2003

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Publication Details

Haththotuwa Gamage, G, Perceptions of kanji learning strategies: Do they differ among Chinese character and alphabetic background learners?, Australian Review of Applied Linguistics, 26(2), 2003, 17-31. Copyright Applied Linguistics Association of Australia ALAA.

PERCEPTIONS OF KANJI LEARNING STRATEGIES: DO THEY DIFFER AMONG CHINESE CHARACTER AND ALPHABETIC BACKGROUND LEARNERS?

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ABSTRACT

This study investigates three important issues in kanji learning strategies; namely, strategy use, effectiveness of strategy and orthographic background. A questionnaire on kanji learning strategy use and perceived effectiveness was administered to 116 beginner level, undergraduate students of Japanese from alphabetic and character backgrounds in Australia. Both descriptive and statistical analyses of the questionnaire responses revealed that the strategies used most often are the most helpful. Repeated writing was reported as the most used strategy type although alphabetic background learners reported using repeated writing strategies significantly more often than character background learners. The importance of strategy training and explicit instruction of fundamental differences between character and alphabetic background learners of Japanese is discussed in relation to teaching strategies.

INTRODUCTION

The learning of kanji or Chinese characters is considered to be one of the most challenging problems faced by learners of Japanese as a second/foreign language (hereafter JFL/JSL learners). The typological differences between kanji and alphabets are assumed to be responsible for this difficulty (Bourke, 1996; Flaherty, 1993; Toyoda, 1998; Watanabe & Toyoda, 1994). Psycholinguistic studies on word recognition on both alphabets and Chinese characters have given rise to conflicting theories on

how Chinese characters are processed in the mental lexicon. Kanji recognition research on JFL learners (Chikamatsu, 1996; Koda, 1990; Mori & Nagy, 1999) has also shed light on implications on different processing mechanisms for learners from alphabetic and Chinese character backgrounds (hereafter referred to as alphabetic and character background learners respectively).

The focus of this study is on kanji learning strategies by learners of Japanese as a foreign language. Insights into learner strategies are important in order to understand the underlying phenomena behind language learning and individual differences among learners. Research on kanji learning strategy has hitherto mainly focused on JFL learners from alphabetic backgrounds and these have indicated strategy preferences according to levels of proficiency (Bourke, 1996; Douglas, 1992; Okita, 1995). This study however, is an attempt to identify differences in perceived kanji learning strategies by both character and alphabetic background JFL learners studying in the same language context in Australia. Identifying such differences in strategy preferences among character and alphabetic background learners may assist instructors of kanji in understanding learner behaviours. The study also attempts to elucidate the frequency of strategy use among those learners and the perceived efficacy of those strategies, which previous studies have not explored.

CONCEPTUAL OUTLINE OF PAST RESEARCH

Orthographic Background

Recently an increasing number of studies have focused on kanji learning strategies by learners of Japanese from alphabetic backgrounds. This is supposedly due to the increasing number of students from non-kanji environments learning Japanese (Japan Foundation, 2000) and the need to better understand individual differences among JFL learners.

However, it is commonly assumed and claimed that learners with no prior knowledge of Chinese characters often find it more difficult to learn kanji than learners from character backgrounds

(Ishida, 1986; Machida, 2000; Toyoda, 1995). The complexity, the opaque sound-shape correspondence, the multiple readings and the vast number of kanji to be learnt, all contribute to the difficulty of learning kanji for alphabetic background learners. Toyoda (1998) indicates that it is during the intermediate stages that most learners from alphabetic backgrounds lose their interest and motivation for studying kanji, although they were interested during the initial stages. This may be due to several reasons. Firstly, the gradual increase of new kanji to be learnt and retaining the already learnt kanji seem to be an endless memory-load on the part of the learner at this stage. Secondly, it is at the intermediate stages that the learners are exposed to authentic material other than kanji textbooks, and frustration builds up when learners realize they are still unable to read an authentic text such as a newspaper.

Character background learners have demonstrated better performances in reading proficiency and recognition of kanji as compared with alphabetic background learners (Machida, 2000; Matsunaga, 1999). Most Japanese language classes outside Japan do not provide separate instructional procedures for character and alphabetic background learners. Perceptions of kanji learning strategies by both character and alphabetic background learners within the context of the same instructional method may provide much needed information on strategies used according to one's first language orthography.

