

Development and Implementation of Mobile Assisted Language Learning Media to Enhance Japanese Grammar

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Abstract—This study aims to develop exercise media on learning verb ~ *te* in Japanese conjugation using android application. The method used was the R & D model of Lee and Owens (2004) in the form of a cycle consisting of five stages: 1) analysis, 2) design, 3) development, 4) implementation, 5) evaluation. Developed media, called *henkado*, was tested, and based on the results, students give responses that this application is easy to use; the exercise using the *henkado* application is more fun than the exercises on paper (conventional exercise); students start the next menu even though the material has not been explained and they repeated exercise if the score was not satisfactory. In other words, the use of this media can arouse student motivation and increase the frequency of exercise, which in turn can enhance the ability of ~*te* verb conjugation. But, teachers still need to carry out the supervisory function during the exercise. So that the exercise of the ~ *te* form verb conjugation can be performed better.

Keywords—foreign language learning; Japanese grammar; language assessment; mobile application

I. INTRODUCTION

Verb ~ *te* conjugation is one of the materials taught in learning Japanese language in high school. How the verb ~ *te* change varies and depends on the verb group [1]. This lesson is an important basic foundation in instilling the transformation principle of the verb ~ *masu* into the verb ~ *te*. The main function of the verb ~ *te* is to combine two or more sentences. The verb ~ *te* will form various sentence patterns with various meanings when combined with auxiliary verbs. Some of them form basic sentence patterns in Japanese communication, such as ~ *te kudasai* to offer or ask politely to the interlocutors, ~ *te mo ii* to request permission, and ~*te wa ikemasen* to prohibit. Nevertheless, based on tests conducted on students of academic year 2017/2018 on one of the Private Senior High School in Bandung, the proficiency level of the verb ~ *te* conjugation material was at a low score, which was 28%. Whereas, mastering the conjugation of Japanese verbs is a skill that needs to be mastered well. Mastering the verb conjugation will then minimize the misuse of sentence patterns in order to avoid misunderstanding in communicating.

Skill mastery can be done by often honing it through repetition. In learning, repetition is done by increasing the portion of the exercise of the verb ~ *te* conjugation. However, conventional exercises tend to be monotonous and makes learners become bored if performed repeatedly [2]. To overcome this, exercise can be done by using the help of learning media as one of the learning components. Learning media can help eliminate students' saturation in learning, without losing its purpose as a reinforcing material taught in addition to other functions [3].

The use of media as conjugation verb training has been done using computer games, called *Bubble Doushi* [4]. The results are learning with *Bubble Doushi* is more effective at increasing ability in Japanese verbs conjugation. Then 64.55% of students responded that learning became more interesting so that they could motivated to learn. There are shortcomings in this study, namely the installation process requires a long time, maintenance of computer equipment is relatively expensive, and mobility is limited, so the exercise can only be done at school. This study aims to 1) develop verb ~ *te* conjugation exercise media using android application, 2) knowing the students' responses to the use of applications that have been developed in the form of conjugation verb *te* learning

II. THEORETICAL FOUNDATION

A. Exercise Urgency According to the Theory of Behavioristic and Cognitive Learning

According to the learning theory of connectionism, learning is the formation or strengthening process of the relationship between the stimulus (S) and response (R) with the result that a strong relationship (bond) between S and R is increasing when often practiced. Practicing the connection (link) between a stimulating situation with a response will strengthen the connection between the two [5]. Stimulus and response can be thoughts, feelings, or movements [6]. In the other words, learning is the formation of the stimulus - response relationship as much as possible through exercises [7]. The exercise is the one done over and over in the correct order and regularly [8]. It is formulated by Thorndike in the Law of Exercise; which includes two things, they are 1) the Law of Use: relationships

or connections will get stronger if any exercise is done, and 2) the Law of Disuse: relationships or connections will get weaker or will be forgotten if any exercise or use is stopped [9].

Since behavioristic psychology sees at the learning process as the behaviors emerging due to the stimulus given from the outside, then cognitive psychology highlights the learning process of the inner self of the learners. This theory emphasizes the empowerment on the ability to think inside the brain in accordance with the normal age of human and their physical development. Morris, as cited in Slavin listed the information processing model in someone's brain which is called Atkinson Shiffrin information processing model [10]. This processing model explained that the received stimulus will be processed through three stages of the process: sensor memory, short-term memory, and long-term memory. Through practice, the process of reinforcing memory by thinking or repeating information (rehearsal) can be done. When information is often repeated through practice, the information will then last longer in short-term memory. The longer an information is in short-term memory, the more likely it is to be transferred into a long-term memory storage system that has more permanent information storage properties. Without practice, it is possible that such information will be quickly lost due to the limited short-term memory capacity or replaced with newer and more powerful information [11].

