

Using Mnemonic-Based Applications to Learning Japanese Hiragana Characters

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Abstract—This study investigated the effects of mnemonics on remembering Japanese hiragana characters by Japanese language learners with an alphabetic background. Our true-experimental design involved 36 high school students taking classes in Japanese course. In experimental conditions used two class, one class Japanese lessons use an android application and one other class uses flashcards. We investigate the effect of the android application on understanding and remembering hiragana letters, which is expected to be seen which media are more effective in remembering Hiragana letters. The results concluded that mnemonic strategies can effectively be used in facilitating the retention of foreign language scripts, non-alphabetically in real educational settings. Suggestions for future research related to the identified mechanisms are offered which android apps are more effective for learning Japanese hiragana characters. Therefore, the right teaching method, which could teach Hiragana efficiently within a short period, is necessary. Using mnemonic application for learning Hiragana more effective rather than rote learning.

Keywords—Japanese characters; mnemonic strategy; mobile learning; word recognition; writing system

I. INTRODUCTION

The modern Japanese writing system uses a combination of logographic kanji, which are adopted Chinese characters, and syllabic kana. Kana itself consists of a pair of syllabaries: hiragana, used primarily for native or naturalized Japanese words and grammatical elements, and katakana, used primarily for foreign words and sometimes for emphasis. Almost all written Japanese sentences contain a mixture of kanji and kana. Because of this mixture of scripts, in addition to a large inventory of kanji characters, the Japanese writing system is often considered to be the most complicated in use anywhere in the world [1]. This study the Japanese script characters used as research objects are Hiragana letters.

There have been many studies done to demonstrate the effectiveness of mnemonic device [2-5]. Pictorial mnemonic have been used effectively in vocabulary learning. A paper by Levin, McCormick, Miller, Berry, and Pressley reported children were taught new vocabulary words, such as children in the pictorial group were given pictures that involved stimulus recording [6,7]. Although mnemonic methods generally use

self-generated imagery, Levin gives an example of provided mnemonics to help a child learn English alphabet [8].

As explained in Rasiban as for the benefits of using mnemonic techniques, because it makes it easier to remember, it will also facilitate learning [9]. Learning barriers will disappear. This will generate motivation for students to be more active in learning, so that they can finally achieve optimal learning outcomes. So, the final achievement of using mnemonic techniques in learning is optimal learning outcomes in a quick and easy way. Therefore, this technique needs to be given to students, especially basic kanji learners.

Teenagers' interest in Indonesia towards smartphones is unfortunately still largely devoted to entertainment activities, not yet leading to more productive activities especially in terms of education - compared to smartphone use conducted in Stockton, New Jersey which has penetrated as an e-learning learning device, downloading podcasts, receive and send emails [10,11]. In fact, through smartphones educators have a great opportunity to present new educational experiences to their students.

Many studies on the effectiveness of application-based media (e-learning) in studying Chinese kanji characters, kanji learning on CALL and several studies show that conventional mnemonic are also effective in learning foreign language vocabulary [12-15]. But to the knowledge of the authors, there have been no studies that reveal differences in the effectiveness of mnemonic strategies in learning media that use android application or flash card. Therefore, the authors will fill the research gap. The purpose of this paper is to report on the effectiveness of the mnemonic strategy for studying the characters of Japanese characters, especially Hiragana letters for Japanese as Foreign Languages with alphabetical background students by connecting which learning media is more effective, whether the media is android applications or flashcards media.

II. METHOD

The research method used in this study is true experimental design with a randomized groups pretest – posttest – follow-up design. The goal of the present study was to examine (1) to what is the ability to mastering Hiragana script characters in a class that uses an android application and in a class that uses

flash cards, and (2) are there differences in Hiragana script characters mastery skills in classes that use Android applications and in classes that use flash cards.

A. Participants

A total of 36 Indonesian high school students participated in this study. The participants are high school students taking specialization class majoring Japanese. Participants' Japanese language skills belong to the basic level group with 20 female and 16 male. The basic level group students is a student who studied the Japanese language for 1 semester or 6 months. In the basic level has studied 46 Kana letters, Hiragana and Katakana characters.