Strategy Type

This study also elucidates the type of strategies used by JFL learners. Psycholinguistic studies in Chinese character processing describe three types of informational content when processing kanji (Kaiho & Saito, 1989; Shimizu & Green, 2002), namely, the shape, pronunciation and the meaning of kanji. Cognitive scientists are still debating the role of phonology in Chinese character recognition. According to the theory of the Universal Phonological Principle (Perfetti & Zhang, 1991; Perfetti, Zhang,

& Berent, 1992), both the meaning–based Chinese characters and the sound-based alphabets are processed the same way, through a phonological mediation route. However, theories on orthographic depth (Frost, 1994; Katz & Feldman, 1983) predict that a shallow orthography allows a simple and direct correspondence between letters and sounds while a deep orthography such as kanji follows a more complex relationship between letters and sounds. The question arises as to what happens when speakers from both deep orthographies (such as Chinese) and comparatively not so deep orthographies (such as English) learn a deep orthography such as Japanese kanji. Do they transfer their first-language processing strategies and are they aware of this?

Several studies suggest differences in character recognition according to similarities of learners' first-language and second-language orthography. According to Koda (1990), first-language orthographic processing strategies are transferred to a certain extent when acquiring a second-language. In a character recognition study, Hayes (1988) revealed processing strategy differences between native Chinese and non-native proficient learners of Chinese. Native readers made more phonological errors while non-natives made both graphical and phonological errors. Chikamatsu (1996) found that advanced English learners of Japanese relied more on phonological information while Chinese learners relied more on visual information when retrieving kana (syllabic Japanese script) words. Mori's study (1998) also revealed that alphabetic background learners' response patterns differed significantly with phonologically inaccessible kanji.

The above studies on character recognition have indicated possible processing differences in the types of strategies used by character and alphabetic background learners. Again, these results can indicate that learner perceptions in character learning may differ according to orthographic background. In other words, do learner perceptions of strategy choice differ according to their first-language orthographic background? This question has not been investigated so far in a same-language setting.

Shimizu and Green (2002) categorize the conventional strategies used for teaching and learning kanji into three types; i.e. rote, contextual and mnemonic or memory strategies. Their questionnaire indicates that rote-writing strategies are most commonly used in kanji instruction in the United States. Rote writing is widely used as a strategy in learning kanji also by Japanese children (Naka & Naoi, 1995; Onose, 1988). Recent trends in kanji textbooks, however, have emphasized the importance of contextual strategies. Hence, it might be worth investigating the type of strategy most frequently used by both character and alphabetic background learners.

Strategy Usage and Effectiveness

Past research on language learning strategies has mainly focused on how frequently a learner employs a certain type of strategy (Oxford, 1989, 1990, 1993). Learners with good performances have claimed frequent use of a wide variety of strategies and frequency of use was mostly considered as a determining factor for effectiveness of a strategy. A question still remains as to whether all learners consider their frequently used strategies as effective strategies for retaining a language in memory. As in the case of learning kanji, rote writing strategies are popularly believed to be one of the most frequently used strategies among native learners as well as JFL learners. However, whether this is considered as an effective strategy still remains doubtful among the learners and even among educators and instructors of the Japanese language. A comparison of self-reported efficacy of strategies with those of strategy use may provide information on the kind of interaction between the two, in one language setting.

THE RESEARCH QUESTIONS

The main research questions therefore, arise from the question of how JFL learners perceive the kanji learning process. A

questionnaire was formulated to answer the following research questions:

1. What is the relationship between perceptions of strategy use and the effectiveness of those strategies by JFL learners?
2. What is the most frequent strategy type JFL learners perceive themselves as using?
3. What are the differences in strategy use according to orthographic background?

THE QUESTIONNAIRE

The questionnaire method has been extensively used in investigating strategy usage in non-native adult learners of Japanese (Bourke, 1996; Grainger, 1997; Okita, 1997; Wharton, 2000). Apart from a few studies (Ishida, 1986; Ke, 1998), most studies have employed the Strategy Inventory for Language Learning (SILL) or a modified version of SILL as the method of investigating strategy usage.

