

THE DESKTOP-BASED NOUN INTRODUCTORY INTERACTIVE MULTIMEDIA APPLICATION FOR AUTISTIC CHILDREN IN SLB NEGERI CILEUNYI

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ABSTRACT

SLB Negeri Cileunyi is a special schools that provide education for children with special needs such as developmental impairment, visual impairment, ADHD and autism. The learning method in SLB Negeri Cileunyi still uses convention methods, the teacher submits the material only using textbooks and modest props until the autistic students can understand. Autistic students need a long time to understand words and spellings per syllable, the material delivery methods less giving an impact that causes autistic students feel bored and bored when they receive the material and lack of understanding of the material presented, because autistic children have obstacles in understanding sentences in reading and syllables. The noun introductory application will give the overview with desktop-based computer media that show the material of spelling lesson through picture and animation. There are also a games to stimulate thinking power, improve children's concentration, and sharpen the brain. Flash card method is the teaching method that can give to autistic children as a games for introducing the letters and words. Based on the research result and the testing with Blackbox and questionnaires using likert scale method which has been done it can be concluded that the respondent stated the application make the learning of spelling lesson easier, the interface easy to understand and the application is easy to use for them due to an increase in the average grade of autistic students in reading and spelling material by 22,3 from 48,8 into 71,1.

Keywords : Autism, Introduction to Syllables, Flash Cards, Desktops, Multimedia, Skala Likert.

1. INTRODUCTION

Autistic children have an inability to interact with others, disorders of the speaking, which is shown by the mastery of language is delayed, the echolalia, the exact opposite of the word, there is the activity of playing the repetitive and stereotype, from the symptoms these children with autism have

difficulty in understanding learning, especially in terms of reading[1].

Based on the results of observation and interviews with one of the teachers in the special schools of the Country Cileunyi that the learning activities in SLB Negeri Cileunyi is still using conventional method that teachers teach in the way one teacher with two students or one teacher with three students, where the teacher convey the material using only the textbooks and teaching aids improvised by the way repeating the word and spelling per syllable objects until the students with autism can understand the word and spelling per syllable of the noun. Students with autism need a long time to understand the word and spelling per syllable objects, visible from the observation passive active that the method of delivery of the material gives less impact interactive cause students with autism who feel saturated and bored in the receipt of the material and the lack of understanding the material presented. The problems that exist at this time is children with autism have obstacles in understanding the sentence in the reading passage and syllable objects, it is seen from the results of the final assessment of the student's academic ability. Students who received final grades with the criterion of "capable of (M)" then the student is otherwise able to understand the material and the value of the average standard to achieve these criteria, is 60, while the students who got the final value by the criteria of "Able to with the help of (MB)" has a default value for achieving these criteria is 55 as well as the "Not Able (TM)" has a default value for achieving these criteria is 50 then declared not able to understand the material. Of the 25 students children with autism, there are only 6 children in the category "able (M)", then the 9 kids in the category of "able to with the help of (MB)", and 10 children in the category of "not able (TM)". From the results of the end of the academic assessments it can be concluded that the 19 students with autism can not understand the learning material that there is.

With regard to the above problems, to improve the learning interest of children with autism is required learning to play/play therapy. Play therapy can contribute to the improvement of ability and skills of social interaction of children with autistic

disorder[2]. Play therapy Flashcard can be given to autistic children as a game to recognize letters and words. The pictures Flashcard with interesting colorful kids, so children with autism are able to remember and easily understand pictures with the colors that he had seen[3]. The method of VAKT is a method of learning that involves the visual (sight), auditory (hearing), tactile-kinestetik (motion-sensing)[4]. To provide a way of learning of children with special needs in accordance with the theory presented by R. D Agustia and I. N Arifin that the method of VAKT can be combined with the method of Flashcard learning . Based on the results of observation and interviews with Mothers Momi Mahdaniar as Teachers in the special schools of the Country Cileunyi there is a technology owned by specialized Computer Lab that has 10 computers, it will be used as a system of interactive learning media based desktop with application of the Method of the Flashcard and the Method of VAKT that will make the learning process interesting and interactive.

