JURNAL ASESMEN DAN INTERVENSI ANAK BERKEBUTUHAN KHUSUS

Application of Adobe Flash Multimedia in Improving Vocabulary Ability of Student with Hearing Impairment

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A B S T R A C T S

This research is motivated by the empirical condition of vocabulary skills shown by deaf students at the State B Garut Special School, Indonesia, which is still small and under the minimum completeness criteria (KKM). The purpose of this study is to improve the vocabulary skills of students with hearing impairment through the application of adobe flash multimedia according to the level of ability or competence of students in the vocabulary aspect. The method was qualitative and quantitative descriptive analysis data processing techniques. The results showed an increase in learning behavior after applying adobe flash multimedia as a medium in improving the vocabulary skills of students with hearing impairment. This is evident from the average vocabulary acquisition results in each cycle and can be seen from the graph which tends to increase. The average percentage of vocabulary proficiency results in the first cycle was 80%, in the second cycle is increased to 88.33%, and in the third cycle, it increased again to 93%, so that it surpassed the predetermined standard KKM of 66. This study shows that the use of adobe flash multimedia can improve students' vocabulary skills. The use of adobe flash multimedia is very interesting and fun for students both in terms of images, audio, and moving animations. In addition, adobe flash multimedia can make it easier for teachers to guide students, especially for students with hearing impairment.

A R T I C L E   I N F O

1. INTRODUCTION

Multimedia is the use of computers to combine or combine text, images, graphic arts, sound, animation, and video with the help of links and tools so that users can navigate, interact, create, and communicate (Irdandi *et al.,* 2017). The multimedia used in this study is adobe flash multimedia, which is a concept and technology from the elements of images, audio, and moving animation, to form a very innovative interaction between these media. Adobe flash is used during the teaching and learning process in contextual learning. Basically, learning media has an important role in the contextual understanding of students with special needs, especially for students with hearing impairment.

Bergeron et al. (2020) suggested that students with hearing impairment are someone who has a lack or loss of hearing ability either partially or completely due to not being able to use his hearing device in everyday life which has an impact on the ability to communicate and live in a complex manner. Students with hearing impairment have an impact on various aspects, especially on speech and language development. students with hearing impairment are slower in speech and language development than listening students. Definition of vocabulary according to experts. The wealth of words owned by a language is called vocabulary. Where vocabulary consists of a collection of words, while words consist of syllables. Words are elements that play a very important role in language. There is no language if there are no words because words are a form of embodiment of language. Each word contains meanings, concepts, and roles depending on the classification or type of words, as well as the use of words in a sentence, (Nurfadilah & Nurhastuti, 2018). Where vocabulary is one aspect of language that must be considered and mastered to support fluency in communicating both orally and in writing. The inability of students with hearing impairment to read is a failure or not optimal mastery of the language possessed by students with hearing impairment. Thus, it has an impact on academic achievement. In fact, language is a person's medium to gain knowledge. Therefore, students' mastery of language is evidence of students' success in obtaining learning outcomes.

Several studies that show an increase in children's vocabulary through the application of learning media include the research conducted by Septiawati *et al.,* (2021) regarding the Use of Educational Games on the Vocabulary Ability of students with hearing impairment. Then research was conducted by Aguselly (2019) on Efforts to Increase Vocabulary Through Snakes and Ladders Game in students with hearing impairment. Then the research on improving Vocabulary through Pop Up Book Media for Class I students with hearing impairment SLB Luak Nan Bungsu Payakumbuh was conducted by (Ariyona and Damri, 2019). In addition, research on improving the vocabulary mastery of students with hearing impairment through picture media for fourth-grade students at SLB Negeri Gorontalo was conducted by Kadir (2021). And research conducted by (Pertiwi, 2018) on the Development of Pop Up Book Media to Improve Vocabulary in Middle School students with hearing impairment at SLB Dewi Sartika Taman Sidoarjo (Pertiwi, 2018).