B. Procedure

The true-experimental group (n = 36) was involved in a program built in accordance with the mnemonic strategy. In this intervention students are actively involved in writing and reading Hiragana activities, beginning with an explanation in which there are various types of writing systems in Japanese language. Then Hiragana letters are introduced through mnemonic image using different media, one class uses the "Hiragana Memory Hint" android application and the other class uses Hiragana flash card.

On the first treatment day, participants were assigned randomly to divided two treatment groups. After finishing the pretest, participants completed the first Questionnaire. Students download the hiragana learning application, Hiragana Memory Hint [Indonesia version] and given an explanation of how to use the application. And the other class were given an explanation about Hiragana learning with Hiragana Mnemonic

The second to the sixth day of treatment for this class is indirect learning in the classroom but may be outside the classroom anywhere and at anytime are called *mobile learning*. Students are told to fill out an *m-Learning Worksheet* to monitor hiragana learning and learning achievements until their learning difficulties.

Whereas for class use Hiragana Mnemonic flashcards in class. Each treatment is carried out by introducing 8 hiragana letters through the mnemonic flashcards. After that students do the exercises on the Hiragana Task.

C. Instrument

In this study, the data were collected using the following instruments:

1) *Hiragana memory hint-android application*: This android application named Hiragana Memory Hint [Indonesia], can be downloaded on the www.jfkc.jp/en/material/memoryhint.html page or on a smartphone in Playstore by entering the keyword 'Hiragana Memory Hint'. The selection of this android application is because in the application there are illustrations (mnemonics) and sounds that can make it easier for students to distinguish letters that are similar and make it easier for students to memorize hiragana. Here's an example page from the display of Hiragana Memory Hint's android application in Figure 1.

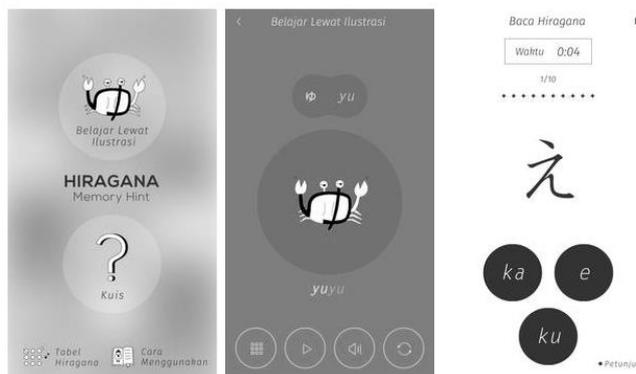


Fig. 1. Hiragana memory hint – android application.

2) *Hiragana mnemonic flashcards*: Picture card learning media from Hiragana's mnemonic image. The image used is downloaded from the internet ([https://www.google.co.id / amp / s / apkpure.biz / amp / com.gustianidev. Application / Illustration-Hiragana-Katakana](https://www.google.co.id/amp/s/apkpure.biz/amp/com.gustianidev.Application/Illustration-Hiragana-Katakana)) then printed with a larger size. This printed image is then used to convey the material to be studied called Hiragana Mnemonic Flashcards. Figure 2 is an example of the Hiragana Mnemonic Flashcards used in experimental activities.



Fig. 2. Hiragana mnemonic flashcards.

3) *Pretest*: The instrument used to measure hiragana letter mastery ability before the experiment. Both experimental classes used the same pre-test questions. the test in the form of written questions divided into 6 parts, part one 20 multiple choice questions, part two 5 matching questions, part three 5

questions distinguishing similar letters, part four 10 crossword puzzles, part five 2 questions change the romaji sentence into hiragana letters, and part six 2 questions change the hiragana sentence into romaji letters.

4) *Posttest*: The instrument used to measure the ability to master hiragana letters after the experimental activities. Both experimental classes used the same posttest questions. The pretest and posttest questions have the same weight, namely measuring the ability to read hiragana letters, applying in words and distinguishing similar letters

5) *Questionnaire*: Instrument to gather information about qualitative data regarding respondents' responses to the media used in hiragana learning, the effectiveness of the media and the advantages and disadvantages of the media.