1.1 Learning Media

Learning Media is a source of learning and can also be interpreted by a human and objects or events that make students may acquire the knowledge, skills or treatment. In addition to tool in the form of the form of objects, which are used to deliver the message in the process of education as a central figure or model in the process of educational interaction is an educational tool which also should be calculated.

According to Oemar Hamalik (1986), learning media is the communication interaction will run smoothly and achieve the maximum results, if using a tool called a communication medium[5].

1.2 Play Therapy

Playing is done with the voluntary/spontaneous, to get satisfaction or excitement. Play is fun and exciting. Play with imagination and fantasy, allow the child to explore their world, first through their feelings and then use your mind and logic. According to Landreth (2001), the play is a series of behavior that is complex and multi-dimensional that changed significantly as the growth and development of the child.[6]

1.3 Methods Flashcard

Flashcard can be given to autistic children as a game to recognize letters and words. The pictures Flashcard with colorful flashy will be liked by children, so that children with autism are able to remember and easily understand the images and the colors that he had seen[3].

1.4 Desktop Based Application

Desktop based application is an application that can run its own (independent) without the use of

browser or internet. Based on information obtained from Informations Communications Group and Microsoft Corporation.

1.5 Autistic

According to Dr. Hardiono, autistic disorder is characterized three main symptoms, namely impaired social interaction, impaired communication, and behavior that is stereotyped. Of these three things that are most important to the child autism itself is a social interaction of the child.[1]

2. RESEARCH CONTENTS

2.1 Analysis Of Current Procedures

The analysis procedure that is running is divided into two parts, namely the procedure of granting material, and the procedure of exercises..

1. Procedures for granting material

Here are the steps of the procedure for granting material :

1. The teacher gave the material about the reading and begin with the introduction of the letters of the alphabet to spell, and forms of objects that exist around
2. The teacher gives the material to show the media pictures and objects around
3. Students receive material that has been given by the teacher
4. The teacher asked the students about the understanding of the material already described
5. If the disciples still not understand what has been explained then the teacher re-explain the material being taught
6. If the pupils already understand and can understand what has been taught then the learning process has been completed

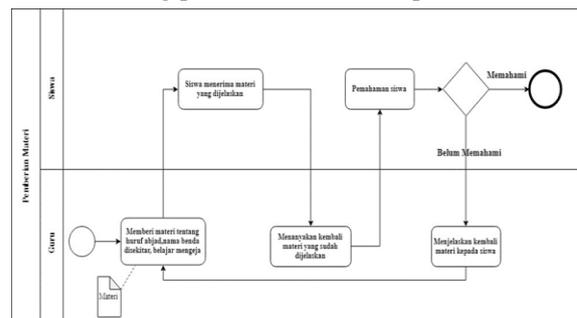


Image 1 Procedures for granting material

2. The procedure exercises

Here are the steps of the procedure for granting about :

1. Teachers to create questions about the material that has been given
2. Teacher give question about material that has been given
3. Students receive the questions given by the teacher

4. Students work on the problems given by the teacher
5. Students who have finished work on a matter is then submitted to the teacher
6. Master rate sheet exercises that have been undertaken by students

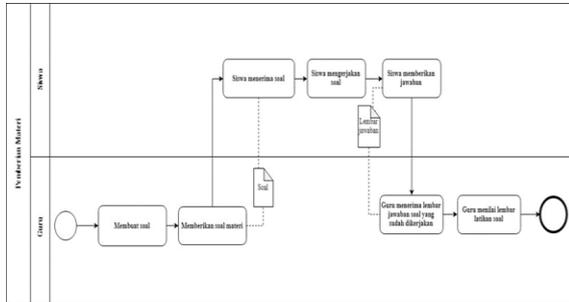


Image 2 The Prosedur Exercises

2.1 Analysis Of Applications Built

The application to be built using a method pembelajaran Flashcard, because this method can help the child in learning to read to be interesting and interactive, besides it's a desktop based application that is devoted to students with autism in learning to read with playing method Flashcards is a game to recognize letters and words with pictures with interesting colorful[7]. Image analysis will be built is shown as the following picture :