The present questionnaire was formulated in order to assess student perceptions of usage and effectiveness in three main areas related to kanji learning, i.e. shape (visual strategies), meaning (semantic strategies) and pronunciation (phonological strategies). Participants in the study were asked to read each statement or approach and indicate their frequency of use and perceived effectiveness. Previous questionnaires in kanji learning were used as guides in formulating the statements. Examples were provided along with the statements to facilitate understanding of these statements.

The questionnaire was influenced by the work done by Bourke (1996) with the "Strategy Inventory for Learning Kanji (SILK)", and adopts the same Likert-scale response system to record strategy usage and helpfulness. Other studies that influenced the conception of the questionnaire were those of Okita (1995), Fujiyoshi (1996) and Douglas (1992). The chosen areas of importance, however, were selected based on the researcher's own

experiences and those gained from discussions with current Japanese language teachers and students. Only script specific memory and cognitive strategies common to all non-native learners of Japanese were chosen for this study. It is important to note that it is not within the scope of this research to deal with strategies other than cognitive or memory strategies, as it is assumed that social and affective strategies are more influenced by external factors such as cultural backgrounds, language teaching methods, task requirements and individual learning styles.

The questionnaire consisted of 20 statements of kanji learning strategies divided into three parts, relating to the shape (7 statements), meaning (6 statements) and pronunciation (7 statements) of a kanji. Each statement caused the reader to think of a certain strategy when memorizing a new kanji. (See Appendix 1 for questionnaire statements)

PARTICIPANTS

Participants included 116 second-year undergraduate students who had learnt approximately 120 kanji within their formal years of study from three universities in Brisbane, Australia. Participants of this specific level of kanji learning were targeted, as it is at this level that they claim to find kanji most difficult to learn (Toyoda, 1995).

Participant Background Information

Demographic information about the participants was gathered through a background questionnaire. Among the 116 participants 64 were from alphabetical backgrounds while 52 were from character backgrounds. The majority of participants were females (n=88, 76%). Nearly half of all participants (47%) had experience of staying in Japan for a very short period of time (not longer than 3 weeks). Most participants (87%) were within the age range of 17-25 (average age 19.1).

Most alphabetic background learners' native language was English (59 native English speakers, 92%). Apart from English, there was one each of Hindi, Thai, Polish, French and German speakers (5 alphabetic speakers other than English).

The character background learners consisted of 42 Chinese speakers, 6 Korean speakers and 3 Japanese speakers respectively. Those who claimed to be fluent in both Chinese and English were treated as character background learners as they had prior knowledge of kanji within their formal educational background. Most participants reported that they studied Japanese because they were interested in the Japanese culture and language (84%).

DATA ANALYSIS AND RESULTS

Each response was assigned a score according to the 5-point Likert scale, where 5 indicates "I use this approach very often" or "This is very helpful" and 1 indicates "I never use this approach" or "This is not a helpful approach". A response of 3 was regarded as a neutral response. The results were recorded for each statement by taking the mean response. Response patterns were noted down for possible relationships. A statistical analysis was employed for significant differences within character and alphabetic background learners.

Strategy Use and their Effectiveness

First, to examine the relationship between strategy usage and effectiveness, the mean response of each statement was compared. Means and standard deviations for the dependent measures of usage and effectiveness for the overall sample are illustrated in Figure 1.

The x-axis indicates the 20 statements of kanji learning strategies divided into 3 strategy types of shape (Visual strategies: V1 to V7), meaning (Semantic strategies: S1 to S6) and pronunciation (Phonological strategies: P1 to P7). The Y-axis marked the average response (columns) and the standard deviation

(lines) of all subjects (116) for each statement. The higher each column bar is, the more the participants claim they use such a strategy (as indicated by dark columns) or the more they seem to think it is useful (as indicated by gray columns).