This study aims to improve the vocabulary skills of students with hearing impairment through the application of adobe flash multimedia according to the level of ability or competence of students in the vocabulary aspect. The provision of learning through the application of adobe flash multimedia is expected to increase children's vocabulary beyond the minimum completeness criteria (KKM) that have been determined. In the learning process, besides students being able to see pictures of 4 healthy 5 perfect vegetables that move, some writings and signs can make it easier for students to accept the vocabulary concepts given.

The expected result of the research is an increase in learning outcomes after applying Adobe Flash multimedia as a learning medium in improving the vocabulary skills of students with hearing impairment.

2. METHODS
2.1. Subject and location research

This study involved 3 students with hearing impairment at the State B Special School (SLB) Garut, West Java. This school is a special school for students with special needs.

2.2 Research procedure

This study focuses on the case of application of adobe flash multimedia to improve the vocabulary skills of students with hearing impairment. The research flow includes: (i) Plan, (ii) Act and Observe, (iii) Reflect, (iv) Revised Plan, (v) Act and Observe, (vi) Reflect.

Figure 1 explains the procedure for the research flow of classroom action research design which consists of several stages according to Kemmis and Mc Taggart, namely with one device consisting of four components, namely planning, action, observation, and reflection. The four components in the form of strands are seen as one cycle. Therefore, the cycle is a round of activities consisting of planning, action, observation, and reflection.

Figure 2 explains the concept map where the initial condition of students' abilities both academically and non-academically is below the Minimum Completeness Criteria (KKM). In addition, researchers have not found appropriate and interesting learning media for students. The biggest problem faced by students with hearing impairment in society is the communication barrier with the environment. This is because people do not understand the language used by students with hearing impairment, as well as the meaning of communication itself for the benefit of students with hearing impairment. In addition, the communication provided by both the teacher and other people is very important which will make it a habit for students.

Based on this, the teacher's efforts are needed so that the addition of vocabulary for students with hearing impairment can run well, one of which is by using appropriate learning multimedia according to the conditions of students with hearing impairment. There are many kinds of learning multimedia and their characteristics, including graphic/visual media (images, posters, sketches, diagrams, and charts), audio media (radio, magnetic tape recording equipment), and projection media (e.g. slides, films, OHP) using adobe flash multimedia, the learning process in the classroom becomes more interesting and fun as well as it is outlined in the actions of cycle 1, cycle II, and cycle III.