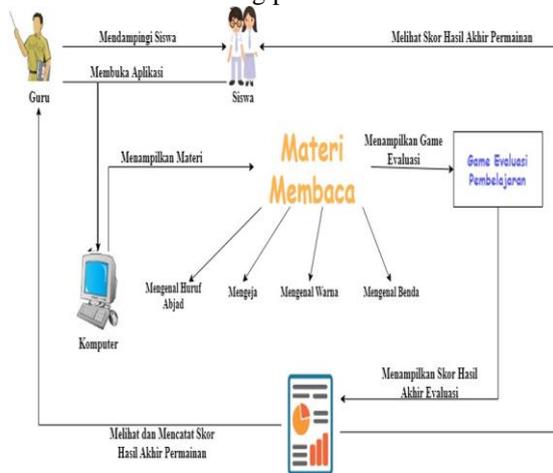


Image 3 Model Application

Here is the flow in the system Application Read the syllables by the method of a Flashcard that will be built :

1. Teachers accompany the students to open learning app with the help of the computer as a supporting application, then the students were instructed to pay attention to the instructions that will be given by the teacher.
2. The teacher began to introduce the features of the application Read the syllables as features to recognize letters of the alphabet, to spell, recognize colors, recognize objects, and game evaluation of learning.

3. Students will begin to learn to use the application if the student already understand what diintruksikan by the teacher previously.
4. Students will start playing the game the evaluation when students are already learning in the features get to know the alphabet, to spell, recognize colors, and familiar objects students will play the game evaluation while accompanied by a teacher
5. The teacher will see the results of the game evaluation of learning and give congratulations to the students who already play the game the evaluation of learning.

2.2 Analysis Of System Architecture

The application to be built using a method of the Flashcard, because this method can help the child in learning to read to be interesting and interactive, besides it's a desktop based application that is devoted to students with autism in learning to read with playing method Flashcards is a game to recognize letters and words with pictures with interesting colorful[8].

Methods the Architecture of the System to be built consists of several components, namely regarding the learning materials are presented a variety of modalities. Modalities used are visual (sight), auditory (hearing), kinesthetic (movement), and tactile (tactile). A fourth known as VAKT. System architecture in the development of this app introduces and teaches how to read to train your memory students with the modalities on the methods of the FlashCard is shown in the following image :

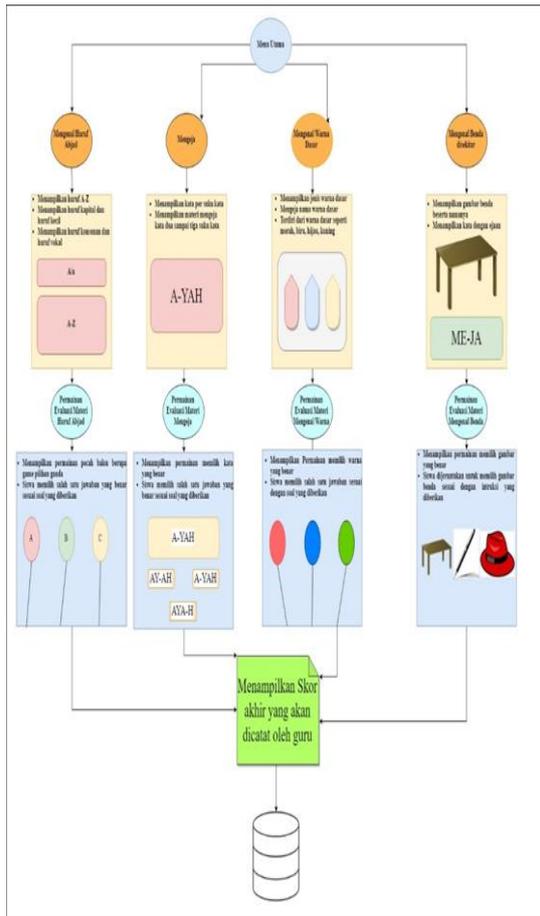


Image 4 System Architecture

2.3 The Analysis Of The Coverage Of The Material On The System

The following is the scope of the material to be applied on the system can be seen in Table 1.

