions and in the second descriptive text there is a descriptive explanation by 1 speaker only. In the second stage, the female speaker gave 1 question for evaluation material to children. After the female speaker gives a question, then she is given a 5 second pause to see whether autistic children respond (answer) or not, then the female speaker gives the same question and she is given a 5 second pause, then there will be a male speaker answering the question in order to be rewarded. The main goals in this media are that children listen and they are able to participate in learning activities and look comfortable.

(2) **Video:** This video media contains counting lessons. This media uses the theme of the location of the forest with an elephant as the object. The applied learning model is ABA. In this media there is a video in which contains a teacher with the help of a paper display with pictures of elephant and there are numbers in it. The initial stage the teacher will introduce natural numbers 1 to 10 accompanied by the number of pictures of elephant. The second stage the teacher will give questions to children about the number of elephants, then a 5 second pause the teacher will give the same question, then a 5 second pause will be given the answer. In this video media real learning tools are needed where later students will be given pictures of the number of elephants.

(3) **Animation:** This animation media contains reading lessons. This media uses the theme of the location of the garden with banana as the object. The applied learning model is PECS. In the initial stage, the media present a descriptive text material about banana. After completing the material, students are able to name the fruit that was previously told in descriptive text by selecting words that match the answers. The second stage is the evaluation which consists of 3 mini games. In mini game 1, students are able to show the name of the fruit and the shape of the fruit in descriptive text. In mini game 2, students are able to identify letters in the fruit picture, by way of students completing letters into words that are correctly adjusted to the fruit picture that appears. In mini game 3, students are able to pair fruit images on the drop target. When students answer correctly, happy expressions will appear, whereas when students answer incorrectly, sad expressions will appear.

(4) **Image Static:** Static image media is about counting. This media uses the theme of the location of the garden with the banana as the object. The learning model used is PECS. The initial stage in this media is the introduction of numbers from 1 to 10 accompanied by the number of images of bananas accompanied by audio. The next stage is evaluation, consisting of 1 oral question and 3 mini games. In oral questions, students are able to mention number 1 to 10. In mini game 1, students can show number 1 to 10 according to the questions ordered, in each number there are a number of bananas according to the numbers shown. In mini game 2, students are able to
In the previous stage, it was still in the form of an interface design of the learning system that would be developed so that no commands or functions were included. Therefore, at this stage, coding will begin to enter functions as expected. The development of this media uses Adobe Flash CS6.

III. EXPERIMENTAL STUDY

In conducting an experimental study, the research scenario is needed. The scenario consisted of seven stages, namely determining the object of research, approach to the object of research, introduction of media, teaching and learning activities, and interviews with teachers. Stages of the research scenario can be seen in Figure 5.
Figure 5 explains each stage carried out by the researcher in implementing the research scenario. The first step is a field study to Al-Hikmah special school in Padalarang Indonesia. This observation was carried out using the interview method conducted to the Principal and Teacher. This observation aims to get a problem related to the learning process of autistic students regarding material that is difficult to teach, difficulties faced in learning, and media that are often used in learning. Next, determine the objects of research, the objects of research are students in classes II, IV, and V with ages 9 to 11 years. The identity of each child can be seen in Table 1.

Table 1. Students’ Characteristics

<table>
<thead>
<tr>
<th>Initial Name</th>
<th>Gender</th>
<th>Age</th>
<th>Characteristic Student</th>
</tr>
</thead>
<tbody>
<tr>
<td>SH</td>
<td>L</td>
<td>9</td>
<td>Non Verbal, able to follow instructions, able to pair, able to point out, not yet able to understand the contents of the story.</td>
</tr>
<tr>
<td>SJ</td>
<td>L</td>
<td>10</td>
<td>Verbal, able to follow instructions, able to pair, able to point, independent.</td>
</tr>
<tr>
<td>ER</td>
<td>L</td>
<td>11</td>
<td>Verbal, able to follow instructions, able to pair, able to point, independent</td>
</tr>
</tbody>
</table>

The next step is the introduction of the media to students. In the learning media students will be given four types of media, namely: audio, video, animation, and static images. Students use these media one by one. Students are asked to listen to all instructions. The teacher as a facilitator observes and helps students if there are students who have difficulty using learning media. The researcher observes the expressions, actions, behaviour, and characteristics of students.