B. Application of MALL in ~ te Form Verb Conjugation Exercises Using Henkado

With today's smartphone era where everything is mobile, the CALL concept has been developed in MALL (Mobile Assisted Language Learning). Gangaiamaran and Pasupathi revealed that MALL has several characteristics that CALL does not have, including portability and mobility; social connectivity; context sensitivity, and individuality [12].

The *henkado* application developed in this study uses the MALL concept with some features that doesn't need internet connection. The media development process is based on the material and target application users, high school students.

III. RESEARCH METHODS

The research was conducted by implementing Lee and Owens' research and development method model [13]. Sugiyono defines this method as a method used to produce a particular product and test the effectiveness of the product [14]. Lee and Owens' model is a cycle consisting of five stages 1) analysis, 2) design, 3) development, 4) implementation, and 5) evaluation.

Media trials were conducted 2 times using experimental designs. Students who take the test are high school students from one of the private high schools in Bandung. The instruments used are tests and non-tests. Tests in the form of pre-test conducted before learning, and post-test conducted after the learning process. Both the pre-test and post-test used a short form of 10 questions. There are also data obtained from non-test instruments in the form of questionnaires to determine the response of students using *henkado*. The whole research procedure is described in figure 1.

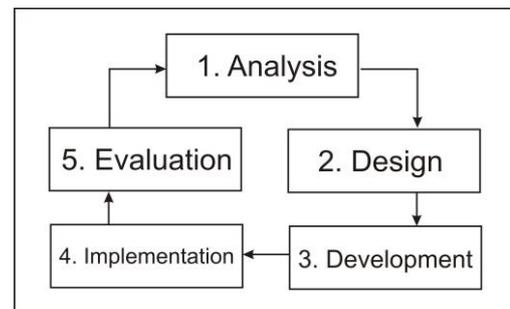


Fig. 1. Lee and Owens's R & D model [13].

IV. RESULTS AND DISCUSSION

A. Media Development

The first stage is an analysis which aims to analyze the potential and the problems in learning conjugation of Japanese verbs in Indonesian high school level. Based on the results of the midterm test, the material of verb ~ te change has the smallest average score compared to the other verb changes. Students' comprehension of the material is still low that the average students who can answer correctly was only 28%. After finding the potentials and problems, various information that can be used as material for media creation planning was then gathered. Based on observations in the classroom, it was discovered that the majority of students owned smartphones, this is in line with data from a survey released by the Indonesian Internet Service Providers Association (APJII) in 2016, individuals aged 10-24 years were ranked second in internet user penetration, which was 75.5%. The type of equipment that is most often used to access it, ranked 1st is mobile devices 63.1 million (47.6%), mobile and computer 67.2 million (50.7%), and computers alone 2.2 million (1, 7%). As many as 80% of mobile device users use the Android operating system.

The penetration of smartphones has an increasing trend every year, and at the same time smartphone models and applications in it (hardware and software) are also changing [15]. Learning innovation needs to be done by following the development of technology today, so that students can enjoy the learning process. Based on the potentials and problems as well as information obtained, the researcher intends to develop a medium of learning for Japanese verb conjugation by using android application that can be accessed using a smartphone.

The next stage is design. The purpose of this design stage is to produce a new product design complete with specifications. In designing, the researcher used Corel Draw and Android Studio. Corel Draw was used to design the early stage, such as designing icons, and the buttons needed for designing the next stage were designed using Android Studio. This app is called *henkado* which is derived from the word, *henka* (変化) which means change and *doushi* (動詞) which means verb. *Henkado* has 3 main menus based on the number of Japanese verb classes. The verbs used in this application are verbs equivalent to the basic level. Each menu consists of learning and playing menu. The learning menu contains explanations about conjugation materials, while the playing contains exercise

questions in the form of multiple choice with four choices of answers. The letters used in this design are hiragana, katakana,

and kanji. Initial design of *henkado* as shown in figure 2.



Fig. 2. Initial design of *Henkado* application.

Validation of products was done by requesting assessments from several experienced experts in their own expertise. In this case, the researcher asked for the consideration and assessment from one of the lecturers of Japanese language education to assess the content of the application. Meanwhile, the display and design were assessed by one practitioner who works as an android application developer.

