



PROMOTING AUTONOMOUS COMPUTER ASSISTED LANGUAGE LEARNING

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ABSTRACT

Basic Kanji is a graphical kanji learning tool originally designed to provide necessary information about each kanji. It takes into consideration the target audience, autonomous learners, by including features that may promote the learners use of strategies. The software displays kanji compounds in correct stroke order, meanings with audio pronunciations as well as a number of their usages to provide autonomous learners with tools for studying on their own without formal instruction. Experimental evaluation that used the Motivated Strategies for Learning Questionnaire, indicated significant improvements in students' motivation and autonomous language learning strategies.

Keywords: *Autonomous Language Learning, Stroke Order, Kanji, Jukugu*

1. INTRODUCTION

Kanji –Chinese Characters— which are an integral component of the Japanese writing system has been described as one of the most complicated in the world [10]. The three orthographies of modern-day Japanese writing system comprises of hiragana, katakana and kanji. While hiragana and katakana, commonly known as kana, pose no major obstacle for Second Language Learners (L2L) and can be memorized without any difficulty, Kanji ideograms, on the other hand, pose enormous difficulty in memorization to the natives and non-natives alike. Kanji, being the oldest writing system, has three thousand years history and imprecisely there are currently fourty thousand characters in usage [4]. At the same time, an average ability to read a Japanese newspaper requires a vocabulary of approximately two thousand characters [3].

Furthermore, each of these Chinese characters generally has numerous distinct readings [2]. The Kanji 発 as for instance, has readings as *hatsu* and *ta(tsu)*, whereas the readings of 表 are *omote*, *hyou* and *arawa (reru)*. The kanji compound of 発表 *happyou* “announcement” thus, takes at least six basic readings, and this number becomes greater when one considers phonological and conjugational variation. To make things worse, most of the Kanji

teaching material lack important information e.g. *Jukugu*, *Okorigana* (Kanji unification with phonetic characters), correct stroke order, possible glyph or Kanji components [1]. Despite the challenging and complex nature of Kanji, traditional learning techniques frequently emphasize on rote learning strategies [11].

However, the real problem with rote learning of kanji is the sheer number of these characters which must be memorized without confusing them with one another. Furthermore, rote memorization can, over longer periods, easily lead to students forgetting or confusing old characters as they memorize new ones [12]. But this does not mean that we are discrediting the traditional techniques as ineffective, rather we want to emphasize the point that these approaches can be integrated with Computer Assisted Language Learning (CALL) and supplemented with features which may promote autonomous learning effectively.

To assist Japanese L2 Learners with the challenging task of learning kanji, we have developed a CALL system namely Basic kanji, based on the ‘concepts of autonomy in language learning’ [5]. We believe that the courseware can enhance student motivation for the kanji learning task, in so doing, will positively affect autonomous language learning. In this paper, we first briefly

review the software interface and examine how it facilitates autonomous learning. Finally we present and discuss experimental results showing effect of our system on student motivation to learn Chinese characters.

2. BASIC KANJI INTERFACE

Basic Kanji is a database driven text-intensive activity designed to assist L2L to apply their Japanese reading skills, as well as help them to develop their basic writing ability. The courseware subsumes each Kanji's meaning, pinyin pronunciations, stroke order illustrations and animations. The current prototype consists of twenty six Kanji lessons. Each lesson displays the chosen Kanji in a grid and by manipulating these characters reveals the complex information associated with them.

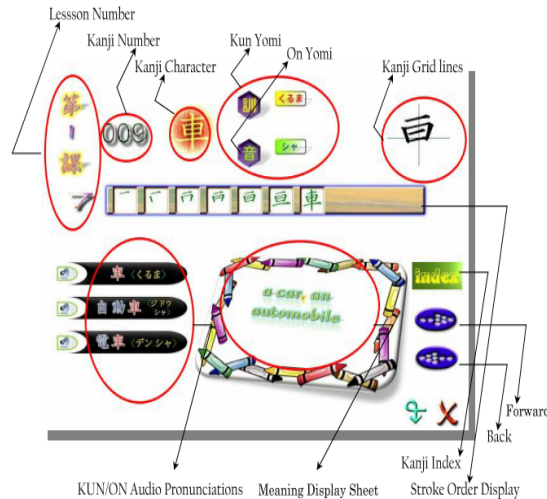


Figure 1. Basic Kanji Interface

Basic Kanji directs the correct stroke order with the help of animation and stroke correspondence relation table. It uses a bar to describe this complex and multifaceted nature of these characters. The prototype currently supports two-character *Jukugo*, which is the most common form of Kanji characters in usage with lexica support in Kana and English primarily to diversify reader's base for learning Kanji characters. Furthermore, the L2L can simply hear the correct pronunciation of the Kanji in native accent by one mouse click to judge the accuracy of their pronunciation (Figure 1).

