

“Intelligent” Errors: Kanji Writing as Meaning Making for Japanese FLES Learners

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Introduction

This paper is another installment in the ongoing project on early language learning in a Japanese FLES program, conducted by ELLRT (Early Language Learning Research Team): Richard Donato and G. Richard Tucker with graduate students from Carnegie Mellon University and the University of Pittsburgh.* The Japanese instructor in this FLES program, Yoko Morimoto, has been a teacher-participant providing an insider's perspective. Since 2002, the research team has extended its focus to literacy learning. Chinen, K., Igarashi, K., Donato, R., & Tucker, G. R. (2003), for example, studied literacy recognition, attitudes toward the program and self-assessment of oral proficiency. Takahashi, E., Donato, R., & Tucker, G. R. (unpublished manuscript) examined kanji knowledge development in terms of recognition of meaning and sound extraction. In the present study, the focus moves to literacy production, particularly kanji writing. During the 2003-4 academic year, we investigated the types of errors that are produced by early language learners in comparison to those produced by Japanese-speaking children. Our qualitative error analysis led us to recognize and try to understand the development of early language learners' personal systems for kanji writing.

Literacy for Japanese FLES learners

The meaning of literacy is indeed complex, since reading and writing themselves are multifaceted activities with many meanings. Literacy, or reading and writing, has been considered by some to be a technology—a special one, which allows us to expand our knowledge, to organize our thoughts and to raise our consciousness to a more abstract level (Ong, 1986; Goody, 1977). On the other hand, literacy can also be considered a cluster of social practices such that the meaning of reading and writing can vary depending on, and reflecting the needs of, the community (Street, 1984; Gee, 1996).

Against this background, this study will consider “literacy” for Japanese FLES learners in the following way. Writing a single kanji is just the beginning of the process of learning to control the Japanese writing system, first of all as a target tool for creating meanings for expression for themselves, to peers and to the instructor as a social community. Though the potential power of literacy is vast, including learning new information, reading for understanding, organizing one's thinking and creating meanings in written form, the FLES learners in this study were just beginning to acquire literacy skills. Indeed, since there were limitations on the exposure to Japanese texts for various reasons (such as program type, class time and so on) and all learners examined for this study

were beginners, they only had the opportunity to begin to write kanji based on their exposure to them in class and on the instructor's explanations of written forms.

For this reason, the study examined how learners produce kanji in the early stages of their literacy development, given that producing a comprehensible kanji is one aspect of an individual's emergent literacy. The analysis was focused on the ways learners control the new writing system, kanji, and the ways they expressed this control to create meaning in kanji. Understanding how kanji production develops is important for early literacy instruction and for understanding learners' processes for creating written text even at the single word level, since learning writing is learning how to make meaning in the target writing system, not simply memorizing and reproducing the target written forms.

Literature review

Learning kanji and pedagogy

L1 learners' experience with the target language is different from that of L2 learners (Koda, 1994). The types of exposure, such as oral and visual, the amount of exposure, the skills already acquired when learners begin learning kanji writing and, indeed, the way of learning Japanese are all very different.

As a matter of established practice, the strategies of kanji

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writing instruction for Japanese-speaking children are mainly kinetic-based, involving repeated writing practice, and shape-based, drawing attention to the shapes of the parts in various kanji. For learners in lower grades, instructors teach kanji by: 1) demonstrating the writing of target kanji, 2) explaining the construction of the kanji in terms of its parts or shapes, 3) counting the strokes, 4) *kusho* (finger writing in the air), 5) having learners copy the model kanji and 6) repeated writing practice in class. In higher grades, kanji is taught by assigning repeated writing practice as homework (The National Institute for Japanese Language, 1994).

