

Japanese Literacy Acquisition by Alphabetic-Based Background Indonesian Learners

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Abstract—This research aims to determine that the contribution of phonological and visual processes to literacy acquisition in two different scripts is important when studying kanji especially reading Japanese kanji characters. However, visual games are less well understood. For logographic scripts where symbols represent all words or units that are meaningful, the importance of visual memory in literacy acquisition may highly be expected due to visual complexity in logographic characters, but in reality is still the same. The research methodology complemented by a questionnaire and kanji tests involved 50 Indonesian students who took the Basic Reading Comprehension course on various literacy and cognitive tasks. Data from the research were collected from the questionnaires, kanji tests, and cognitive tasks. The results showed that the skills differences that predict literacy performance in phonological awareness and logographic Kanji provide experimental evidence that visual memory is important when learning Kanji. Therefore, the problem of literacy in Japanese as a foreign language and remediation program must be considered in a reading and writing lesson for elementary level learners.

Keywords—*alphabetic background learners; literacy acquisition; phonological awareness; second language acquisition; word recognition*

I. INTRODUCTION

The acquisition of reading comprehension is learning to understand writing as well as one understands spoken language has empirical justification [1]. At the beginning of learning to read, the correlations between reading and spoken language comprehension are small [1]. This is because, in the beginning, children are learning to decode and identify words, so it is these word-reading processes that limit comprehension. However, as children move beyond the beginnings of learning to read, the correlations between reading comprehension and spoken language comprehension increase and then level out by high school [2]. As children learn to read words, the limiting factor in reading comprehension shifts from word recognition.

Reading is a complex cognitive activity that integrates the lower and higher process. Reading in a second language (L2) or a foreign language (FL) is different from reading in the first language (L1) in a different way. Readers L1 has a verbal ability that well developed, vocabulary, and 'tacit' grammar when they begin learning to read [3,4]. Readers L2/FL may lack the verbal ability and the possibility of having a limited

vocabulary, and grammatical knowledge are not developed yet. Readers L2 is always slower and inaccurate in text processing, especially for readers who have a different orthography [5].

Cognitive load is even bigger when the writing system is an orthographic L2 away from the system when the writing system L1 or L2 phonologically unclear. In this state, L2 learners may have a big problem while extracting linguistic information (phonological e.g.) directly [1]. Therefore, learn to read like the Chinese or Japanese language, which has one of the most daunting writing systems and phonology, were challenging for the L1 learners who not similar with Chinese or Japanese characters [1].

Japanese have a lot of scripts, thus offering a different set of challenges for Indonesia as a foreign learner. Japanese writing involves two qualitatively different scripts: kanji logography and syllable of Hiragana and Katakana. Kanji comes from the majority of Chinese characters, means that the letters can be understood through visual access instead of letters and sounds. The other challenge is how to read the two kinds of kanji, from the Chinese (*On-Yomi*) or from the Japanese language itself (*Kun-Yomi*).

The speed contribution for one-minute reading test performance is often used as a measure of the accuracy of reading word and reading level. Reading tests in the form of words, sentences, and paragraphs can also be used as an evaluation for a foreign language learner. A multi-component reading skill involves scanning visual, phonological skills, processing speed, lexical access, working memory [6].

The reading process involves a regulatory mechanism that involves phonological and printed words, so that underlie the ability of learners to detect and represent the orthographic patterns. This will help beginners to store different representations and composed specific spelling words. While phonological awareness is highly correlated with accuracy in decoding and encoding letter-sound, speed is more correlated with the word identification [7,8].

In this paper, the author presents a problem that occurs in different multilingual orthography especially at beginner learners. The research questions raised in this study as follows,

- Does the activation of phonology give some influence in the process of reading the Japanese text?

- Is the visual process of understanding the Japanese characters contributing to the process of literacy acquisition Japanese?

II. METHOD

A. Research Design

This study used to *Think Aloud Protocols* (TAPs) method, a method used by verbalizing about what the learners thought, felt and the opinion out in the evaluation. *Think Aloud Protocols* (TAPs) is a protocol used to gather data in usability testing in product design and development, in psychology and a range of social sciences (e.g., reading, writing, translation research, decision making, and process tracing). This method is usually used to evaluate the learners understand the text individually. In other words, this method is the application of cognitive psychology to obtain data and information on a person's thinking process [9].