6) *m-Learning worksheet*: This worksheet is used in the experimental class that uses the Android application. This worksheet contains notes on the time of use of the Hiragana Memory Hint application, learning achievement until hiragana learning difficulties by using this application.

7) *Hiragana task*: This worksheet contains the hiragana letter exercises from each treatment. The form of exercise starts from distinguishing letters, the practice of reading the hiragana to writing hiragana until the hiragana letter application on vocabulary.

III. FINDINGS AND DISCUSSION

A. Learning Hiragana Characters Using Mnemonic-Based Android Applications and Hiragana Mnemonic Flashcards

Mnemonics are schemes for assisting memory. They include well-known and simple rhymes. Baddeley provided a good general description of mnemonic strategies, and noted that they usually employ various manipulations of the material to be remembered to make that material more memorable (e.g., by using imagery, elaboration, or reduction) [16].

Based on the research conducted on the experimental group students taught by the android application-based mnemonic method for 6 (six) treatment. After the data analysis that the highest value is 96.66, the lowest value is 65, the average value is 86.66, see in Table 1.

Based on the results of test data analysis (Table 1), it can be concluded that students' mastery of hiragana letters after being given treatment in the experimental group using the android application-based mnemonic method with an average pretest value of 86.66 is in the excellent category, whereas in the experimental group who use the image card-based mnemonic method with an average pretest value of 71.57 in the sufficient category.

TABLE I. PRETEST AND POSTTEST DATA RESULTS

	n	Android Apps. Class	Flashcards Class
Pre-Test	M	61,57	63,32
	SD	14,22	21,06
Post-Test	M	86,66	71,57
	SD	9,14	18,37

Source: Research data

From these data it can be concluded that the mastery of students' hiragana letters in the experimental group taught by the android application-based mnemonic method is very good based on the assessment standard table. Increasing the mastery of hiragana letters is due to the application of assisted mnemonic methods to media android applications. Android-based learning media here are categorized into Mobile learning. Mobile Learning can be said as a form of learning that utilizes mobile devices and technology, can make it easier for users to access learning content anywhere and anytime, without having to visit a certain place at a certain time [17]. Students can do hiragana learning using an android application wherever and whenever so students can practice repeatedly or repeat learning.

Based on the student worksheets given to monitor the intensity of hiragana learning students use the mnemonic method of media assistance android applications. In accordance with the opinion of Matsunaga that the mnemonic method is effective but its effectiveness largely fades if without training, it shows the importance of training for hiragana long-term retention [14]. Then in the android application also allows learning fun through the quiz provided in the application, the same thing also expressed by Peter Kline that learning will be effective if done in a pleasant atmosphere. And with this Android-based hiragana letter learning application students become more facilitated in recognizing and learning these letters [18].

In hiragana learning using the android application-based mnemonic method, there are also animations and sound modes or the presentation of human voice (vocals) that can help students receive information faster, easy to remember and can be repeated if necessary to add clarity. In using sound can cause more senses of students involved (visual, audio). With the increasing number of senses involved, students will more easily understand a concept [19].

From the results of the analysis on the experimental group student worksheets, it can be seen that in addition to using image illustrations or image associations, experimental group students used the quiz content contained in the application for hiragana learning. As with the opinion expressed by Hall et al. that the mnemonic method can be useful provided it is used selectively along with other learning methods [20]. The effectiveness of imagery for learning to associate hiragana characters with the spoken syllables that they represent. On the test of immediate recall, imagery was clearly superior to direct instruction. Imagery is an effective way to teach students to associate hiragana characters [15].

Differences in Hiragana Letter Mastery Ability for Students Using Mnemonics Based on Android Applications and Students Using Hiragana Mnemonic Flashcards

Based on the results of processing statistical data, it can be seen that the average value of the pretest in the experimental group (in Table 1) using android application-based mnemonics was 61.57, while in the experimental group using image card-based mnemonics was 63.32. After being treated, the average posttest value of the experimental group using android application-based mnemonics was 86.66, while in the experimental group using image card-based mnemonics was

71.57. From the results of posttest data processing, the results of t count are 4.33. Then the value is compared with the value of the t table with $db = 35$ which is equal to 2.03 (5%) and 2.72 (1%).