On the other hand, many strategies for kanji writing instruction for L2 learners are visually oriented (see Shimizu, 1997 for an examination of instructional materials used in North America). The decomposition of kanji (Heisig, 1986) and compositional feature-focused teaching using pictographs, katakana composites and semantic composites (Yamashita & Maru, 2000) have been proposed as effective strategies. Although empirical studies are still lacking, memory aids, such as pictures, keywords and stories, have also been proposed as tools to help learners make effective associations. Further, in a recent study, *kusho* (finger writing in the air) was also proposed as a kinetic memory aid for L2 kanji learners (Kuriya, 2004). However, the L2 learners in these studies were college students; the case of early language learners appears not to have been studied yet.

Errors in writing kanji

Because of the unique focus of the present study—on errors in the production of single kanji by beginning language learners—many of the frameworks for error analysis familiar from the literature on literacy were not easily applicable. For instance, Goodman, Watson and Burke's (1987) miscue analysis is designed for examining errors in the oral reading of texts, but the FLES learners' ability to read out loud was not the focus of this study. As for analyses of errors specifically focused on writing kanji, some researchers have investigated various influences such as semantic and phonological factors (Hatta, Kawakami & Hatasa, 1997; Hatta, Kawakami & Tamaoka, 2002) on L2 learners' production. The characteristics of errors as they vary with learners' first languages have also been examined (Okita, 2001). Again, though, the L2 learners in these studies have been college age; not early language learners. Further, these studies have focused more on two- or three-character compound words. Single kanji have not been the focus of these studies. Learning single kanji and learning compound words are not the same. When a single kanji is introduced, the reading is usually in *kun*, that is, the Japanese-origin pronunciation. The single kanji and its reading directly indicate a single semantic meaning of a Japanese-origin word. On the other hand, the reading of many compound words is in *on*, the Chinese-origin pronunciation. The *on* reading of a single kanji from a compound word does not directly yield a single semantic meaning. Further, the reading itself can change depending on the other

kanji connected before or after the single kanji. The meaning of compound words is of course related to the meaning of the single kanji contained, but not in a straightforward, mechanical way (Morton, et al, 1992). Many basic- and elementary-level vocabulary items for early language learners are written in single kanji, and even when compound words are included, such as *sensei* (teacher: 先生), they are still directly connected to topics familiar to the students. Because many basic and elementary-level vocabulary items for early language learners are written in single kanji, we believe that it is worth studying the learning of single kanji as well as of compound words, since the processes involved may be different.

As for previous comparative studies on kanji writing errors between L1 and L2 learners of Japanese, shape-based kanji errors in handwriting by native-speaking Japanese have been found (e.g., Hatta, Kawakami & Tamaoka, 2002; Hatta, Kawakami & Hatasa, 1997; Kuriya, 2004). However, these studies have also focused on kanji errors in compound words which consist of two kanji; studies have not been carried out on errors in writing single kanji. The study by Yamada (1995), though it included single kanji writing errors, examined only L1 Japanese primary school children. This study also found shape-based errors as well as semantic errors. Therefore, we believe there is value in examining errors in writers of different age groups as well as in L1 and L2 groups, since such a study may provide insight into L2 learners' developmental patterns in handwriting kanji in comparison with the developmental patterns of L1 learners.

The study

This study analyzed the errors in kanji which were produced by three groups of children: sixth grade learners of Japanese in a FLES program in the U.S., and two groups of Japanese-speaking children in a Japanese school (in second and third grades; and fifth and sixth grades). The study was conducted to answer the general question, "What can the sixth grade learners in this Japanese FLES program do with kanji production?" More specifically, the following questions were raised: 1) what does writing kanji mean for the children in this FLES program and 2) how does their experience in the classroom influence their kanji learning? Data from Japanese native-speaking children were also collected to obtain a baseline.

Participants and research settings

The participants in this study were 8 learners of Japanese in a Japanese FLES program in Pennsylvania, and 18 native-speaking Japanese children in a public elementary school in Japan.

The FLES learners

The learners of Japanese were all in the sixth grade in the same class, taught by one instructor—a native speaker of

Japanese who has been teaching in this FLES program for more than ten years. One cycle of the Japanese class was offered 40 minutes per day from Monday to Friday over six weeks. The students participated in two cycles per year, and the time between the two cycles was twelve weeks.