Based on the suggestions and corrections from both experts, it was necessary to make improvements to the designs and contents of the *henkado* application. The inputs are: the writing should use Latin letters (Romaji) to adjust the target users, i.e. high school student's level, the application should only include exercise alone since in Indonesian education teachers still plays an important role to explain the material, countdown timer feature and an additional menu of verb conjugation exercise should be added. In terms of design, a plain colored background should be given to make it easier for users in reading the exercise questions. Development results of *henkado* as shown in figure 3 and figure 4.

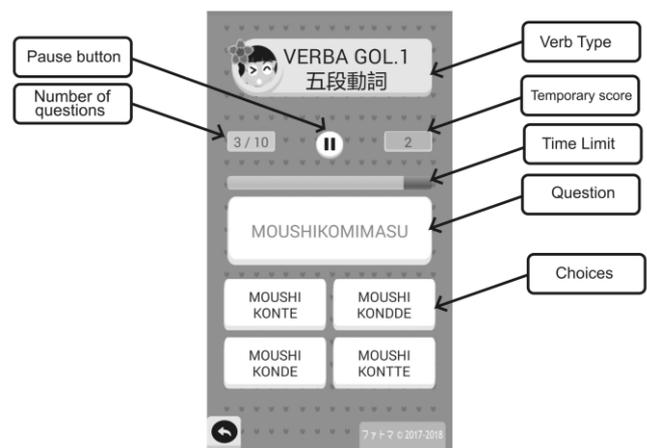


Fig. 4. Developed design of *Henkado* application (2).

The features in the *Henkado* application include:

1) *Visual appearance*: Compared to conventional exercises using paper, *henkado* has the advantage of visual side. Approximately 90 percent of learning outcomes are obtained through the senses of view and only about 5 percent through the senses of hearing and 5 percent of the other senses [16].

2) *Time limit*: In the *henkado* application, there is a time limitation in working on practice questions. Students can discuss with other students during exercise, but because there are different time and questions, students are required to have an understanding of the material independently and need to respond quickly by answering the questions correctly. In addition, the time limit can train students' self-control to focus, train cognitive and psychomotor skills [17].

3) *Question randomization*: The question randomization feature in the *henkado* application makes the practice questions received by students vary. With different questions, students seem to focus more on doing their own practice questions.



Fig. 3. Developed design of *Henkado* application (1).

4) *Scoring system*: With the scoring system, students can do self-evaluation not only in class to find out how much their understanding of the *~ te* form verb conjugation material. This system is also expected to spur students to get a higher score. To get a higher score the user must repeat working on the question, in other words the use of the application has a tendency to increase the frequency of exercise. Repetitive practice can improve students' skills in mastering *~ te* form verb conjugations.

5) *Green and red colour*: In the *henkado* application, it will appear green if the answer is correct, and in red if the answer is wrong, making the students immediately know whether the answer given is right or wrong. This green and red color is actually a form of affective reinforcement. Green is a form of positive reinforcement, while red is a form of negative reinforcement. If it appears red (if the answer is wrong), it makes students more careful to answer the next question. If it appears green (if the answer is correct) students are more motivated to get the right answer so that it raises the green color in the next question.

Affective reinforcement can provide cognitive reinforcement. According to Thorndike, a test or exercise will bring results if accompanied by reinforcement in the form of positive reinforcement of rewards or negative reinforcement in the form of punishment. This is the second law of Thorndike, which is called the Law of Effects [9].

B. Media Testing Implementation

The revised development product is called a prototype. This prototype was tested in small groups a larger group. The small group consists of 10 students, while the large group is 2 times that is 20 students. Pre-test was then performed, to test the initial ability of the research subjects. Post-test was held to find out the students' final abilities.

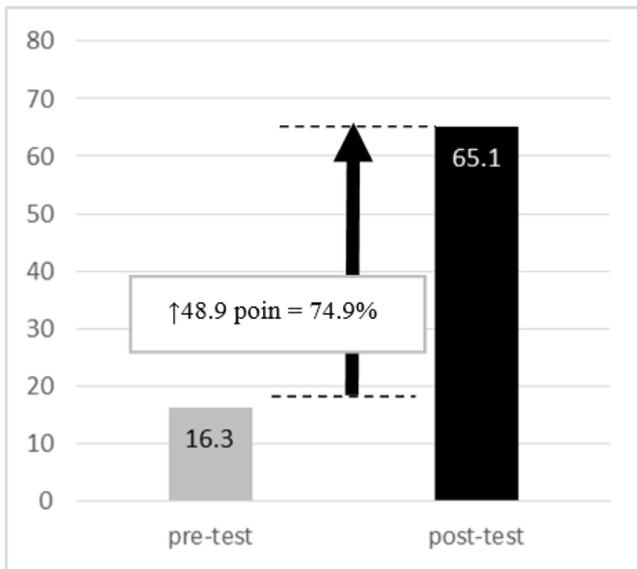


Fig. 5. Result of small group testing.