Based on this problem, efforts to increase the vocabulary of students with hearing impairment are carried out with the application of adobe flash multimedia, which is expected to be an alternative learning media that can be useful for increasing the vocabulary of students with hearing impairment. With a fairly large repertory of students with hearing impairment, it is hoped that it will affect the ability to communicate, as well as provide a comprehensive strengthening of understanding through connecting the meaning or intent of students' knowledge with direct experience in real life
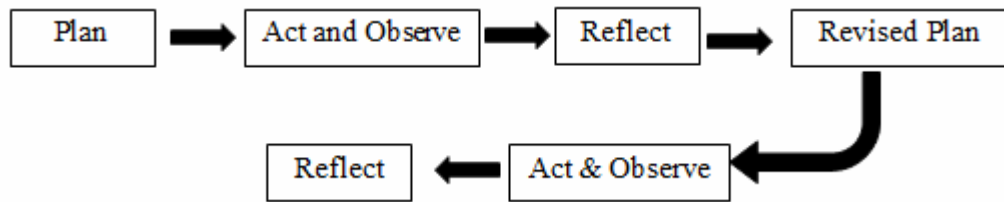
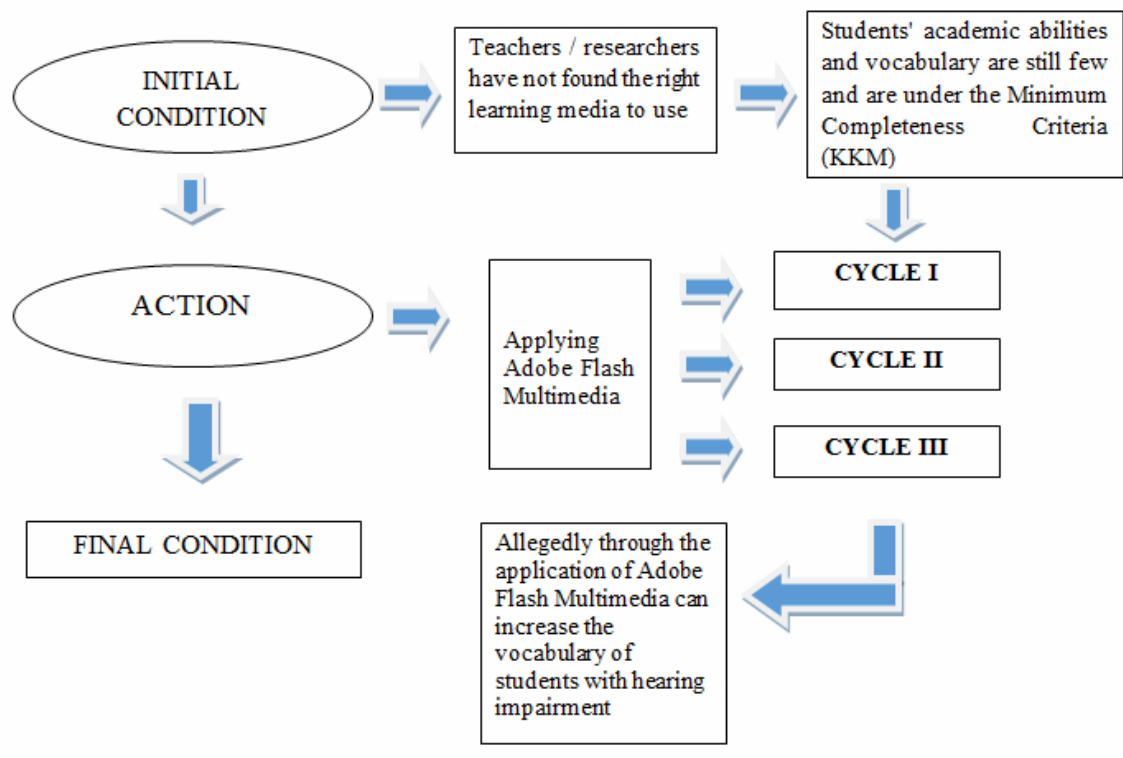**Figure 1.** Procedure for the research flow of classroom action research design**.**

Figure 2. Concept map.

2.3 Activity procedure

Figure 3 describes the procedure for classroom action research activities consisting of the stages of planning, implementing, observing, and reflecting. In planning activities by identifying and assessing students, as well as discussing with colleagues who work together with researchers in forming team teaching. At the stage of implementing this action, the researcher carried out learning procedures based on the stages of completing the vocabulary addition problem using Adobe Flash multimedia in accordance with the Learning Implementation Plan (RPP) that had been prepared. At the stage of implementing this action, the researcher carried out learning procedures based on the stages of completing the vocabulary addition problem using Adobe Flash multimedia in accordance with the Learning Implementation Plan (RPP) that had been prepared. At the observation stage, we monitor the implementation of actions that are in accordance with the research objectives, namely increasing vocabulary skills through adobe flash multimedia. Reflection is done to carry out the processes, problems, and constraints experienced during classroom action research.4
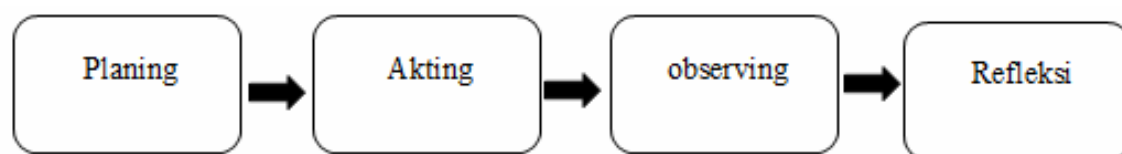
Figure 3. Classroom action research activity procedures.

2.4. Research instruments

In research activities, researchers collect data through observation and tests. Researchers make instruments in the form of questions, questionnaires, and test questions. The questions in the form of questions were made up of 10 questions to determine student activity in the learning process and 15 test questions to determine the level of students' understanding of the material being taught.