3. AUTONOMOUS LANGUAGE LEARNING WITH BASIC KANJI

Learner's autonomy, as being the pre-requisite of productive learning, has been an area of

considerable research interest over the past two decades [17, 18, 19]. It is a defining characteristic of all sustained learning that attains long-term success [20] and principally an issue of students taking greater control over the content and methods of learning [21]. It develops gradually as long as the learner recognizes his or her own responsibility towards learning a foreign language. The learner is in fact a decision-maker who has, or will develop the capacity for choosing from among available tools and resources to create what is needed for the task in hand [22].

Autonomous Technology-Assisted Language Learning (ATALL) refers to (a) the development and use of technological tools to facilitate foreign language (FL) or second language (L2) learning (both to be used synonymously hereafter), and (b) research on the development, use, and effects of such tools for language teaching and learning [5]. Basic Kanji Courseware is autonomous in the sense that it provides the means to the Japanese language learners to improve their proficiency whether or not they are taking formal courses. Thus, this powerful tool can be used by L2L in conjunction with formal Japanese study or by those who are not taking Japanese lessons. In other words, Basic Kanji activities can be used as an integrated component of formal Japanese courses or for supplemental study within L2 courses. It can also be used by non-native Japanese/ English teachers who wish to improve their L2 skills and show their students how they can continue to develop their L2 proficiency outside of class.

The term "Autonomous" also refers that the tools are widely available (such as via the World Wide Web) at no or low cost [6]. ATALL encompasses all forms of electronic and information technology that can be used to facilitate L2 proficiency. This includes the obvious tools of computer and Internet technology as well as other forms of communication technology such as wired and wireless telephony, television and radio (broadcast, satellite and cable) and the integration of older communication technologies with newer information technologies. Basic Kanji shall be accessible online soon (site under-construction) with full color manual and latest CD-ROM. It is based on the latest theory and research on L2 acquisition [7], the psychology of learning [8] and Computer Aided Language Learning (CALL) [9]. All of these approaches complete the embroidered theoretical framework of Basic Kanji tools and activities providing provided directions of how it can best be used to improve Japanese proficiency in the areas of listening, speaking, reading and writing.



3.1 RELATIONSHIP BETWEEN AUTONOMOUS LANGUAGE LEARNING BEHAVIOUR AND MOTIVATION

It has been widely recognized that that learners' attitudes towards language learning can and do influence their language learning behaviour [23]. Earlier research [13, 14] in this direction has explored potential benefits of CALL for kanji learning motivation. It is important because learners' motivation and self-confidence affect his or her learning performance [15, 22]. Therefore, we decided to test the effect of the application on Kanji learners' motivation instead of measuring their Kanji learning results. The reason for this decision taken was due to the short timeframe of our experiment (one week). During this short time span, learners result after interaction with Basic Kanji application would have facilitated short term or temporary memory when in fact, the real challenge lies in memorizing larger number of kanji as a long-term memory pursuit. Contrary to this, we felt measuring learners' motivation over a seven days period would be a meaningful exercise. If our system could improve student motivation for learning kanji, then it naturally increases the chances for autonomous learning in the long-run. The results of this evaluation indicate that the programs facilitated students' acquisition of Japanese characters and served to motivate them to continue their acquisition of Japanese. It was revealed motivational increase did lead to greater frequency of autonomous practices and the motivated L2L appeared to work hard than others in their quest for L2 acquisition.

3.1.1 METHOD

Questionnaires are generally used to determine student motivation in learning. We, therefore, opted a modified version of the *Motivated Strategies for Learning Questionnaire* (MSLQ) [16] for our experiment. The reason for choosing MSLQ is that it helps examining student enthusiasm and learning strategies in various subscales and each subscale, in turn, consists of several questions measuring one particular factor. Likewise, each question states a specific learning exercise or belief, and the participants have to respond in relation to their appositeness. The reason for these responses mentioned in a *Likert-style* scale is due to the fact that MSLQ is designed for use in general learning conditions. Some of its subscales may not apply to a particular Kanji learning condition as for instance, the questions related to critical thinking. This section does not apply to kanji learning, because learning

Chinese characters is a memorization and not a critical thinking activity at all. We have, therefore, modified the MSLQ to meet our specific learning needs.

Our research questions, for which we have conducted this study, include:

- a) Is it feasible to design and implement a graphical kanji learning tool by including features that may promote the learners use of strategies?
- b) What are the strengths and weaknesses of the courseware in actual use by students?
- c) Does such a CALL system positively affect student motivation?

To explore these questions, eight unpaid volunteers that include four from first-year course, two from the second-year course and two from the third-course male were selected at the Ritsumeikan Asia Pacific University Campus. All participants were foreign students and they were fluent in English which was a requirement due to the use of English-language keywords by our system. Furthermore, all the participants stated that their kanji knowledge was limited or at the beginning level, and that they were interested in trying out a new courseware for kanji learning. They filled out the necessary demographic details during the first meeting and responded to the modified MSLQ.