In the final stage, the researcher interviewed the teacher regarding interactive media used in the implementation of teaching and learning activities. The results of observing students’ and teacher’s responses are then used as a reference for further media development.

ABA and PECS learning methods are implemented. The most widely used ABA technique in learning is Discrete Trial Training (DTT). DTT is teaching that usually only lasts for 5-20 seconds, and it must be carried out by a teacher and a child in an environment free of distractions. DTT is a method of teaching with steps that are simplified and structured. DTT stages begin with instructions and end with rewards. Three times the instructions with a grace period of 3-5 seconds for the 1st and 2nd instructions. There are six phases in PECS: Phase I: Initiation in Communication, Phase II: Expansion of Image Use, Phase III: Choosing Messages in PECS, Phase IV: Expanding requests with Attributes, Phase V: Teaching Answering Short Questions, and Phase VI: Teaching Commenting (Riza et al., 2020).

IV. RESULTS AND DISCUSSION

After making observations, the learning media are first validated by experts using LORI. The results of media validation by expert 1 have an average of 90.56%, while those by expert 2 have an average of 82.04%. So that the average evaluation criteria obtained by experts 1 and 2 is 86% and this media can be categorized with the title "Very Good".

The implementing media was conducted for two days. Researcher made observations on each student in terms of focus, emotions, and behavior. In the interactive media that was built, the researchers had four media, namely audio, video, animation, and static images. So that observations were made from each of these media. Students give different responses from each media displayed.

During the process of experimental activities, the researchers observed the duration of the student’s focus while using learning media, students were given time to use audio media for five minutes. During these time students...
calculated the average focus of learning using audio media. The average duration of student focus can be seen in Table 2.

Table 2. The average duration of a student's focus on media

<table>
<thead>
<tr>
<th>Initial Name</th>
<th>Average duration of a student's focus</th>
<th>Audio</th>
<th>Video</th>
<th>Animation</th>
<th>Static Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>SH</td>
<td>5 minutes</td>
<td></td>
<td>11 minutes</td>
<td>5 minutes</td>
<td>13 minutes</td>
</tr>
<tr>
<td>SJ</td>
<td>3 minutes</td>
<td>11 minutes</td>
<td></td>
<td>5 minutes</td>
<td>15 minutes</td>
</tr>
<tr>
<td>ER</td>
<td>3 minutes</td>
<td>10 minutes</td>
<td>5 minutes</td>
<td></td>
<td>15 minutes</td>
</tr>
</tbody>
</table>

Note: children look bored and want to do other things outside the media

In Table 2, it can be seen that student SH can focus on audio media from the beginning to the end of the media with an average focus of five minutes. As long as student SH using the media, he can focus but do not understand the material presented. Student SJ has an average focus of three minutes because SJ focus is shifted to other things such as looking to the right and left. Student ER has an average focus of three minutes because ER talks about things outside the material, even ER invites the observer to talk. So it can be concluded that the audio media is less effective to be a learning medium for autistic children.

In video media, students are given 11 minutes. The average duration of student focus can be seen in Table 2. In Table 2 also we can see SH and SJ can focus on video media from the beginning to the end of the media running with the average focus of 11 minutes. SH and SJ are not distracted. But unlike ER, he has an average focus of 10 minutes because ER talks about anything other than material. So, it can be concluded that video media is effective as a learning media for autistic children.

In the animation media, students are given five minutes. It also can be seen that SH, SJ, and ER are focusing on the animation media from the beginning of the media running to the end of completing the mini-games. So, it can be concluded that the animation media attract the attention of students to focus. The attention will not be distracted from the beginning of the material to completing the mini-games.

In a static image media, students are given 15 minutes. In Table 2 also we can see that SJ and ER can focus on the static image media from the beginning to the end. In contrast, SH has an average focus of 13 minutes because SH wants to do other things outside of using the media and the child looks bored wanting to get out of the chair. To refocus the children to the media, it takes them 2 minutes.

In addition to observing the duration of the child's focus, researchers observe the emotional feelings of students. Researchers observed facial expressions, body expressions, and vocal expressions of students while using learning media. Assessment of emotional feelings is done by the observation when the children are given behaviour in the form of audio learning media. The results of observing emotional feelings towards audio media can be seen in Table 3.