Table 1 Coverage Of The Material on The System

No	Material	Material Details
1	About the letters of the alphabet from A-Z	<p>Get to know the letters of the alphabet from A-Z :</p> <ol style="list-style-type: none"> know the consonant letter: <i>b, c, d, f, g, h, j, k, l, m, n, p, q, r, s, t, v, w, x, y, dan z.</i> knowing vowel letters: <i>a, e, i, o, dan u.</i> find out the capital letters and non capital: <ol style="list-style-type: none"> <i>A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z.</i> <i>a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z.</i>

2	Spell and read short text of two to three syllables	<p>To spell a short text of two to three syllables</p> <ol style="list-style-type: none"> spell the word the theme of family <ol style="list-style-type: none"> A-DIK KA-KAK A-YAH I-BU BI-BI Spell the word themed greeting everyday <ol style="list-style-type: none"> MA-KAN TI-DUR MAN-DI I-NGIN BE-LA-JAR Spell the word themed place <ol style="list-style-type: none"> PA-SAR SE-KO-LAH RU-MAH DA-PUR KE-LAS
3	Recognize objects in the environment within class	<p>Familiar objects around the classroom:</p> <ol style="list-style-type: none"> Find out the objects used by students <ol style="list-style-type: none"> BA-JU TO-PI DA-SI CE-LA-NA SE-PA-TU Find out stationery objects <ol style="list-style-type: none"> PUL-PEN PEN-SIL PENG-HA-PUS SE-RU-TAN BU-KU Find out the objects property on the classroom <ol style="list-style-type: none"> ME-JA <ol style="list-style-type: none"> KUR-SI LE-MA-RI PIN-TU JEN-DE-LA
4	Know basic colors	<p>Know and know the basic colors :</p> <ol style="list-style-type: none"> ME-RAH BI-RU HI-JAU KU-NING HI-TAM

2.4 The Design Of The Application To Be Built

This application is intended for pupils with autism in special schools the Country Cileunyi Bandung Regency, especially from SDLB up with SMALB to learn to read. On the functionality of learning students will be shown one by one for

learning to read desktop-based, then students will learn over and over until students understand and can remember what has been learned. After the material is delivered it will be tested to the students in learning while playing with games broken balloons, this game aims to measure the level of success of students in learning about the alphabet. This application is an individual or a single Player.

This app is designed more attractive and interactive with some animation and music, so that students with autism are interested to learn to read because students prefer the method of learning while playing. The following table describes about the design of the on application Know-Syllable Words.

Table 2 Application Design

Element	Description
Application Title	BRAIN (Belajar Sambil Bermain)
Audiens	Students of SDLB up with SMALB SLB Negeri Cileunyi
Image	The images are there on the application adapted to the characteristics of the child and the age of the pupils in the special
Audio	The Audio consists of sound letters of the alphabet and the sound of each syllable, and the application filled a cheerful music that will give the spirit of the players.
Animation	There is a picture modified to be able to change shape and even move
Interactive	Interactivity in this application there are on the existing game on the app get to Know a Syllable of this

To produce learning Applications in accordance with the main purpose of which for pupils with autism better understand the learning to read with the delivery methods made special, it takes the concept visually to avoid errors in delivery of messages (information and information) with a media visual which is good to avoid mistake of delivering information. Here is the concept of visual reading App syllables:

1. Screen Format

Application Know-Syllable Words to students with autism designed with the size of the monitor 1920 x 1080.

2. Layout

Layout or layouts is a part-a small part of the design or visual elements of the application that is to be unity in the application with the aim that the images and text presented can be more

communicative so that the message will be delivered delivered properly.

3. Letters

The design of the letters used in this application uses fonts Widow Manatees Solid and Wicked Mouse to text and use images for the letters on the application.

2.5 Minimum Hardware Requirements

On the user side, perangkat keras is required to run this Application are as follows :

Table 3 Specifications Hardware (Minimum)

Device Name	Spesification
Sistem Operasi	Windows XP
RAM	512 MB
Hardisk	20 GB
Display	Monitor 14", Resolusi 1024 x 768
Keyboard	Standar
Mouse	Standard

2.6 Software Requirements

Software needed for building applications multimedia learning recognition rates of nouns for children with autism is the windows operating system because applications that are built based desktop that will be used on the computer in SLB Negeri Cileunyi.