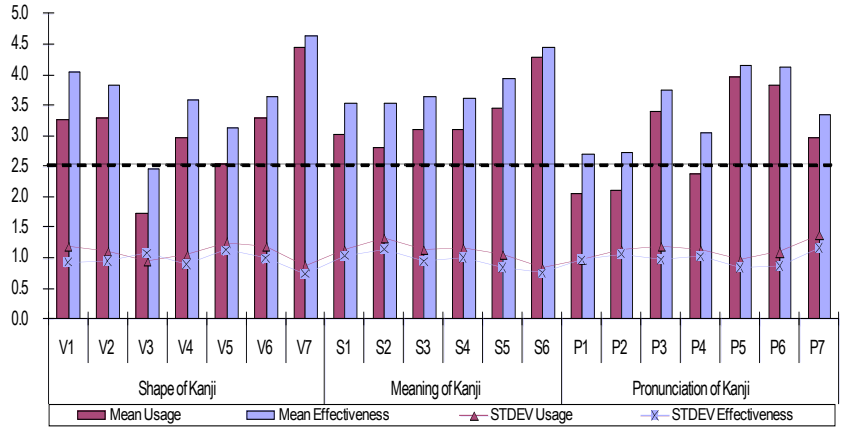

Figure 1: The average response pattern of kanji learning strategy usage and their effectiveness. (1-never, 2-almost never, 3-sometimes, 4-quite often, 5-very often)

As Figure 1 indicates, the mean (average) of "effectiveness" for each statement is higher than the average for "usage" in all responses, irrespective of the strategy type. In other words, JFL learners perceive that the strategies they use in learning kanji are also helpful in remembering them. Assuming that their average perceptions on usage predict the scores on effectiveness, a correlation analysis was conducted for each participant's response mean and there was a very high correlation between his or her usage and efficacy (0.89). This clearly indicates that learners of Japanese believe that the strategies that they use in learning kanji are effective in retaining them.

The Most Frequently Used Strategy Type

Traditional strategies which include motor skills such as "remembering the shape, meaning and pronunciation of a new kanji by writing it on a piece of paper repeatedly" (V7, S6 and P6 respectively) were perceived as most frequently used by the learner, and they were also perceived as most effective in learning kanji.

As can be seen from Figure 1, the means of four strategies were below the 2.5 mean response line, i.e. "creating associations between kanji and the shape of the alphabet" (V3), "placing it in a group of kanji that have the same pronunciation" (P1), "associating the sound of a kanji with a familiar English word" (P2) and "associating with other kanji which have the same sound radical" (P4). Accordingly, it can be assumed that strategies associated with pronunciation (phonological strategies) seem to be least preferred by all participants. This observation, however, is inconsistent with some of the empirical kanji recognition studies which proclaim that JFL learners tend to rely heavily on L2 phonological representations for character recognition (Koda, 1989; Takahashi, 2001). Further investigations are necessary in view of the fact that participant opinions and their actual applications may reveal different results. As such, the significance of teaching methods/instructions on learner deployment of strategies has not been examined in this research and may be useful to examine in future research.

In sum, the results of this study indicates that in strategy type, whether visual, phonological or semantic, the participants tend to rely more on rote learning skills for retaining a new kanji. All participants very rarely use contextual skills and associating kanji with alphabets in order to remember the shape or pronunciation.

Strategy Usage among Alphabetic and Character background Learners

The third research question dealt with exploring similarities or differences in strategy usage according to the orthographic

background of the learner. To answer this question, the response means and the standard deviations of alphabetic and character background learners were compared using a column graph. Additionally, for each of these statements, t-tests were run to assess significant differences within the means of alphabetic and character background learners' strategy usage.

As can be seen from Figure 2, alphabetic and character background learners' opinions seem to differ in some statements although the trend seems to be similar. Character background learners' average score was higher than alphabetic background learners in 9 statements approximately half of all the statements (V4, V6, S1, S3, S4, P1, P3, P4, and P7).