Table 3. Emotional feelings towards media

<table>
<thead>
<tr>
<th>Initial Name</th>
<th>Emotional Feeling Toward Media</th>
<th>Audio</th>
<th>Video</th>
<th>Animation</th>
<th>Static Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>SH</td>
<td>Facial expressions are not excited when the audio media is playing, looking towards the teacher.</td>
<td></td>
<td>Smiling, laughing, saying words.</td>
<td>Smiling when he saw the character of a boy, shouted when given a reward of &quot;great&quot;, clapped, danced by moving his hands, and said the words.</td>
<td>Smiling when given a &quot;great&quot; reward, clapping, saying words, and facial expressions look bored.</td>
</tr>
<tr>
<td>SJ</td>
<td>Smiling, looking at the teacher.</td>
<td>Smile, interact with</td>
<td>Smiling when given a &quot;great&quot; reward, clapping, following the</td>
<td>Smiling when given a &quot;great&quot; reward, clapping, following the</td>
<td></td>
</tr>
</tbody>
</table>
During using audio, each student has different emotional feelings. SH’s facial expression seemed uninterested while the audio media was playing. SH looked more towards the teacher. SJ smiled when the sound first appeared but it wasn't too long, SJ seemed unfocused while using the audio because his body could not be still and his eyes focused on the other direction. ER’s facial expression seems uninspired when the beginning of the media is played and often says words other things outside the material. Therefore, it can be concluded that children with autism give a negative response to audio media.

During using video media, all students were seen smiling, laughing, and interacting with videos. Students seem happy and very enthusiastic about video media. Students do not look bored while learning to use video media in progress. So, it can be concluded that autistic children give more positive responses to video media.

During using the animation media, students showed happy expressions. SH smiled when he first saw the character of a boy. SH seemed happy with the character of a boy, as well as SJ and ER doing the same thing. SH, SJ and ER say the words when the animation is running, they even mention the word “banana” repeatedly. In the animation media there is a mini game where the child must complete the mini game. As long as students use the mini game, all students look happy, especially when getting a reward, the reward says “you are great” and students repeat the word “great”. All students looked very happy even SH danced by moving their hands, SJ clapped and followed the head movements of the boys’ characters, and ER laughed and followed the boys’ head movements. Then it can be concluded that students provide positive responses to the animation media during learning.

During the learning process using static drawing media all students showed happy expressions, but in the middle the SH appeared to be bored, even the SH wanted to get out of the chair and wanted to do other things outside the learning media, but the teacher helped so that the SH could refocus on the static drawing media finally SH wanted to focus again on the media after getting persuasion from the accompanying teacher. For SJ and ER it looks normal, no happy expressions are shown, but when given a reward the child can smile. Then it can be concluded that students do not give a positive response to the static image media.

Student behaviour varies in using learning media. Assessment of children’s behaviour by observation is done when children are given behaviour in the form of learning media. The observation results of student behaviour toward audio media can be seen in Table 4.

**Table 4. Student behaviour towards audio media**

<table>
<thead>
<tr>
<th>Initial</th>
<th>Student behaviour towards media</th>
<th>Video</th>
<th>Animation</th>
<th>Static Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SH</td>
<td></td>
<td>(1) Speaking responds to the teacher in the video.</td>
<td>(1) Talking about bananas.</td>
<td>(1) Talking about bananas.</td>
</tr>
<tr>
<td></td>
<td>(2) Student sits on a chair, do not get out of the chair during the learning process.</td>
<td>(2) Shout when successfully completing the media stages.</td>
<td>(2) Applause when successfully completing the media stage.</td>
<td></td>
</tr>
<tr>
<td>SJ</td>
<td>(1) Look and focus towards other than the media.</td>
<td>(3) Applause when successfully completing the media stage.</td>
<td>(3) Student sits on a chair, do not get out of the chair during the learning process.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2) Student sits on a chair, do not get out of the chair during the learning process.</td>
<td>(4) Move the head following the movements of the boy’s character</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(5) Move the head following the movements of the boy’s character</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1) Talking about bananas.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(2) Move the head following the movements of the boy’s character</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(3) Applause when successfully completing the media stage.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(4) Ask to repeat the media.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(5) Student sits on a chair, do</td>
<td></td>
</tr>
</tbody>
</table>

www.turkjphysiotherrehabil.org
During the use of audio media all students sit on a chair and do not get out of the chair during the learning process. SH and SJ silently did not say the words while learning took place, nothing else was shown. However, it is different from ER, during the learning process ER is accompanied by talking about other things besides the content of the story. SJ sees and focuses towards other than the media.