The data collected from September to October 2018. The author gave some reading exercises which contain the complete questions related to Japanese sentences and Japanese short text. Then the participants read it and recorded it with a smartphone voice recorder.

B. Participant

50 students who participated in the study were taken purposively of the *Shokyu Dokkai 1* (Basic Reading Comprehension) course in one of the universities in Bandung, West Java, Indonesia majoring Japanese Language Education. Respondents totaled 50 students (32 women and 18 men). Respondents are designated as the basic level Japanese ranging in age from 17 to 20 years.

C. Instruments

The instrument used in this study were collected from TAP tasks, questionnaires, Kanji Test, Cognitive Tasks and Interviews.

1) *TAPs task*: The task is consisting of five sentences *kana* (*hiragana* and *katakana*) and *kanji* is called *Vocabulary Test*, and one paragraph a Japanese short text containing *kana* (*hiragana* and *katakana*) and *kanji* is called *Reading Test*.

2) *Vocabulary test*: This standardized test is designed to measure the ability of students to comprehend the meaning of the word within the context of a single sentences. The vocabulary consist three Japanese characters, *hiragana*, *katakana* and *kanji*.

3) *Reading test*: This standardized test is designed to measure general reading of student in basic level. After reading a text, a student answers a number of questions about words, entences and text levels of Japanese text.

4) *Reading questionnaire*: This questionnaire measures knowledge of reading strategies in basic level. This instrument used to collect information in the process of reading Japanese text strategies, a comprehension the meaning of sentences and a short text.

5) *Interview guideline*: This standardized test is designed to measure in-depth interviews conducted to detail information. A detail information about the process of reading Japanese sentences and text, external and internal factors in reading Japanese characters.

D. Measurement Instruments

During the measurement, the following instruments were administered: the TAPs Task (Vocabulary Test and Reading Test), and Reading Questionnaire. There are several steps for collecting data, which are called by the general reading process; collecting the TAPs Task data and fill the Reading Questionnaire. The TAPs Task stage as following: 1. Respondent read five Japanese sentences and a Japanese short text; 2. Record the reading of vocabulary and text into words and meanings with a smartphone voice recorder; 3. Ask questions before, during, and after reading; 4. Respondent filled the Reading Questionnaire containing questions about any difficulty factor in reading Japanese texts, difficulties in understanding the meaning of text and how to recognize Japanese characters; 5. Collecting more detailed information by interview.

This research was conducted in extra time outside the *Shokyu Dokkai 1* course. At the time of the test retrieval data (in the form of observations in class) are not documented, but at the time of the test read through TAPs task and voice recorded it.

1) *Data collection*: Data collected by 1) observing and recording any constraints faced by the respondent at the time of reading and understanding Japanese sentence and short text. 2) Note and recorded with a tape recorder when the respondent did TAPs task. 3) Record the learner's effort while verbalizing what they think, feel, and their opinions when understanding the content of the Japanese-language text / sentence.

Data analysis procedures: (a) transcribe the record, (b) analyze the results to classify the difficulties and strategies used by the respondent through the data recording TAPs Task, and Cognitive Task, (c) Interpreting the data results, (d) Combine the data results and the interview data, (e) Make conclusions and recommendations.

2) *Data analysis*. Our main analytical approach consists of two-variable analysis between two independent groups (t-test) and multivariate, including difference tests, partial correlation, and hierarchical analysis, which allows us to estimate phonological processing, and visual attention. Hierarchical regression analysis allows us to assess the extent of predictive value of cognitive skills in reading ability. It should be noted that reading speed and phonological awareness in logography are only taken as appropriate indicators to characterize reading performance.

III. FINDINGS AND DISCUSSION

This research discusses two issues concerning (1) the contribution of phonological activation whether it gives influence in the process of reading Japanese text; and (2) the

visual processes in understanding Japanese characters give contribute to the process of literacy.