Processing of vocabulary ability test results, obtained by calculating the average and presenting the results of students' vocabulary skills with the ideal maximum score that must be mastered, with the formula:

$$\text{Score} = \frac{\text{Earning Score}}{\text{Ideal Maximum Score}} \times 100$$

Presenting the average (average) test results of students in learning on the vocabulary aspect can be calculated using the formula:

$$X = \frac{\Sigma x}{N} \cdot 100$$

Description : X = average test results
Σx = total scores or total student scores
N = a lot of data or the number of students

In the aspect of student development or ability, we provide an assessment score for students' abilities with scores of 0 (Not Good), 1 (Less Good), 2 (Good Enough), 3 (Good), 4 (Very Good).

3. RESULTS AND DISCUSSION
3.1. Student demographics

In terms of language, these students with hearing impairment are quite poor in vocabulary, have difficulty interpreting abstract (idiematic) expressions and words, have difficulty understanding complex sentences and lack mastery of rhythm and style of language. Looks like a normal child's face. This deaf child has a low level of deafness, so this child is quite fluent in communicating even though in composing sentences there are a few shortcomings (Agustin, 2019).

FJ students have good motor skills. Meanwhile, the communication aspect is still not good. In terms of concentration is still not good. The language possessed by students is not good. And the academic aspect is not good, especially in the aspect of vocabulary skills. DR students have good motor skills, communication is quite good, concentration is not good, language is not good, and academic is not good, especially in the aspect of vocabulary skills. DS students have good motor skills, communication is quite good, concentration is quite good, language is quite good, and academic is not good, especially in the aspect of vocabulary skills. The results of the demographics of students' initial abilities can be seen in **Table 1** and depicted in **Figure 4**.

Table 1. Initial conditions of students' ability.

Student's name	Motor Skill	Communication	Consentration	language	Academic
FJ	3	1	1	1	1
DR	3	2	1	1	1
DS	3	2	2	2	1
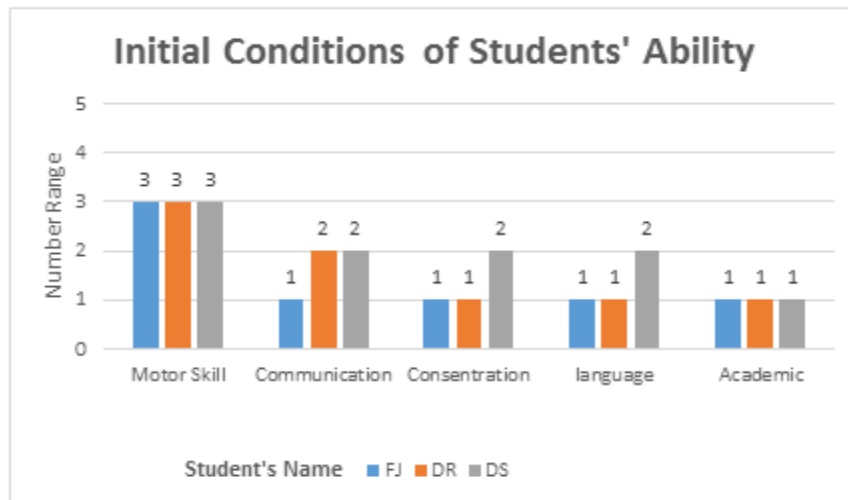
Figure 4. The initial condition of student ability.

3.2 Learning process activities

A good learning method is a method that can be applied to the right problems and conditions of students. This means that the learning method is applied to the learning problems of each child with special needs with certain characteristics including the characteristics of deaf children. In learning activities the teacher conveys the subject matter orally and in writing and students are required to hear and understand what is conveyed by the teacher. Even though the condition of deafness experienced by students who are just unable to hear, let alone understand the subject matter that the teacher conveys. This disability hinders the development of language and speech in deaf children. Through learning, deaf students are taught language skills so that they can communicate well (Trimo, 2012)

Learning activities begin with initial activities, namely greeting and then conditioning students to be ready to receive lessons. Followed by praying before studying, checking student attendance, doing apperception by asking what activities were done before leaving for school such as whether students had breakfast first or not. Then convey the material that will be studied today.