During using video media, all students sit on a chair and do not get out of the chair during the learning process. SH, SJ and ER spoke in response to the teacher in the video. They seem enthusiastic about learning to use video, there is no behaviour that describes they do not like video media.

During the use of animation media, all students sit on a chair and do not get out of the chair during learning so that they can focus on learning. SH, SJ, and ER often talk about bananas and even do the movement of holding a banana and how to eat it. This indicates that they are more enthusiastic about bananas than elephants in the audio and video media. Students applaud when successfully completing the mini game. Students move their heads following the movements of boys' character expressions when given a reward, this indicates that the child is happy with the character, even SH dances along with the head movements. After the animation media is finished, SJ and ER ask to repeat the animation media indicating that they are very happy with the media. Based on the behaviour exhibited by students, it can be concluded that children show happy behaviour towards the animation media.

While using static drawing media, all students sit on their chairs and do not get out of the chairs during learning, but the SH had revolted to get out of the chair because he seemed bored so he wanted to do something else outside the media. Just like in animation media, students applaud when successfully completing a mini game and the child recites bananas repeatedly even after the media is finished. Based on the behavior exhibited by students, it can be concluded that students are not fully happy about static image media.

In the use of instructional media, each student has different characteristics. When conducting research, researchers observe that each child's characteristics differ in terms of the use of instructional media. Data observations of researchers against students during learning using learning media can be seen in Table 5.

Table 5. The characteristics of each individual towards the media

<table>
<thead>
<tr>
<th>Initial Name</th>
<th>Media Use</th>
</tr>
</thead>
</table>
| SH           | (1) Using the media, must still be accompanied by a teacher.  
(2) There is no response when using audio media.  
(3) Happier response to video and animation media.  
(4) Prefer games with a pairing category either in animated media or static images.  
(5) Tend to look bored when using static image media and want to do other things outside the learning media.  
(6) More likely to say "bananas" when using animated media and static images, and even say "bananas" when learning to use media has finished. |
| SJ           | (1) Using the media sometimes, must be accompanied by a teacher.  
(2) When using audio media, children tend to focus on other things outside of audio media.  
(3) Happier response to video and animation media.  
(4) More focused and silent when playing games with the pairing category, the game is a type of drag and drop game the child is able to do independently.  
(5) Tend to look bored when using static image media.  
(6) Understand in using all stages of animated media and static images because they are able to complete each mini-game with good results.  
(7) More likely to say "bananas" when using animated media and static images, and even say "bananas" when learning to use media has finished. |
Autistic children respond more video and animation media. In addition, they tend to like bananas because they are often said and even exhibited when eating them. Another thing that can be seen is that autistic children prefer games because this makes autistic children smile and laugh, especially when happy expressions come out and say "you are great" when completing the game correctly, even the child follows the expression movements.

Based on interview with teacher, the learning media can be used to diagnose the media that autistic children like. From the results of the study it was seen that all students more quickly accepted learning through video or animation media. This can be seen from the expressions of students who look happy and laugh when using the media.

V. CONCLUSION

In designing learning media for autistic children, characteristics of multimedia for autistic children, special learning methods for autistic children, and teaching aids should be taken into account. Multimedia characteristics for autistic children related to text, color, images, audio, and user interface. In implementing learning media for autistic children, it is necessary to provide an introduction to the media and guidance and direction at all stages of the learning media, because autistic children tend to lack of confidence when they first try so they need to be accompanied by someone trusted. Learning media that are suitable for autistic children are mobile visual media such as video and animation because children give positive responses such as smiling and laughing, even they respond to content from videos and animations. In addition, students look more enthusiastic about bananas than elephants, this is evident from the attitude of students that students say bananas repeatedly even after learning to use the media. In terms of reading comprehension, children need a considerable amount of time to understand reading texts, while in terms of numerical understanding children can follow and be able to answer all questions. Students look happy even laughing when given a reward when completing the game.

REFERENCES