The TAPs Task was only implemented once, because limited time and large number of respondents. But the task divided was two tests, Vocabulary Test and Reading Test, used to read and think aloud sentences and texts. The Vocabulary Test contained five sentences, and each sentence contained 3 – 4 words include *kana* (*hiragana* and *katakana*) and *kanji* (see table 1). The Reading Test contained one short paragraphs, it is contained 8 sentences with title “*Machi no Seikatsu, Yama no Seikatsu*” (see Table 1). This sentences was refered from “[10] and the text was refered from “*Minna no Nihongo Shokyu I – Shokyu de Yomeru Topikku 25*” [11].

TABLE I. DESCRIPTION OF THE SENTENCES AND TEXT IN THE TAPs TASK

Stimuli	Description	Sentence	Text
Hiragana	a Japanese syllabary, used for phonetically spelling out Japanese words,	5	10
Katakana	a Japanese syllabary, used for for foreign words and a loanword	3	1
Kanji	the adopted logographic Chinese characters that are used in the Japanese writing system	11	14
Particle	marks the grammatical object of a sentence, such as <i>は</i> (<i>wa</i>) functions as <i>tobe</i> in English.	15	18
Japanese Numerals (<i>suuji</i>)	the system of number names used in the Japanese language, it represented with Romawi number or kanji	1	1

Source: Research Data

The difficulty of the sentences and the text are kanji that have not been studied. But all of the Kana characters have been studied and mastered before. In table 2, description and occurrence of the different sentences and text in the TAPs Task.

TABLE II. DESCRIPTION AND OCCURANCE OF THE DIFFERENT SENTENCES AND TEXT IN THE TAPs TASK

Stimuli	Description	Sentence	Text
Postpond reading comprehension	A difficult remembering how to read Japanese characters	103	+7
Problematic reading hiragana	Distinguish the same Hiragana character's shape and shape	214	+9
Problematic reading katakana	A difficult how to read Katakana characters and distinguish the same characters	120	+77
Problematic reading kanji	A difficult how to read Kanji characters and distinguish the same characters	121	+13
Problematic reading Japanese numeral	A difficult remembering how to read Japanese numeral	210	-8

Source: Research Data

An interesting finding in this research is the independent contribution from visual attention and phonological awareness in spelling and reading Japanese text. It seems that the role of visual attention in the written language is more clearly in the early stages of reading acquisition. For learn to read and spell,

learners start depends on the discipline (scanning left-to-right, visual analysis of fine, the organization of visual-spatial) to control the effect of optimal position in speech recognition that allows the reader to identify most of the letters in the word [12] which develops in children when they are learning to read [13]. Kanji acquisition would be more affected by the visual skills-orthography, especially the long-term visual memory [14].

Based on the test results read by using TAPs, it is indicated that nearly (90%) of all respondents take a few seconds in the coding process to compared logographic kanji rather than kana in the form of a sentence or a paragraph. Especially in the medium-low group that has the Japanese ability at least 5 seconds in the coding process to read orally.

Another interesting finding emerged when the kanji numbers, day etc. (sequence). Some of the respondents rely on sequential memorization in the reading process until it comes out verbally. So there is some pause a few seconds for the words to pronounce.

This proves that in the reading process the different L2 orthography requires visual attention through the information that extracted from the input orthography to come out verbally [15]. The observations in this research, before and during the reading, it is suggested that visual attention is one of the few cognitive skills where beginners build visual reading activities compared with phonological process activation [14].

Cognitive Task Based on the analysis, figure 1 shows that the components of the inability of Japanese language text read as follows.

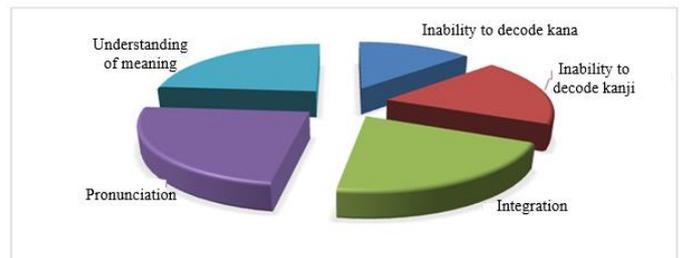


Fig. 1. Components of the Japanese-language text reading inabilities.