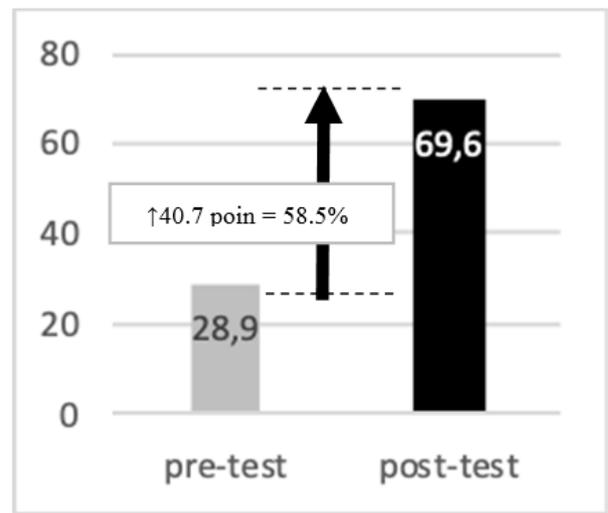


Fig. 6. Result of larger group testing.

Based on the figure 5 and 6 above, it is known that both small group testing and larger group testing, there is an increase in the mastery of *~ te* form verb conjugation. But the increase in the small group is greater than larger group (48.9 > 40.7 points). This may be because the supervision of the larger group is difficult to do compared to supervision in small group.

There is possibility of students opening other applications when using a smartphone. Therefore, it is necessary to add the scoreboard feature so that it can be known about the student's track record. Students should be instructed to do the exercise at least three times, as evidenced by the track record of scores on the scoreboard which must be reported to the teacher after the exercise has been completed.

Message notifications during the exercise can also disrupt student concentration. This can be anticipated by turning off the internet connection facility during the exercise. Low battery also a problem that can be anticipated by students and teachers by carrying a charger and a spare battery.

For students who do not have a smartphone for any reason, they can borrow a smartphone belonging to a friend, but use a different name when entering it on the scoreboard. Scores that go to the scoreboard should also be limited, for example, only the ten highest scores, thus motivating students to repeat the exercise if the score is low and cannot enter the scoreboard.

Teachers still need to carry out the supervisory function during the exercise. So that the practice of the *~ te* form verb conjugation can be performed better.

TABLE I. RESULT OF QUESTIONNAIRE

No	Question	SA	A	NVA	NA
1	<i>Henkado</i> application is easy to use	79	21	0	0
2	The practice questions contained in the <i>henkado</i> application match the material taught.	95	5	0	0
3	I like the <i>henkado</i> application design.	42	53	5	0

Table 1. Cont.

4	The exercise using <i>henkado</i> application is more fun than the exercises on paper	58	37	5	0
5	I start the next menu even though the material has not been explained	42	47	11	0
6	I repeated exercise if the score was not satisfactory	63	37	0	0
7	The questions in the <i>henkado</i> application helped me learn Japanese verb conjugation material	79	21	0	0

SA = Strongly agree; A= Agree; NVA= Not Very Agree; NA= Not Agree

To find out the students' response to this application, a questionnaire was distributed. The results of the questionnaire showed a positive response. Students think that the *henkado* application is easy to use (79%) and in accordance with the learning material (95%). This is because the *henkado* application media is based on the learning needs and the target users. 42% of the students liked the design of *henkado*. However, there are a small number of students (5%) who do not very agree with the questionnaire statement above. This is possible because the *henkado* application has a static, immovable animation design. More than half of the students agreed (63%) with the items listed in the aspect of repetition of the exercise. The use of the application has a tendency to increase the frequency of exercise. Repetitive practice can improve students' skills in mastering *~ te* form verb conjugations.

V. CONCLUSION

This research produced media exercise of verb *~ te* conjugation called *henkado* with the features visual appearance, multiple choice questions with a time limit, questions randomization, red-green color and, a scoring system for the self-evaluation. The analysis showed that *henkado* was significantly able to improve the mastery of verb *~ te* conjugation. Based on the results, students give responses that this application is easy to use; the exercise using the *henkado* application is more fun than the exercises on paper (conventional exercise); students start the next menu even though the material has not been explained and they repeated exercise if the score was not satisfactory. In other words, the use of this media can arouse student motivation and increase the frequency of exercise, which in turn can enhance the ability of *~te* verb conjugation. But, teachers still need to carry out the

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