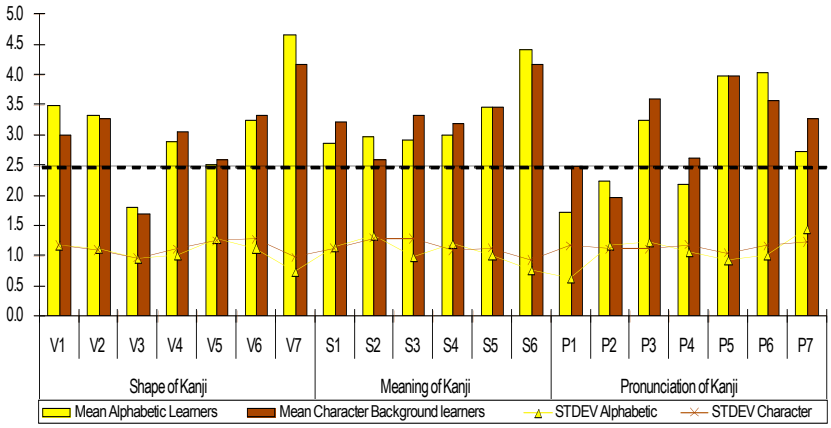

Figure 2: The average response pattern of kanji learning strategy usage among alphabetic and character background learners. (1-never, 2-almost never, 3-sometimes, 4-quite often, 5-very often)

When one closely examines these statements in all three types of strategies, it is noticeable that most of these consist of strategies that look into the internal structure of a kanji, i.e., grouping kanji with other kanji containing the same radical (V4), remembering the stroke order (V6), grouping kanji with similar sound radicals

(P4) and remembering the compound word rather than the individual kanji (P3).

Although with slight differences in the averages, it is noticeable that strategies requiring motor skills (V7, S6 and P6) are among the highest, even among character background learners. Two contrasting reasons can be given for this trend. On the one hand, character background learners may just be adopting rote learning strategies similar to the methods through which they learnt their first character based script. On the other hand, one can assume that, since these learners are already aware of the shape and the meaning of kanji to a certain extent, due to wide exposure from their native orthographic background, they can be transferring their prior knowledge in the acquisition of these characters without rote writing strategies. The results show otherwise, implying that it is a misconception to say that rote writing strategies are mostly used by alphabetic background learners. It is apparent that character background learners seem to be making use of motor skills as much as the alphabetic background learners.

Multiple T-tests[2] were performed for each statement to determine whether there were significant differences in the averages among character and alphabetic background learners. T-tests are used to compare the mean score of two different groups of subjects. The statements with significant differences between the two groups are recorded in Table 1.

Statement - usage	Mean	*Variance*	*T Critical (two tail)*	*p(T<=t)*
V1. *Creating associations with pictures*	A-3.5 K-2.98	A- 1.36 K- 1.39	1.982	0.0098**
V7. *Writing it on a piece of paper*	A- 4.67 K- 4.15	A- 0.54 K- 0.96	1.986	0.0021**
P1. *Grouping kanji with similar pronunciations*	A- 1.72 K- 2.5	A- 0.39 K- 1.31	1.992	0.00003**
P4. *Grouping kanji with similar sound radicals*	A- 2.19 K- 2.63	A- 1.13 K- 1.33	1.98	0.03*

P6. *Reading aloud while writing it*	A- 4.03 K- 3.52	A- 1.01 K- 1.47	1.98	0.016*

Table 1: Significant differences between alphabetic and character background learners
A=Alphabetic background learners K=Character background learners
*$p<0.05$ ** $p<0.01$

As can be seen from Table 1, there were significant differences between character and alphabetic background learners for five statements in the questionnaire, i.e., two statements relating to shape and three statements relating to the sound of kanji. Incidentally, we could gather that alphabetic background learners' response mean was higher than those of the character background learners for visual strategies and vice versa for phonological strategies with the exception of one motor skills strategy (P6). In other words, alphabetic background learners claim to use visually-oriented strategies such as "picture association to kanji" and "repeated writing" more than the character background learners, while character background learners prefer to use phonologically-oriented strategies such as "grouping kanji with similar pronunciations and phonetic radicals". In general, repeated writing strategies are claimed to be frequently used by both alphabetic and character background learners, with a higher preference among alphabetic background learners.

CONCLUSIONS

Based on the findings of the present study, several recommendations can be made for instruction in kanji for learners of Japanese as a foreign language. First, the present findings suggest that JFL learners (who have learnt approximately 120 kanji) believe that the strategies they use most are the most helpful strategies. Contrary to the widespread belief that repeated writing is a time consuming and tedious task, JFL learners seem to believe that strategies associated with repeated writing are the most

helpful in learning kanji. Given that kanji learning strategy usage is mostly limited to "rote writing" measures, it is conceivable that JFL learners perceive motor skills as being one of the most efficient strategies. Research in kanji learning has not yet addressed the issue of repeated writing vs. other cognitive strategies, although Naka & Naoi (1995) have explored the effect of repeated writing on memory.