Before using adobe flash multimedia directly, the researcher explained in advance what 4 healthy 5 perfect foods were. Furthermore, the researchers showed 4 healthy 5 perfect foods to students through adobe flash multimedia. Before students use adobe flash multimedia, the researcher explains in advance to students how to use adobe flash multimedia so that students can do it independently. Furthermore, students use adobe flash multimedia as a medium of learning in turn by following instructions from the teacher. Students practice one by one the appropriate cues with Adobe Flash multimedia. Then the students mention the names of 4 healthy 5 perfect one by one according to their cues. Before learning ends,

students and teachers conclude what has been learned and carry out an evaluation of learning. Furthermore, students get assignments to do at home related to knowing 4 healthy 5 perfect. The researcher closed the learning activity and prayed together to end the lesson. The learning process using Adobe Flash is illustrated in **Figure 5**.

3.3 Pretest posttest results or learning outcomes

The percentage of vocabulary ability test scores before and after being given the action showed that FJ students scored 60 pretest scores, cycle 1 scored 80, cycle II scored 90, and cycle III scored 95. DR students got the pretest score of 50, cycle 1 scored 75, the second cycle the score is 85, and the third cycle the value is 87. DS students get the pretest score of 55, in the first cycle, the score is 85, in the second cycle the value is 90, and in the third cycle the value is 97. And, the average percentage of the pretest results is 55%, the first cycle is 80 %, cycle II was 89%, and cycle III was 93%. The summary of the results obtained by each student can be seen in **Table 2** and is illustrated in **Figure 6**.

Based on the results, it can be seen that there is an increase in vocabulary ability in each cycle. The score obtained by all students can be said to be maximum because all students can achieve a score above the KKM set, which is 66. The average percentage of vocabulary test results before being given action is 55%, after being given action in the first cycle it increases to 80%, in the second cycle to 89%, and in the third cycle increased again to 93%.

3.4 Analysis of the results of research activities

In developing a contextual learning model based on adobe flash multimedia, a process of attitude formation occurs with a pattern of habituation and modeling. This habituation pattern is applied at school and home. While the modeling process is carried out by forming attitudes through the assimilation process or the pilot process by the teacher. The results of preliminary research studies indicate that the learning process using the lecture, demonstration, and assignment methods is not optimal yet for students with hearing impairment. In line with that learning using the lecture method often makes what is received by students misunderstand what is conveyed by the teacher and students sometimes get bored quickly.

Learning media is one of the learning tools that are very important for the successful achievement of students' abilities, especially in increasing the vocabulary skills of students with hearing impairment. The limitations of the existing media cause students' initial vocabulary skills to be still below the Minimum Completeness Criteria (KKM). The absence of supporting media causes the teacher to act as a model that demonstrates the vocabulary learned by students and plays a role in directing students to pay attention to the teacher when demonstrating it. Students tend not to concentrate, are less enthusiastic, less active, and less independent in the learning process. Learning media has a very important role, namely as a tool to increase effectiveness in learning and also attract students' interest, so we need really appropriate media to help students learn such as tutorial media (Nikolawatin *et al.*, 2019).