Because the school curriculum had recently been changed, the instructor was required to deal with mixed groups of students who had very different background experiences learning Japanese. Some had begun to learn Japanese in kindergarten and had been studying with the instructor for seven years, while others had just started to learn Japanese in grade six. Further, eight of sixteen students in the group were identified by the school as children who needed special attention¹. The instructor, who also participated as a researcher in this study, designed the Japanese course for this year, focusing on cultural themes and introducing language through cultural themes and activities. For example, when the tea ceremony was a theme of the unit, students learned a kanji character, tea (茶), as they experienced the tea ceremony. When *kakizome* (special New Year's calligraphy) was a theme of the unit, they practiced calligraphy with brushes, and then they learned the kanji character for "brush" (筆). Since brushes are made of bamboo, the instructor could introduce the radical for "bamboo" (竹), which is one of the components of the kanji character for "brush." As kanji were introduced within this framework, learners were encouraged to write them. Writing kanji, as well as reading kanji, had been set as a literacy goal for the students this year. Because writing kanji was equally new for all learners, the instructor thought it could bring them together by filling a gap they all shared, despite their diverse experiences studying Japanese.

Japanese-speaking children

The native-speaking Japanese children attended the same public elementary school in Japan, and the same public after-school program. Eleven second- and third-graders and seven fifth- and sixth-graders participated in this study at the after-school program. All of them were born in Japan and live in Japan. They learn kanji in their classroom as well as outside of the classroom. None of the children who participated in this study had received training in special techniques for learning kanji in order to prepare for entrance examinations for private middle-schools.

Data collection and analysis

Two types of data from both sites were collected for this study: 1) students' performance on a kanji test, and 2) observation notes by the researchers during test-taking. The kanji

test was given to the early FLES learners as a group at school by the researchers, using one forty-five minute class period. Observation by the researchers during this test-taking time provided data for the particular study, although they had also visited the classes several times before the test was given.

In contrast, the kanji test was given to Japanese-speaking children at the after-school program (one at a time, due to the constraints of the location) by one of the researchers. The observations of children were also done by the researcher one at a time. Because of this individual test-taking environment, many children talked to the researcher about what they were thinking during their test-taking, and those words were recorded as observation notes by the researcher.

In the writing task, students were asked to write entire kanji corresponding to meanings given in English that they had learned. The kanji test consisted of four tasks: 1) kanji completion, 2) writing, 3) recognition and 4) guessing (sections 2 and 3 were omitted from the test given to the Japanese-speaking children, as explained below) (see Appendix 1). The first two tasks involved kanji production, either of parts of kanji or of entire kanji. In the kanji completion task, learners were asked to fill in missing parts of four characters (radicals) with pencils to complete the kanji. The kanji for this task were carefully chosen from among kanji unknown to children in both sites. Unknown kanji were selected in consultation with the instructor for the FLES children, and by consulting the Japanese (*kokugo*) textbooks and one of the parents for the Japanese-speaking children. However, since the radicals themselves were familiar to the children from other characters, this task can be considered to be an application of their knowledge.

The recognition task invited learners to recognize the meanings of six kanji that had been learned in class. For each learned kanji given, students were asked to choose the correct meaning from four items written in English. The recognition task and the writing task were not given to the Japanese-speaking children, since the focus of this study was not on how well Japanese-speaking children could reproduce learned kanji.

Finally, the guessing task was designed to examine to what degree learners can guess the meanings of unknown kanji, using their knowledge of semantic symbols such as radicals. Learners were given four unknown kanji which contained familiar semantic keys, and were asked to choose one meaning out of four items written in English or, in the case of the test given to Japanese-speaking children, illustrated with pictures.

In addition, two other types of data were collected at the FLES site eight months after the first data collection to obtain a longitudinal perspective: 1) a follow-up interview with some students and 2) an interview with the instructor. The three students for this interview were chosen based on the results of analysis of the errors they made on the four tasks

¹ The data from the eight students who were identified as in need of special attention were not included in this study, since the kinds of needs were varied and complex. Though there seemed to be some differences between the special needs students and the others, we do not feel we have enough information to generalize about them.

