

Kanji Learning Strategies: Acquisition of Motor Skills

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Abstract: This paper describes the effective strategy in learning kanji. This strategy is acquisition of motor skills, and it is a learning method to memorize kanji. In this strategy, learners practice writing kanji repeatedly using a digital pen for a few weeks. This writing motion is complex motor skill, and is developed through repeated writing kanji. We then analyze performance of kanji writing and compare results of pretests and posttests.

Keywords: Repeated writing kanji, acquisition of motor skills, strategies of learning, digital pen, handwriting

Introduction

The focus of this study is on kanji learning strategies. Kanji is a logographic script adopted from the Chinese language. Kanji characters express meanings. Also, one kanji can have many readings. Furthermore, kanji character forms are more complicated. The 1006 kanjis that primary school students need to learn have an average number of 12 writing strokes, indicating that many of them are complicated kanjis. Therefore, since (1) kanjis have different ways to read, (2) there are many types of characters, and (3) glyph is complicated, learning kanji has been considered as very difficult. In particular, students from non-kanji cultures find it especially difficult to learn kanji. In this research, we studied strategy of learning Japanese kanji.

1. Research on Learning Strategies and memorization Related to Kanji Study

1.1 Theoretical Background

Many studies in cognitive psychology related to kanji study have been made so far. Nozaki and Ichikawa (1997) have pointed out that facilitation of writing motions and understanding of kanjis' pattern structure are helpful. This article focuses on the facilitation of writing motions pointed out by Nozaki and others. Studies on effects of writing motions on memory indicate that to repeat writing serves as a visual rehearsal to facilitate memorization. In addition, memorization by writing allows one to acquire representation of motor skills different from visual memory and thus facilitates studying. "Kusho" is defined as the "writing-like finger movements without any physical or visible trace." A studies have shown that (1) "kusho" behavior facilitates character-recall in adults from kanji cultures, and (2) "kusho" writing on paper is better at promoting character-

recall than writing in the air (Sasaki, 1982, 1984). These results show that the imagery derived from these writing-like movements is useful in remembering kanji characters. Onose (1987) classified writing motions into tracing, copying (writing while looking at an example), and spontaneous writing (writing after the example is put away) to study methods of teaching how to write kanjis. In addition, to repeat writing motions is one of effective strategies to acquire kanji for those who understood common rules in kanji scripts. Such common rules include the following: horizontal bars are written left to right; vertical bars are written top to bottom.

2. Position of the Study

As mentioned in the previous section, repeatedly writing the characters enables creating a movement-derived imagery of the characters, which facilitates their memorization. Recognizing the effectiveness of writing motions in learning kanji as pointed out in previous research, we integrated them into the learning method used in this study. In our support in Kanji study, we encourage children to repeat writing using a digital pen so as to facilitate their writing motions, intending to facilitate their learning accompanied with motor skills.

The use of the digital pen has the following advantages: (1) Scripts and figures written on paper by a student can be recorded with the original brushstrokes; (2) Records of scripts and figures of all the students can be saved so that their thoughts and opinions can be easily classified; (3) Brushstrokes can be reproduced stroke by stroke so that stroke orders of Kanjis can be checked; and (4) Since scripting processes of students can be saved and their orders can be reproduced, false steps in the process of thoughts and their factors can be found and educational guidance can be evaluated. In addition, the use of the digital pen in studying at home has the following advantages: (1) Data can be saved in a connected PC so that even parents busy in working or child-rearing can check their children's learning status when they have time; and (2) Learning using an unusual means can increase motivation for learning.

3. Kanji Study Support for Japanese Children

3.1 Method

Target: One fourth-year female student, she is not very good at studying kanji

Supporting Period: Prior interview, pretest conducted once, study support for seven days in total, and posttest conducted once

Materials Used for Study: A personal computer, a digital pen, and a dedicated notebook for the digital pen

Place of Supporting: The home of the target (One of the authors visited her home to provide the individual educational guidance)

3.2 Procedure of Study Support

At first we conduct a pretest to see how many kanjis she has acquired, how her errors in stroke orders are characterized, and so on. Then, we create learning materials based on the results analyzed over the pretest. The target drills kanjis using the learning materials, the digital pen, and the dedicated notebook. The supporter points out what noticed as it arises.

In the end we conduct a posttest to analyze the result and compare with the result of the pretest.

3.3 Result of Kanji Test

Table 1 shows the results of kanji dictation and stroke order questions. Since the pretest (1) contains many familiar kanjis with small numbers of strokes, the percentages of correct answers in dictation were high. On the other hand, since the pretest (3) contains many difficult kanjis with large numbers of strokes, the percentages of correct answers in dictation were low. We conducted the posttest with the same questions as in the pretest. In the posttest, overall percentages of correct answers were high. In the posttest, overall percentages of correct answers were high. The percentages of correct answers of all the items in the posttest were higher than those in the pretest. In particular, the percentages are significantly improved in the following items: Kanji dictation questions of pre-posttest (2) from 71% to 92% and stroke order questions of pre-posttest (1) from 50% to 100% .

Table 1. Percentages of Correct Answers in Pretest and Posttest

	Pretest(1)	Posttest(1)	Pretest(2)	Posttest(2)	Pretest(3)	Posttest(3)
Kanji Dictation Questions	96%	100%	71%	92%	57%	89%
Stroke Order Questions	50%	100%	63%	75%	42%	42%

4. Related Research

In this section, we will introduce a kanji learning system partly developed by the authors. The “Java Kanji Flashcard 500” (JFK 500) is a kanji learning system developed under the leadership of Chikamatsu(1998). The authors collaborated in the development of the system. JFK 500 has the following features: (1) it enables learning the 500 kanjis most commonly used in Japanese newspapers, (2) it shows a stroke order animation. It can be accessed through the following URL: <http://nuthatch.com/kanjicards/>.

5. Conclusions

In this study, we conducted an experiment of helping a Japanese student who has difficulty in reading and writing kanji to learn kanji using a digital pen. The student was asked to practice writing kanji repeatedly using a digital pen for seven days. This improved the student’s kanji test scores, indicating that this learning strategy is effective. However, since our support was too short this time, there are still many kanji yet to be acquired.

Repeated writing kanji is an effective learning strategy. In the future, we would like to continue providing Japanese students with adequate support for learning kanji. In this study, however, only one student was used as subject for evaluating the above kanji learning method. There is thus a need to increase the number of subjects and properly assess the effectiveness of learning through the method used in the study.

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