The results of observations made in cycles I, II, and III showed the successful application of adobe flash multimedia-based contextual learning models. This success can be seen in the learning process and the increase in students' scores in adding vocabulary skills that are above the Minimum Completeness Criteria (KKM) so that students can be said to be complete in learning and vocabulary skills.
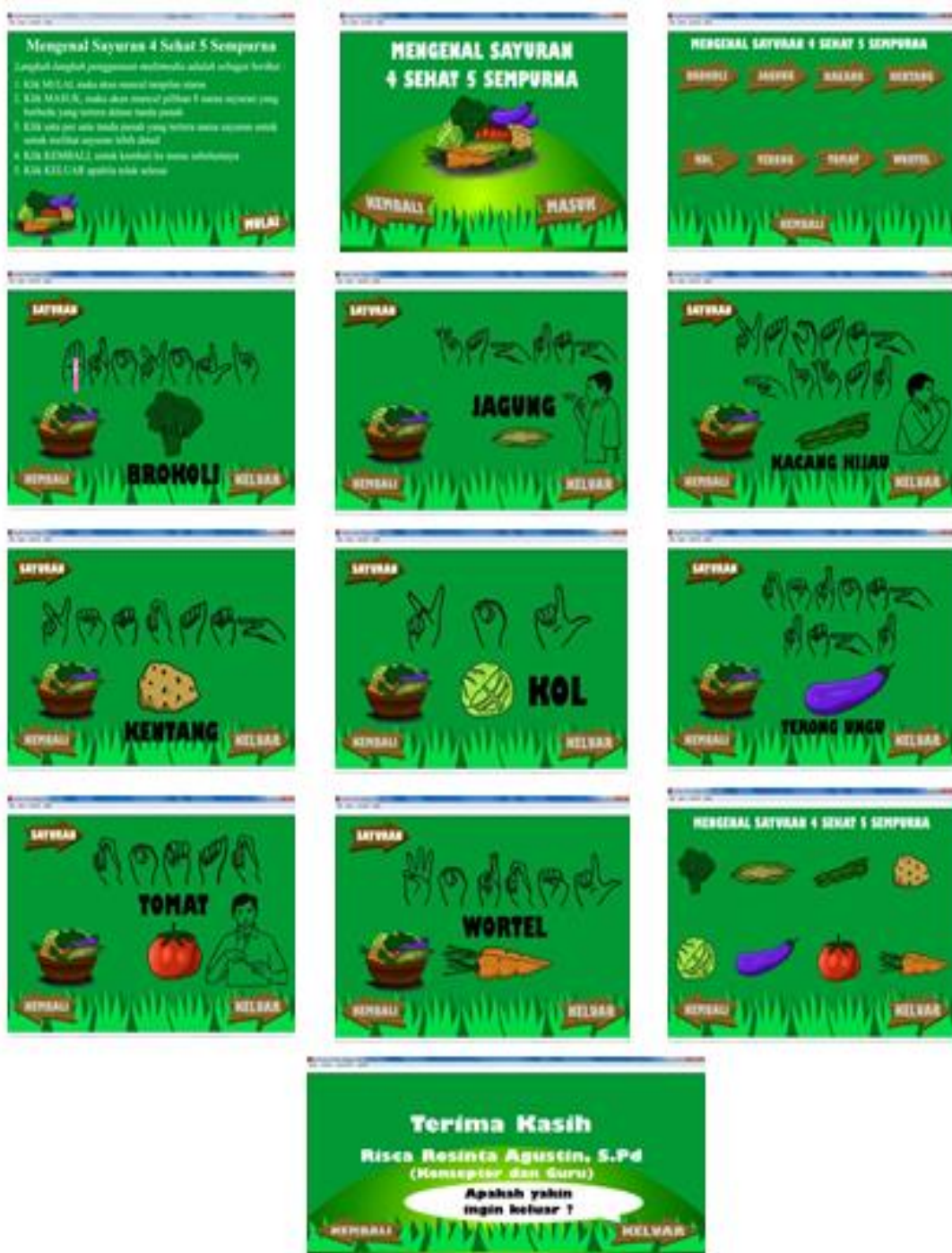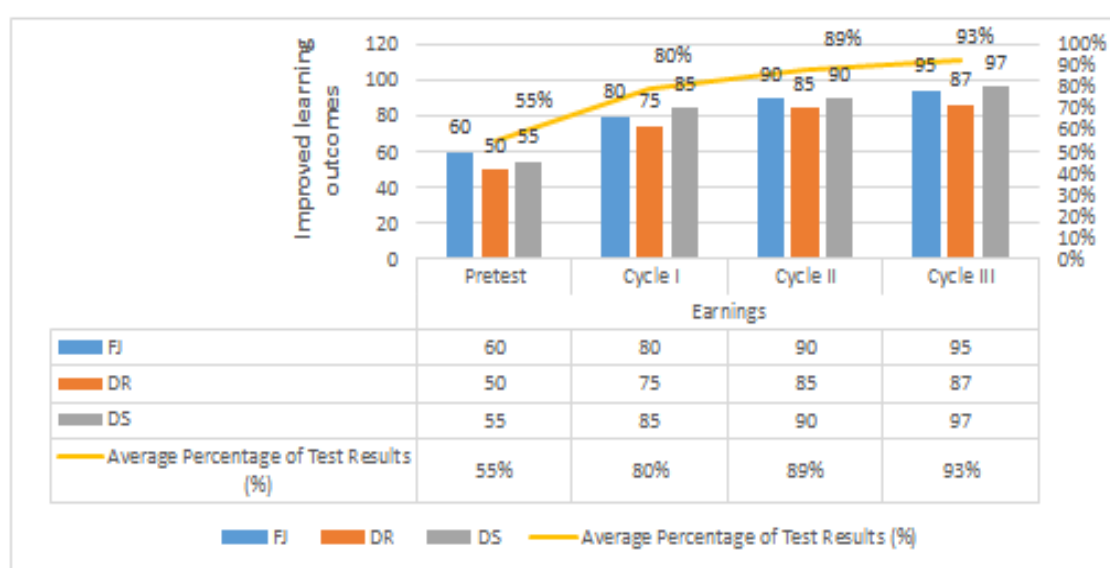
Figure 5. Screen shoot from multimedia adobe flash