Based on the percentage in figure 1, inability components for reading Japanese text are pronunciation and understanding the meaning. Overall only 2 respondents who demonstrate good pronunciation as well as the meaning of sentence and paragraph. The respondents came from the high Japanese language ability group. Between the understanding and pronunciation factors have a close correlation because when the reader does not understand the meaning of a sentence, then the pronunciation and intonation in reading will incorrect.

Inability to decode Kanji factor is bigger than Kana. For beginners, learning Japanese kanji is more difficult to recognize than the *kana*.

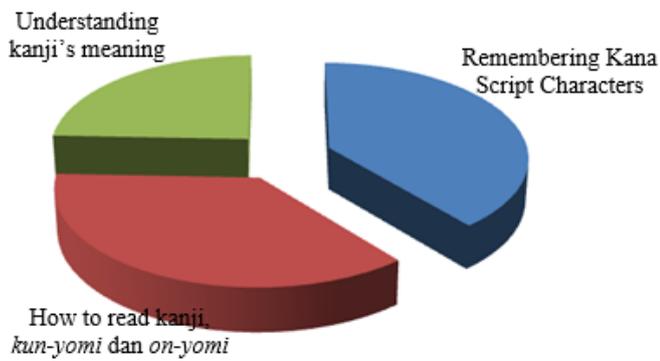


Fig. 2. Component factors affecting reading barriers.

Figure 2 shows the factors that influence from the read barriers. Most of the sequence was the car abaca kun-yomi and on-yomi, memorize kana and understand the meaning.

For plan, realization and monitor the acquisition of literacy early in the second language / foreign two are very important: (i) identification the differences of the first and second language / foreign writing system, and (ii) identification of the transfer rate; positive and negative of the first language to language second / foreign. The transparency gives teachers valuable information about student's strategies that learn reading and writing with different levels. With more transparent writing system, the students tend to develop just one strategy, it is the alphabet strategy. The less transparent system of writing, the more strategies developed to address diversity in phoneme-grapheme correspondence. For example, reading and writing learners in English developed three different strategies: (i) analogy strategies to read and write words with the on-set or the same rhyme (eg., light, right, might, fight, bright, knights), (ii) lexical strategies in recoding words representations irregular decode (eg, people, choir), (iii) alphabet strategies to rearrange words with correspondence regularly between phoneme and grapheme (eg, tin, cap, plants) [16]. Identification of the divergence in the two phonology and writing system shows the level of phonology, phonological awareness, and acquisition correspondence-morpheme that can move from first learners (positive transfer) and which level need systematic instruction to prevent or at least prevent the negative transfer.

IV. CONCLUSION

The difference of the writing system needed a phonological awareness in predicting the performance of literacy, especially in recognizing and understanding the logography of kanji characters. For beginner literacy, acquisition process can be better if each individual has a schema / knowledge regarding appropriate strategy or mechanism in the process of reading literacy. In addition, the learner must have an understanding of cross-cultural diversity of the two characteristics of the writing systems / orthography of the language: the language phonological awareness and orthographic transparency. The development of phonological awareness significantly affects the development of early literacy and the acquisition of reading literacy in the development of the cognitive level of is different.

From the research results that provide experimental evidence, visual memory is very important when learning Kanji as Japanese language for foreign learners. Therefore, the problem of literacy in Japanese as a foreign language and remediation program must be considered in reading and writing lesson for elementary level learners.

From a methodological standpoint, our findings suggest the need to include a variety of reading and spelling measures in studies for mastery the written language, and to explore their specific components. Also These findings support for implementing the initial training program that requires the entire phonological awareness, visual attention and cross-modal processing (matching the visual-verbal) for learners.

The findings of this research also have implications for pedagogical, such as, Japanese educators and textbook designers should Consider the incorporating between consistency and orthographic information in designing and developing methods and materials to teach the Japanese kanji character for elementary-secondary students L2.

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