(discussed further below); they were identified as the most significant and/or unique when we considered the meaning of writing for the learners. The follow-up interviews with the students were semi-structured, and consisted of six questions (see Appendix 2). In the follow-up interview, the researcher asked each student to write one particular kanji, as well as a favorite kanji. The kanji which the researcher asked them to write were ones on which they had made errors in the earlier writing task. The follow-up interview with the instructor was also semi-structured, consisting of four questions (see Appendix 3) related to the results of analysis of learners' mistakes.

The data were analyzed in terms of types of errors as well as patterns of answers for the various tasks. The test data led us to an initial categorization of the types of errors, and the observational data, which were analyzed qualitatively, gave us multiple perspectives on the target errors so as to allow us verification of the initial categorization. The responses were separated into three groups: Japanese-speaking children in grades two and three (native speakers of Japanese: J G2/3), Japanese-speaking children in grades five and six (J G5/6), and FLES students (early Japanese language learners: EL).

Findings

After examining all data from multiple perspectives, we categorized the types of errors made by each group and found systematic patterns of errors on the kanji test by the students. In addition, data from follow-up interviews with the instructor and with the early language learners were analyzed to inform our understanding of the findings from the test data. The types and patterns of errors tell us to what degree and how these early language learners use their knowledge for writing kanji.

Types of errors















The errors which were found in the kanji completion task were qualitatively analyzed along with the observation notes by the researcher and the instructor's comments. Nine types of errors were identified.

Type 1 errors are those in which the radicals were written as mirror images, or the correct radicals were written with bad shapes. "Bad shape" means here that, though the writing can be recognized as the correct radical rather than a different one altogether, it is written in such a non-standard way that the shape would not be recognized if the evaluators did not know the target kanji.

Type 2 errors are those in which part of a kanji was repeated without meaning. Type 3 errors are the ones in which the kanji was completed with a part of a different kanji. They fell into four sub-categories.

Type 3(1) errors are cases where one stroke is added to the correct radical. Type 3(2) errors involve completing kanji

Figure 1

		Types of Error	
1	Completing with a bad shape (opposite direction)	EL*	
2	Meaningless repetition	EL	
3	Completing with part of another kanji		
	(1) Additional stroke to the correct radical	EL	
	(2) Application of learned kanji	EL	
	(3) Similar shape of kanji		
	a. Additional stroke	J	
	b. Wrongly positioned stroke	J	
	(4) Guessing		
	a. Radicals which still have close meaning (e.g. whale—water sanzui)	J	
	b. Radicals which have completely unrelated meaning	J	
4	Making up own kanji	EL	
5	Expressing semantic meaning using features of kanji (e.g., multiple shapes mean "a lot")	EL	
6	Expressing meaning with a picture	EL	
7	Others: hard to understand	J	
8	Creating radicals from the shape of blanks	J	
9	Playing (just drawing a picture); meaningless	J	

* EL: Early language learners
J: Japanese-speaking children

Table 1

Occurrence of error types: Early language learners vs. Japanese-speaking children

Type	Visual				Kanji Structure-based				Semantic	Indeterminate			N/A**	Total	
	1	3(1)	3(3)	4	2	3(2)	5	6	3(4)a	3(4)b	7	8	9		
EL	3(2)*	1		2	2	4(2)*	1	1						2	14
J G2/3			5						5	10	2	6	1		29
J G5/6			1						2	4					7

* Two errors by EL learners were classified as both type 1 and type 3.