Many studies have emphasized the importance of strategy training in kanji learning for non-character background learners (Douglas, 1992; Bourke, 1996; Fujiyoshi, 1997). Although the present study did not address the issue of strategy training directly, the findings reveal a clear need to make JFL learners more aware of the range of possibilities for kanji learning other than repeated writing. One of the best ways to improve proficiency in kanji acquisition is to increase the learners' exposure to cognitive processing strategies oriented to their orthographic background.

Finally, the data from the present study reaffirms the fact that alphabetic background learners rely more on visually oriented strategies. This replicates the findings of Okita's (1995) questionnaire. Moreover, the data also revealed that character background learners seem to rely more on phonological strategies than alphabetic background learners. Although the questionnaire method reveals only the surface level strategies of the learner, the results of the present study are consistent to a certain extent with character recognition studies conducted on Chinese and Japanese character processing (Chikamatsu, 1996; Hayes, 1988; Koda, 1992; Mori, 1998) in that the processing strategies seem to differ according to the orthographic background of the learner. It is suggestive that alphabetical background learners are often forced to focus on the graphemic nature of kanji and have recourse to motor skills because of the complexity and the logographic nature of kanji, which is contrastive with their first-language orthography, the sound-based alphabets. This is presumably due to two factors. One is that not all JFL learners from alphabetic backgrounds may be aware of other cognitively demanding

strategies, such as image association, keyword association or component analysis, which could alternate with use of motor skills. The other factor could be that they prefer to use cognitively less demanding strategies in order to remember new kanji into memory. Contrastingly, character background learners seem to transfer knowledge of their prior exposure in creating visual associations to kanji components. It is inevitable that they concentrate more on phonological strategies, as they are already familiar with the shape and meaning of kanji. Since data shows that orthography plays a significant role in deciding the frequency of strategy choice in JFL learners, it would be interesting to determine how such strategies could best be taught. One of the issues that arises from this is the need to explicitly instruct JFL learners from alphabetic backgrounds in the fundamental differences between kanji and alphabets.

APPENDIX

STATEMENTS USED FOR THE FORMULATION OF THE QUESTIONNAIRE

The shape of a new kanji is learnt by,

1. creating associations between pictures and kanji (V1)
2. creating associations with (a) kanji already learnt (V2)
3. creating associations between kanji and the shape of the alphabet (V3)
4. grouping the kanji with other kanji containing the same radical (part of kanji) (V4)
5. practicing with my finger in the air (V5)
6. remembering the stroke order (V6)
7. writing it on a piece of paper (V7)

The meaning of a new kanji is learnt by,

8. grouping it with other kanji having similar meanings (S1)
9. creating a story with its meaning (S2)
10. remembering the kanji in a meaningful sentence (S3)

11. associating it with other kanji that mean the opposite (S4)
12. remembering the meaningful radical (S5)
13. trying to remember the meaning while writing the kanji on a piece of paper repeatedly (S6)

The pronunciation of a new kanji is learnt by,

14. placing it in a group with other kanji that have the same pronunciation (P1)
15. associating it with a sound of a familiar word from the mother tongue (P2)
16. remembering it as a part of a compound word rather than an individual kanji (P3)
17. associating it with other kanji which have the same radical with the same pronunciation (P4)
18. repeatedly pronouncing it while looking at it (P5)
19. reading aloud while writing it (P6)
20. remembering both "on" (Chinese pronunciation) and "kun" (Japanese pronunciation) at the same time (P7)

NOTES

1 This study was supported by a scholarship from the Commonwealth Government-Department of Education, Science & Training, Australia, the International Postgraduate Research Scholarship (IPRS). I would like to express my sincere gratitude to Alison Wild and Nanette Gottlieb for their helpful suggestions and comments.

2 The application of multiple T-tests with the same groups may result in a higher probability of results being significant due to chance alone (see Brown, 1988 for more details). A stringent alpha level (e.g. $p<0.01$) is considered more effective in interpreting the results.

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