2.7 Use Case

Use Case diagram is a visual overview of some of the case for functionality related to the 'what' that can be done to a system or subsystem. Use Case diagram merespresantikan interaction between the actor with the system.

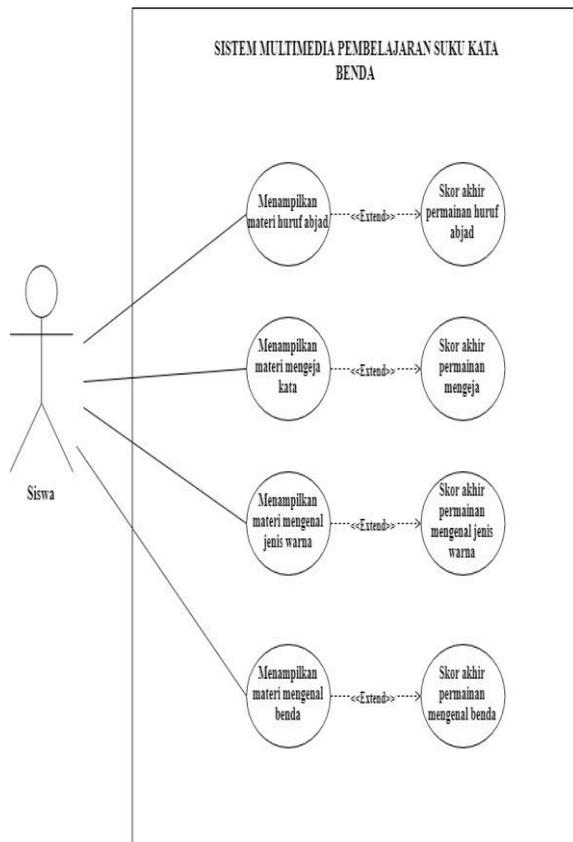


Image 5 Use Case Diagram

1. Definition Actor

There is only 1 actor, namely Students, Students of SLB Negeri Cileunyi can operate the application “the introduction of syllable objects”.

2. Definition use case

The definition of the Use Case of an introduction of a syllable can be seen in Table 3.

Table 3 Definition Use Case

NO	Use Case	Description
1	Display The Material Letters Of The Alphabet	Is the functionality to display material in the form of the introduction of the letters of the alphabet a consists of A-Z
2	Display Material To Spell The Word	Is the functionality to display material about the spelling of two-syllable words up to three syllables
3	Display Materials Getting To Know The Type Of Color	Is the functionality to display material in the form of type-type the name of the color
4	Display Materials Getting To Know	Is the functionality of the display material in

	Objects	
5	The Final Score Of The Game The Letters Of The Alphabet	the form of shapes and names of objects around the classroom Is the functionality to display the acquisition value of the result of the game broke balloons choose the letter of the alphabet
6	The Final Score Of The Game Spell	Is the functionality to display the acquisition value of the result of the game compose a word per syllable
7	The Final Score Of The Game Know The Type Of Color	Is the functionality to display the acquisition value of the result of the game broke a balloon choose color
8	The Final Score Of The Game Know The Object	Is the functionality to display the acquisition value of the result of the game choose objects

2.8 Struktur Menu

The menu structure is the general form of a program design, the menu structure can facilitate the user in running the application on a PC/desktop with view menu structure. The menu structure used for navigation so the user does not have difficulty to select the menu. The design of the menu structure on the application of lessons the introduction of the syllable shown in the picture below :