** N/A indicates no answer (left blank).

with radicals which are incorrect, but which came from the kanji that students had learned in class and showed up on the kanji test. The shape of the blank was not a hint for the writers. For example, though *kusakanmuri* (a radical of characters for plants) can only complete a character on the top, some students wrote it into a blank located on the left side. Type 3(3) errors involve incorrect radicals that have a similar shape with the radical of the target kanji. In this case, two types of errors were further subcategorized: a) an additional stroke was added or a stroke was missing; and b) a stroke was wrongly positioned. Type 3(4) errors involved incorrect radicals, which are a) semantically related to the target kanji, but nevertheless not correct; or b) totally unrelated to the radical of the target kanji. However, the participants likely guessed the radicals because the chosen radicals share the shape and location of the blanks in one kanji structure, and as a consequence they put a familiar radical into a blank in which it fit well. Indeed, during the test, some students gave explanations to the researcher about how easy it was for them to find the "correct" radicals by considering the shape of the blank and justified their own answers in this way. Filling in a radical that is semantically related to the target kanji (Type 3(4)a) is considered a creative error, though again, the first hint for students was the shape and location of the blanks.

Type 4 errors were cases in which participants wrote non-existent kanji, but had intended to write correct kanji. The shape was almost correct, but as we see in the sample (see Figure 1), because one stroke was misplaced, the radical looked as though it had been newly invented.

On the other hand, Type 5 and 6 errors were ones which expressed meaning to readers. Type 5 errors expressed meaning through the structural features of kanji. As we see in the sample, the learner tried to express the meaning "a lot" by repeating the same shape. (For example, three trees (木) actually do mean woods (森) in kanji, and the learner tried to replicate this effect.) Type 6 errors expressed the writer's meaning by a picture. These two are considered "intelligent" errors, because they reveal the student's knowledge of the meaning of a kanji structure.

Type 7 errors were ones that are totally irrelevant to the target kanji and which do not mean anything for readers. In this vein, Type 8 errors involved completely creative and non-existent radicals, where the participants invented the radicals based on the shape of the blanks. Type 9 errors were ones in which the participant drew an irrelevant picture, being unable to guess what might be correct.

Patterns of errors

Distinctive patterns emerged in each group from the analysis of the occurrence of each type of error on the kanji completion test and the percentages of correct kanji in the kanji guessing test across the three groups of the students.

Occurrence of each type of error.

The occurrence of errors by type and student group is shown in Table 1. The chart shows clear differences in terms of error types among the three groups, particularly between early language learners and Japanese-speaking children.

The errors in the kanji completion test fell into four categories: visual errors, kanji structure-based errors, semantic errors and indeterminate errors. Types 1, 3(1), 3(3)a/b, and 4 were identified as visual errors; all of these visual errors were only observed in early language learners' errors, except Type 3(3), which were observed only in Japanese-speaking children's errors. Types 2, 3(2), 5 and 6 were identified as kanji structure-based errors, but which still involve an application of learners' knowledge of the structure of kanji. All of them were only observed in early language learners. Type 3(4)a errors were identified as semantic errors, and were observed only in Japanese-speaking children's errors. Lastly, Types 3(4)b, 7, 8 and 9 were identified as indeterminate errors whose sources we cannot trace, whether they be associations with meaning, visual structures, or shapes of parts of kanji. These types were only observed in Japanese-speaking children.

In terms of visual errors, the types of kanji-writing errors made by early language learners reflect tendencies that

Table 2

Percentage of correct responses on guessing task

	J (G2/3)	J (G5/6)	EL
薪 (charcoal)	55.0	86.0	75.0
鮭 (salmon)	73.0	86.0	87.5
浜 (beach)			87.5
跳 (to jump)	36.0	86.0	
田 (rice field)			37.5
穴 (hole)	55.0	100.0	
Total (%)	55.0	89.0	71.9

EL: Early language learners
J: Japanese-speaking children

might derive from experiences when they first learned English handwriting; they also reflect their knowledge about kanji structures and how to make meaning with kanji. Type 1 errors, putting a stroke in the wrong place or in the opposite direction, appeared in early language learners' answers only when the answer was *kusakanmuri* (grass radical). This type of error can be observed in English-speaking children's alphabet handwriting errors (Kress, 2000). In the same vein, Type 3(1) errors, an additional stroke, which we can also find in alphabet handwriting errors (Kress, 2000), were found only among the early language learners. Without relation to English handwriting errors, Type 4 errors show an attempt to write the right shape, although the directions of each stroke in the radicals were wrong. Interestingly, all types of visual errors demonstrate the writers' knowledge of kanji: they consist of straight sharp lines.