Table 2. Improved learning outcomes from pre-cycle to cycle 3

No	Participant Name Educate	Earnings			
		Pretest	Cycle I	Cycle II	Cycle III
1.	FJ	60	80	90	95
2.	DR	50	75	85	87
3.	DS	55	85	90	97
	Average Percentage of Test Results (%)	55 %	80 %	89 %	93 %

Figure 6. The percentage of vocabulary ability test scores before and after the action is given.

Positive changes in learning behavior after implementing the adobe flash multimedia-based contextual learning model are indicated by an increase in student learning activities and an increase in cooperative skills in each cycle of the learning process and teachers always think innovatively by creating active, creative, and fun learning. This increase in vocabulary skills is supported by careful planning, application of learning models, and the use of appropriate media and infrastructure used in learning.

Teachers must carry out various developments in improving students' abilities and increasing students' learning motivation so that they are skilled in aspects of increasing vocabulary skills so that learning objectives can be achieved optimally.

The application of adobe flash multimedia can improve the vocabulary skills of students with hearing impairment at the State B Special School (SLB) Garut. The success of the application of adobe flash multimedia as an effort to improve the vocabulary skills of deaf students is shown by changes in the learning process. The learning process improves vocabulary skills at the time of the test the percentage of the learning process is 55% which is included in the category of poor learning. However, after applying the contextual learning model based on adobe flash multimedia, the percentage of the learning process continues to

increase, until at the end of the third cycle the percentage of the learning process becomes 93% which is included in the category of very good learning. The teacher's ability to open lessons, the learning process, teacher attitudes, mastery of the material, the use of adobe flash multimedia in the learning process, evaluation, and closing of learning is getting better.

4. CONCLUSION

This research was conducted at the State B Special School (SLB) Garut. The research subjects were 3 students with hearing impairment. The students' initial vocabulary ability is still below the Minimum Completeness Criteria (KKM). The increase in the vocabulary of students with hearing impairment is influenced by several aspects, one of which is the media and methods used by the teacher. Thus, this study aims to improve the vocabulary skills of students with hearing impairment through the application of adobe flash multimedia according to the level of ability or competence of students in the vocabulary aspect. The results obtained in this study are an increase in learning behavior after applying adobe flash multimedia to improve the vocabulary skills of students with hearing impairment. This is evident from the average vocabulary acquisition results in each cycle and can be seen from the graph which tends to increase. The value obtained in the initial ability is the average percentage of vocabulary ability results in the first cycle to 80%, in the second cycle it increases to 88.33%, and in the third cycle, it increases again to 93% so that it exceeds the Minimum Completeness Criteria that have been set, namely 66. This is caused by the application of adobe flash multimedia that makes it easier for students to understand information about adding vocabulary. Students with hearing impairment need concrete and interesting media. Media that is in accordance with the needs of students can improve students' understanding, especially students with hearing impairment. Adobe Flash multimedia can be considered by teachers to be used in the Indonesian language learning process, especially in adding vocabulary for students with hearing impairment, and can be developed for learning other materials.

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6. AUTHOR NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

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