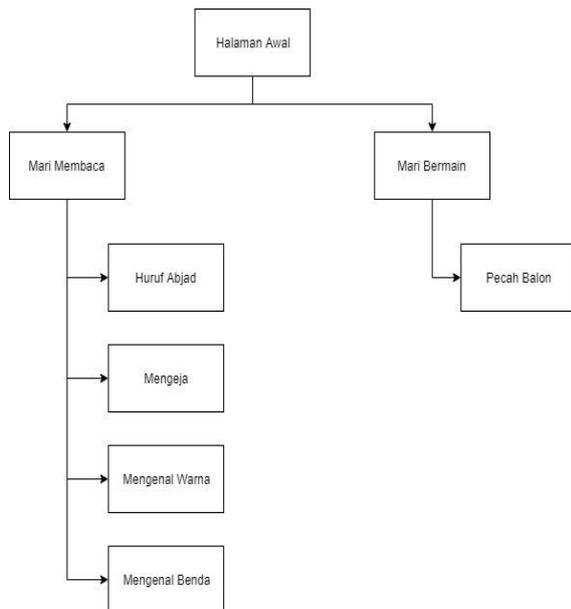


Image 7 Struktur Menu

2.9 A semantic network

A semantic network is a data network that shows the relationships between the various objects. The following figure shows a semantic network from applications to lessons reading syllables.

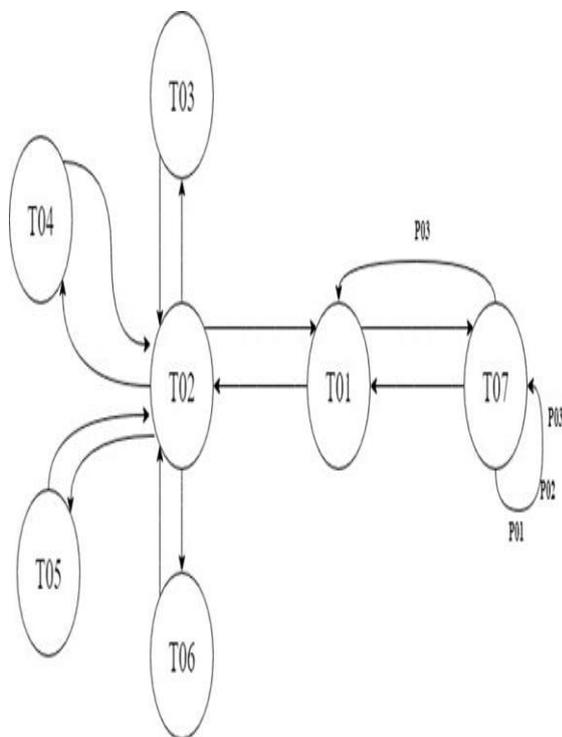


Image 8 Semantik Network

Description:

T01 :the Design of the interface start page

T02 :the interface Design page let's read

T03 :the interface Design page get to know the alphabet

T04 :the interface Design page spell

T05 :the interface Design page know color

T06 :the interface Design page get to know objects

T07 :the interface Design page let's play

2.10 Implementation Software

The Software has been built is implemented using the operating systems of windows is because applications that are built based desktop that will be used on the computer in SLB Negeri Cileunyi.

2.11 Implementation Hardware

Hardware needed to implement this application can be seen in table 4.

Table 4 Implementation Specification Hardware

Hardware	Specification
Processor	Intel Core i3
RAM	4 GB
Hardisk	225 GB
Display	Resolution 1280 x 1024
Keyboard	Standar
Mouse	Standard

2.12 Blackbox Testing

Blackbox testing is used to test the new system. Blackbox testing focuses on the functional requirements of the software consists of a test plan and cases test results[9].

The scenario shows the sequence and things that have been tested in the testing done on the application. Based on the results of testing with test cases sample above can be drawn the conclusion that the software is functionally produce the results as expected[10].

Table 5 Scenario Blackbox Testing

Interactive Multimedia Applications For Children With Special Needs			
No	Components Are Tested	Scenario Testing	This Type Of Testing
1	Home	button "Mari Belajar"	Blackbox
		button "Mari Bermain"	Blackbox
		button "Keluar"	Blackbox
		button "Info"	Blackbox
2	Page Menu Mari Belajar	button "Mengenali Huruf"	Blackbox