Early language learners show a tendency to express meanings using kanji structures, as we see in all the types of kanji structure-based errors. This shows their knowledge of kanji structure, which can be summarized as follows: they grasp the ideas that 1) one kind of kanji structure involves multiple repetitions of the same shape; 2) a part of kanji can be used in other kanji; 3) a structure involving multiple shapes means "a lot" (of whatever the shape signifies); and 4) a part of a kanji represents a part of its meaning.

On the other hand, the types of errors made by Japanese-speaking children show their tendency toward shape dependence when writing kanji. Visual errors of Types 3(3), semantic errors (Type 3[4]a) and all indeterminate errors (Type 3[4]b, 7, 8, 9) were observed only in Japanese-speaking children, and more frequently among the second and third graders. Although the sources of errors were realized differently, the key source of these errors was the shape of the blanks.

This tendency supports the results from previous studies of kanji writing errors, in which Japanese native speakers' errors tend to be shape-based (e.g., Hatta, Kawakami & Hatasa, 1997; Yamada, 1995).

Two similarities were identified in the error patterns of native Japanese speakers and FLES students: 1) completing kanji with part of another kanji (Type 3 errors) were found in all groups (but in different sub-types), and 2) errors involving additional strokes: completing kanji with the correct radical, but adding an additional stroke (Type 3[1]) in early language learners, and completing kanji by filling in a radical with a shape similar to the correct one (Type 3[3]) in Japanese-speaking children.

Percentages of correct kanji

Table 2 shows the patterns of errors in the guessing task by group membership. In this task, although the sample is too small for the result to be analyzed rigorously, it is suggestive that early language learners identified the radical "fish (魚)", which is used in 鮭 (salmon), slightly better than Japanese-speaking students. It may be that, even though Japanese-speaking children were familiar with the kanji and the concept of fish, they did not apply it in new contexts as early language learners did. Further, this chart shows that early language learners could guess the meaning of complex kanji from the radicals, but they could not guess the meaning of simple kanji as well (where there is only one part, such as 田 (rice field)).

Table 3 shows the patterns of errors in the kanji completion task by group membership. In this task, when Japanese-speaking students tried to fill in radicals they already knew, they tended to base their responses simply on the shape of the blank without considering meaning, though some paid attention to "related words," but they did not categorize the meanings. For instance, they reported to the researcher during the test that they didn't think of "potato" as belonging to "plants." Thus, the way they associated radicals with meanings was incorrect.

Japanese-speaking children paid attention to the names of the radicals, such as *sanzui* (a radical for water) and *kusakanmuri* (a radical for plants), but this did not mean that they attended to their meanings. For example, when they were thinking about how to fill in a blank, they mentioned

Table 3

Percentage of correct responses on kanji completion task

J (G2/3)	J (G5/6)	EL
47.3 %	80.0 %	56.3 %

EL: Early language learners
J: Japanese-speaking children

the names of radicals, but not their meanings.

J G3 boy

Hey, it's not *tehen* [a radical for "hand"], right? I wonder if it is *sanzui* [a radical for "water"] ...

It is true that they use drill books daily to learn kanji, and the information about those radicals is given in the book. However, students reported that such information was rarely taught in class. It may be helpful to know it for some examinations and, therefore, cram schools (which participants in this study did not attend) teach the names of radicals and their meanings in a different way from elementary school. Nevertheless, again, the errors made by Japanese-speaking children in this study tended not to reflect a grasp of the meanings of radicals, but mostly of their shapes.