It means that it can be concluded that there is a significant difference between the hiragana mastery ability of the experimental group students using the android application-based mnemonic method and the experimental group that uses image-based mnemonic methods as evidenced by statistical data which shows that the average values of the two groups are at the category different.

The conclusion can be said that the higher hiragana letter mastery ability of the experimental group using the android application-based mnemonic method rather than the hiragana mastery ability of the experimental group students using image card-based mnemonics.

The conventional mnemonics were initially effective only for those learners of Japanese without prior experience in learning non-Roman scripts, and that the effectiveness largely faded away without practice [14]. The importance of practice for long-term retention of learned hiragana, the uncertainty of the longterm effect of L1 strategy transfer, and the importance of the an unambiguous association between the sound and the picture for mnemonics to be effective at least for short-term retention [21,22].

Based on the results and findings of the study it can be concluded that the m-Learning learning model will be a popular learning approach in higher education. But in principle in a teaching and learning activity, it should not eliminate the teacher's role altogether. Because after all students to digital natives - even though they are born with technology - knowing how to use using mobile devices still need direction on how to learn and use them [11].

The findings show that mobile phones are not just for fun, communication and entertainment purposes; they can also be used as a tool for language learning. In mobile learning students are not tied to a specific time and place; they have access to educational material at any time. Mobile technologies provide opportunities to independently investigate and learn about things that pique students' curiosity. It makes the learning process comprehensive and motivates learners to pursue lifelong learning.

The results of final exams in Table 1 showed that students from the experimental groups received better grades than the control groups. Thus, the creative use of mobile learning contributed to more effective learning and improved their Hiragana memory ability.

Mobile learning offers a variety of benefits that students can achieve in various ways and to improve the education they get. The first biggest advantage is the ability to study whenever and wherever as mentioned by Foti and Mendez [10]. Secondly, smartphones and other devices connected to the internet have spread to our culture, so the world of education will certainly not be teetered when this technology is implemented in the process of teaching and learning activities. Third, later mobile devices have become an affordable product. Manufacturers have offered a variety of products at affordable

prices for the community. Fourth, mobile learning presents a medium that is able to improve high-level thinking skills. 21st Century Skills which is an ability that must be mastered by students in schools such as critical thinking and problem solving, communicating, collaborating, creating and innovating are examples of implicit activities found in everyday use of educational technology through mobile devices.

In the meantime, mobile learning offers a new way to motivate students by providing a high level of involvement and novelty, personalization, and independence. The ability to continue to use new applications and find new ways to use these devices is a challenging and interesting activity for students. The use of smartphones as mobile devices has a high level among students, especially children, and adolescents, and is, of course, something of value when bringing them to mobile learning rather than limiting them to older learning methods, when they clearly have talent and passion towards newer technologies. Allowing and encouraging the use of smartphones for academic purposes gives new meaning and enthusiasm for learning [11].

Mobile learning is not a panacea for all the problems that interfere with our education system. With someone's mobile device immediately there will be no increase in achievement and enthusiasm for learning. Like computers that have been present before, mobile devices such as smartphones have tremendous potential to change the way students learn and our expectations about what must happen in the classroom. The ability of mobile devices to give a "shock effect" to the status quo of the education system and update it depends on knitted teaching [11].

The use of mnemonic images in current learning uses forms or letters or easily recognizable objects [7,8,23]. Because an object is integrated with the shape of the character that represents it. The "picture method" among other mnemonic strategies that utilize imagery and which are effective tools to facilitate short-term learning. The mnemonic-based application more useful for Japanese language learners especially learners with Roman-alphabetic background who are learning to read and write Japanese, either in hiragana or katakana also might be effective in learning to read and write kanji.

IV. CONCLUSION

The process of remembering people's memories to remember the latest information related to a particular stimulus and to release or release information previously associated with it. Learning with mnemonic devices is generally found to be more effective than rote learning (see Bellezza, for a discussion of some of the issues connected with mnemonic learning) [24].

Further research is needed to reinforce these results and to investigate the effects of respondents on different learning outcomes. For example, if the respondent's self stimulates deeper cognitive processes than the mnemonics provided, the achievement differences may be more obvious for higher level learning than the training or repetition tasks contained in the application used in this study.

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