Interactive Multimedia Applications For Children With Special Needs			
No	Components Are Tested	Scenario Testing	This Type Of Testing
		button "Mengeja"	Blackbox
		button "Mengenal Warna"	Blackbox
		button "Mengenal Benda"	Blackbox
3	Page Mengenal Huruf	button "A"	Blackbox
		Memilih button "B"	Blackbox
		button "C"	Blackbox
		button "D"	Blackbox
		button "E"	Black box
		button "F"	Black box
		button "G"	Black box
		button "H"	Black box
		button "I"	Black box
		Memilih button "J"	Black box
		button "K"	Black box
		Memilih button "L"	Black box
		button "M"	Black box
		button "N"	Black box
		button "O"	Black box
		button "P"	Black box
		button "Q"	Black box
		button "R"	Black box
		button "S"	Black box
		button "T"	Black box
		button "U"	Black box
		button "V"	Black box
		button "W"	Black box
		button "X"	Black box
		button "Y"	Black box
		button "Z"	Black box
		button "Kembali"	Black box
		button "Kanan"	Black box
		button "Kiri"	Black box
		button "Kembali"	Black box
4	Page Mengeja	button "Kanan"	Black box

Interactive Multimedia Applications For Children With Special Needs			
No	Components Are Tested	Scenario Testing	This Type Of Testing
		button "Kiri"	Black box
		button "Warna"	Black box
5	Page Mengenal Warna	button "kembali"	Black box
		button "Kembali"	Black box
6	Page Mengenal Benda	button "Kanan"	Black box
		button "Kiri"	Black box
		button "Gambar 1"	Black box
7	Page Menu Mari Bermain	button "Gambar 2"	Black box
		button "Gambar 3"	Black box
		button "Kembali"	Black box
		button "Main Lagi"	Black box

2.13 Testing Of Students

Testing the value of the done with how to share about the Pre-Test and about the Post Test to the students autis SLB Negeri Cileunyi with the number of multiple choice questions as much as 10 questions with different material every point. Testing Pre-Test done in the classroom prior learning through the application and testing Post Test was done by using the application learning to know a syllable of objects that have been built on the menu of games available on the app. The number of students who become the sample testing Pre-Test on students with autism numbered 19 students categorized as not capable and able to help. However in testing the Pre Test and Post Test is only done to the 9 students with autism because there are constraints when testing the Pre-Test and Post-Test. Then, for the comparison of the values of Pre Test and Post Test is only done to the 9 students with autism in special schools the Country Cileunyi. Here are the results of the value of the Pre-Test and Post-Test of the 9 students with autism can be seen in the following table :

Table 6 Result Pre Test Students Autism

No	Value	Score	Value x Score
1	0	0	0
2	20	0	0
3	30	0	0

4	40	3	120
5	50	4	200
6	60	2	120
7	70	0	0
8	80	0	0
9	90	0	0
10	100	0	0
Total			440
number of students			9
average value			48,8

Tabel 7 Result Post Test Students Autism

No	value	Score	Value x Score
1	0	0	0
2	20	0	0
3	30	0	0
4	40	0	0
5	50	0	0
6	60	3	180
7	70	2	140
8	80	4	320
9	90	0	0
10	100	0	0
Total			640
number of students			9
average value			71,1

2.14 Conclusion Testing Students

On the results of testing the value that has been conducted on students with autism there is an increase in the average value from 48.8 become 71,1. Then, an increase in the average value of 22.3. It can be concluded that applications that are built can help students with autism in the process of learning to read.

2.15 Conclusion Results Questionnaire

Based on the test results, it can be concluded that the respondents expressed a positive attitude and agree that the application is the introduction of syllable objects is an application that is easy to understand as well as with features available in it, in addition an introduction of a syllable objects can be helpful in learning about teaching reading especially spell.

3. CONCLUSION AND SUGGESTION

3.1 Conclusion Study

3.1.1 Conclusion

The results obtained from the research conducted as well as refers to the purpose of the research, it can be concluded.

1. An introduction of a syllable it can help students with autism in improving the ability to learn and understand the material learning to read and spell, accompanied by the teacher. It can be concluded that there is an increase in the average value of 22.3 from the 48, 8 71,1.
2. An introduction of a syllable it can help teachers by students with autism in conveying the learning material read the spell based on the results of the questionnaire that has been done during the testing of the application.

i.Suggestion

Based on all the results that have been achieved at this time, that the Application of Multimedia Learning the introduction of syllable objects have some that should be advised to add things that can complement this learning app that will come, namely:

1. The addition material is added again to include the whole of the material.
2. The learning material is made more interactive again.
3. Arrival of the material on the application of learning media are made to be more dynamic.

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