This tendency by Japanese-speaking children to make shape-oriented errors supported the results of previous studies of kanji writing errors by Japanese native speakers (e.g., Hatta, Kawakami, & Hatasa, 1997; Yamada, 1995; Kuriya, 2004). Although previous studies have focused on writing kanji in compound words, not on single kanji, the findings of this study suggest that even writing a single kanji is shape-dependent.

Follow-up interviews

Interestingly, early language learners could reproduce their own kanji almost identically eight months later when the second round of data was collected. They could not only reproduce them, but they could also explain the kanji to the researcher in the interview, as well as the way that they had tried to remember the kanji.

a) About kanji "oil"

Alan: ...Looks like an oil factory or oil can.

Researcher: Hmm, then, what are those dots on both sides?

Alan: Umm, oil squirting out.

Alan commented on his favorite kanji, 木 (tree): he does not see the Chinese character in nature, but he sees nature in the Chinese character. The instructor was also asked how she taught kanji in her class. She reported that giving one explanation is much more effective than writing the same kanji 500 times. Indeed, she gave unique explanations for each kanji in context. Her goal was to create an impression and an impact on the students, using the shared background knowledge in a context familiar to the students, such as the katakana parts in kanji and the following story:

b) Instructor's way of explaining kanji "oil"

For oil, it's "sanzuihen" [radical of kanji 'oil'], and related to water. Um...well...I guess, you know, it's like something

spouting out. I guess I talk about it. Also, "ta" is the kanji for rice field. So oil is suddenly spouting out from the rice field. When someone was cultivating the field, coincidentally he got to the place where the oil was. It could happen in the U.S., you know? Someone suddenly becomes a millionaire. So I gave this kind of explanation, and told them a joke-y story about how in Japan the oil spouted out when someone was cultivating the field.

Unlike other Japanese teachers who may prescribe rules about kanji formation, this instructor, in addition to explaining how kanji are formed, engaged the students' creative thinking by inviting them to observe and explain their own views on kanji formation. In the interview, she mentioned *students' input* about how kanji is constructed. When she gave her explanations, a couple of students always suggested their own way of seeing kanji, saying, "Can I think of this as a wave, instead of water?" Then, new explanations were co-constructed with peers, beginning with the instructor's explanation. She assumed that the Alan's way of memorizing the kanji "oil" could be one of the co-constructed ideas which students suggested.

Conclusion and implications

What we learned from this experience

This analysis provided several observations regarding what early language learners were able to do in writing kanji. First, they understood the structure and functions of kanji, which had become new *systems* for them to express meanings. They appear to have developed their own system for understanding as well as for reproducing kanji. For decoding, they took a semantic approach and, indeed, inferred the meaning of unknown kanji using their own systems. This supports Chinen, *et al.*'s (2003) findings that students processed kanji either visually or semantically. They made errors, but those errors were intelligent and systematic. In other words, the errors were not random, unlike the errors by Japanese-speaking children who relied on more practical hints such as the shape of blanks and did not rely on their knowledge of kanji structures and functions.

Additionally, early language learners constructed their own meaning creatively and expressively using their systems. When students faced an unknown kanji, early language learners tried to express the meaning, even by drawing a picture, while Japanese-speaking children just filled in whichever shape they guessed. The errors by early language learners were not simply "incorrect answers," but showed purposeful behavior; we may prefer to call them "intelligent errors" rather than simple mistakes. Brown (2000) differentiates between mistakes and errors: "a mistake refers to a performance error that is either a random guess or a 'slip,' in that it is a failure to utilize a known system correctly... [A]n error, a noticeable deviation from the adult grammar of a native speaker, reflects the competence of the learner"

(p. 217). The types of errors made by early language learners were more systematic than the ones made by Japanese-speaking children, which may reveal the competence of early language learners in kanji production.