Later, we distributed the installers of Basic Kanji among the subjects and instructed them installation procedure, method and usage of our courseware (to record, playback, navigate kanji lessons, meanings, pronunciation, kanji stroke order etc). The participants took the installers home and, over the next seven days, used the program in their leisure hours. They were asked to explore and learn as many kanji as they want by using our Kanji learning tool. At the end of the week, subjects returned the CDs, again filled out the MSLQ, and answered questions on courseware utility both in *Likert-scale* form and in free-form questions. They were asked to respond to 18 questions on a four-point scale (1 = Not at all, 2 = Slightly, 3 = Moderately, and 4 = Highly); to write comments on the programs; suggestions for improvement and to name the most useful modules.

3.1.2 RESULTS

To the questions "How do you like Basic Kanji as a software program?" most of the subjects stated that they liked the programs "Moderately" or "Highly." Table 1 presents a summary of the analysis of students' responses to these questions.



TABLE 1. MEANS OF SUBJECTS' RESPONSES

PROGRAM	FIRST YEAR	SECOND/THIRD YEARS	OVERALL
BASIC KANJI	3.71	3.07	3.41

The mean score of the participants at all levels was 3.41 which was above the "Moderate" response level. Basic Kanji had been well received by the First-year students with 3.71 as compared to the second-/third-year learners with mean of 3.07. Furthermore, a *t*-test examination indicated that the mean score of the first-year Basic Kanji learners was considerably higher than that of the second- and third-year learners ($p < .01$). The analysis also indicates a different statistical trend between the mean scores of the first-year freshmen and second-/third-year participants ($.10 < p < .05$). Therefore, it would not be unfair to assume that the freshmen took Basic Kanji more seriously than the second-/third-year students who used courseware for review. However, all the subjects commented that the program had been very useful in their efforts to learn Kanji characters. This was an answer to our first research question of determining the feasibility of implementing a kanji learning tool by including features that may promote the learners use of strategies. Since, we have been able to successfully implement the program and evaluate it with students; we can asseverate the feasibility of Basic Kanji.

Subjects were told to rate the utility of each module in Basic Kanji on the same four-point scale. The mean scores for all subjects ranged 3.00 ~ 3.91 for each feature in the courseware. Tango (vocabulary building), *Jukugo* and Stroke-order demonstration were realized as the most informative components of Basic Kanji by the students that allowed them to learn Kanji characters with fun, ease and attention. Some students suggested that the final version should contain three and four character *Jukugo* and *Okurigana* (combination of Kanji with phonetic characters). The combination of Chinese characters in entirety is called *Jukugo*. Kanji are commonly found in *Jukugo* form that can be described as an arrangement of two to four different Kanji characters (meaning-wise) into a singular word having different meaning e.g., 入(enter) + 口(mouth) = 入口 (entrance). The general complaints from students revolved around the issue that certain Kanji appeared garbled and the text on the screen looked crappy.

TABLE 2. SCORES FOR INDIVIDUAL MODULES

MODULE	NO. OF SUBJECTS	FIRST YEAR	SECOND/THIRD YEARS	OVERALL
Kun-yomi	6	3.57	3.20	3.42
On-yomi	5	3.56	3.38	3.47
Stroke Order	8	3.83	3.33	3.53
Meaning	8	3.83	3.33	3.53
Pronunciations	3	3.00	2.75	2.83
Jukugo	7	3.91	3.27	3.61

MSQL session with the participants also described the overall graphical presentation as above average, with high ratings for color and animation and suggested more flashes and things that move. Furthermore, the second/ Third Year subjects indicated that the speed of stroke animation was high and that it needed to be slower and suggested a controller to stop them at any moment instead of leaving them constantly blinking. The participants responded that they would use Basic Kanji as a dictionary tool to find ample examples, to get meanings of Kanji character and to practice stroke order. The page structure appeared to be confusing in the beginning. This happened mainly because majority of the respondents did not read instructions mentioned in the *User Guide* before opening lessons.

4. CONCLUSION & FUTURE WORKS

We investigated that after using our device, students' belief in their own ability to master kanji has been increased and their anxiety for learning kanji has been lowered. It was found that higher motivation did lead to higher frequency of engagement in the autonomous practices outside the classroom. The motivated students appeared to do more than their peers who claimed that they were less motivated. The use of Basic Kanji can positively affect students' cognitive language learning processes and motivation. Learning kanji requires persistence and effort over a long period of time. Most of the Japanese language learners lose interest and motivation during their intermediate stages of language acquisition therefore, by improving motivation at this juncture is an important step in supporting students' learning success in the long-run. The future version of the Basic Kanji will include features as grouping by radicals, mnemonics, ideographs, drills, quizzes, Okorigana, and kanji learning in context to allow the autonomous learner with more resources for learning. Furthermore, all of these modules will be rigorously tested to determine



its effectiveness for autonomous learning of kanji characters.

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