This finding suggests that we should pay attention to learners' errors to see their stages of development, and draw on this understanding to support their continuing language growth. In this FLES program, new explanations emerging from discussion with peers may lead the students to better understanding and more effective learning. Providing opportunities to engage in this sort of process may also be suggested for Japanese-speaking children to learn kanji effectively. The teacher-participant in this study reflected afterwards on how the study helped her to see how the learners actually learn kanji. At the same time, she recognized the importance of kanji production. The next time she teaches kanji, she will look for tendencies in each student's errors, and may point them out. In a future study, it would be interesting to find out if there are any relationships between individual learners' imaginative or participatory activities and remembering kanji: might it be that the more imaginative the learners or the more participatory, the more effectively they remember kanji?

Teachers' awareness of types of errors in kanji production emerges as an important cue to help early language learners learn kanji positively and effectively. This awareness helps teachers to give positive feedback to the learners. Since learning kanji is hard for learners who read and write using an alphabetic system, positive feedback from teachers is essential for learners. In addition, different types of errors in kanji show the learners' level of literacy development in kanji. As a diagnostic technique, monitoring learners' errors may help the teacher to assess learners' developmental stages. Meanwhile, teachers may reflect on their own teaching of kanji to learners by examining the types of errors produced in their own classroom. For implementation of these ideas, the development of benchmarks is needed and is the logical next step for our research team.

The experience of learning to write kanji provides early language learners with access to new ways of making meaning. Focusing on the process of kanji learning allows them to deal with kanji in context and gives them opportunities to co-construct new ways of making meaning. Also, it encourages them to develop their own systems of understanding and producing kanji, which are powerful strategies for kanji learning. From the point of view of articulation with higher-level education as well, it would be very helpful to implement this approach, focusing on the process of kanji learning, in early Japanese language learning education.

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Appendix 1

Four tasks of kanji test

1) Kanji completion

For early language learners

Please fill in the blank with a correct radical.

potato = 干

lake = 胡

woods = 木

bright = 月

For Japanese-speaking children

□に入れよう。漢字を書いてみよう。

くじら 京

いも 芋

ほね 骨

こまる 木 る

にげる 兆 げる

2) Writing

For early language learners

Please write the following words in kanji: 1. flower

2. oil

3) Recognition

For early language learners

Please circle the one that is the correct meaning of the given kanji.

菊*

a. flower

b. grass

c. stem

d. chrysanthemum

4) Guessing

For early language learners

Please circle the one that is the correct meaning of the given kanji.

鮭

a. bear

b. salmon

c. mouse

d. bird

For Japanese-speaking children

次の漢字の意味は何でしょう。一つえらんで○をしよう。

鮭

1.



2.



3.



4.



* We gave hand-written kanji for early language learners, since they were not familiar with printed kanji.

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Appendix 2

Follow-up interview sheet for FLES students

Name: _____

- | | | | |
|----|---|-----|----|
| 1. | Do you remember taking this test (showing the test they took)? | Yes | No |
| 2. | Do you remember these kanji? | Yes | No |
| 3. | Could you tell me why you wrote like this (pointing at focused kanji)? | | |
| 4. | Did your teacher tell you a story about it or did you learn it in a story? | | |
| 5. | Could you write your favorite kanji for me (if they have one)? | | |
| 6. | Have you ever practiced kanji on your own when you are not in class (at home, for example)? | Yes | No |
- If yes, Could you tell me a little bit about this?
-

Appendix 3

Follow-up interview questions with the FLES instructor

1. What kinds of strategies did you use for teaching kanji to your students?
生徒たちに漢字を教える際、どのようなストラテジーを使いましたか。
 2. Could you tell me how you taught kanji? Please give me examples.
生徒たちにどのように漢字を教えましたか。具体的な例を挙げて教えてください。
 3. Do you feel certain strategies are more useful than others for teaching kanji?
漢字の教え方について、より効果的な教え方というのがあると思いますか。
 4. What have you gained from your participation in this project on analyzing the kanji of your students? Have you learned anything that might influence what you will do differently in the future?
先生の生徒たちの漢字を分析したこのプロジェクトに参加したことで、得たことは何ですか。今後の漢字の教え方について、何か影響を受けたことがありますか。
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