

# Seeking for Seamless Language Learning: How can we entwine formal learning with informal learning?

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**Abstract:** We proposed SMALL system seeking for seamless language learning in our previous study [1]. In this paper, we describe how far we have developed the system for the realization of seamless learning. As our first step, we aim to support English vocabulary learning, since vocabulary learning is one of the fundamental aspects of language learning. We also aim to create a knowledge-aware virtual learning community to promote P2P interaction in our seamless learning environment. Before the actual use of the system in a classroom environment, a pilot experiment was conducted, which shows that we need to change some functions in our system.

**Keywords:** Mobile Assisted Language Learning (MALL), Seamless Learning, Vocabulary Learning, Learning Log, EFL, TESOL

## Introduction

English has been a “*lingua franca*” in the world [2]. Therefore EFL (English as a Foreign Language) education is pivotal for non-English speaking countries including Japan. However, Japan is facing a serious problem in terms of English proficiency. One of the factors which have caused this disappointing situation is lack of learning time of English at school [3]. How should we cope with this situation? If time to study in class is limited, there is no other way but to learn outside class. Here our basic issue is to establish an effective method to carry out outside-class learning and to entwine in-class learning with outside-class learning. Along with the shortage problem, it has been pointed out that Japanese EFL learners are in lack of vocabulary. Since it is an essential component in language, it is pivotal to build up vocabulary to improve one’s language skill. We believe one solution of these problems lies in mobile assisted learning, which has been gaining global attention in recent years. So our aim is to provide EFL learners with a seamless vocabulary learning support system, namely SMALL system.

## 1. Theoretical Background

### 1.1 Vocabulary Learning Strategies

Vocabulary is one of the most important components of a language. But living in Japan, students rarely have exposure to English outside the classroom. Since incidental learning is not highly expected, they should be encouraged to learn vocabulary outside-classroom on an autonomous basis. Then here come the questions: What is effective vocabulary learning?

How should learners learn vocabulary? Unfortunately, researches on vocabulary learning strategies are in a lack of theoretical underpinning [4]. However, along with recent development of studies on technology enhanced learning, studies on vocabulary learning strategies have been gaining quite a few researchers' attention, and now are expected to provide us with some answers to the above questions.

### 1.2 Seamless Learning & Cyclic Model of Learning

Recent progress of mobile and wireless technologies offers us a new learning environment, namely "seamless learning". It allows learners to learn anytime, anywhere, and provides them with multiple ways of learning throughout the day. In this paper, by seamless learning, we mean learning which occurs with seamless transitions between in-class and out-class learning as "American College Personnel Association (1994) stresses the importance of linking students' in-class and out-of-class experiences to create seamless learning and academic success." [5]. The basis of our seamless learning idea is 'cyclic model of learning', proposed by Takeuchi (2007), that there are four processes of learning: preview, in-class lesson, review, and expanded self-learning, where 'class', in a broad sense, means not only learning in-class but also learning out-class and it allows teachers to incorporate students' self-learning into classroom activities [6] (Figure 1).

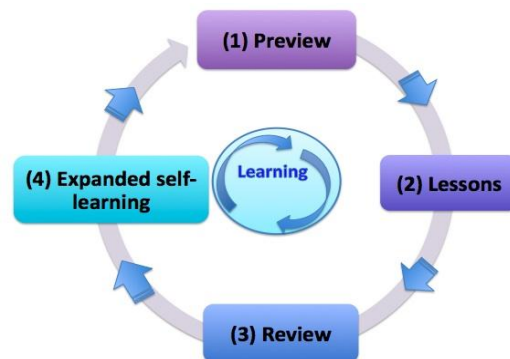


Figure 1. Cyclic Model of Learning  
(adapted from Takeuchi, 2007)

## 2. System Design

Based upon the above ideas, we design the following Seamless Mobile-Assisted Language Learning Support System (hereafter we call it SMALL System) (Figure 2) in our previous study [1].

**Textbook Data** in Figure 2 consists of the whole units of the textbook to be learned through one semester. A teacher uploads Pdf file textbook data to the system in advance.

**Learning Log System** or SCROLL is a system developed by our team. Users register what they have learned, which we call "learning log objects (LLO) to the system and view LLOs uploaded by themselves and others, then it supports recalling of their learning logs by giving them quizzes [7].

**Quiz** : The students register textbook target words and their newly acquired words during their self-learning and the system gives them quizzes. It generates quizzes based on the LLOs registered and viewed by the students.

**Message** : Users can send messages to other users in this system. When a viewer clicks the author name of the LLO, new window will be popped up and can send a message to him. This function will promote the students' interaction or discussion and will lead to

collaborative learning which will be inevitable where the teacher is not there outside-class self-learning.

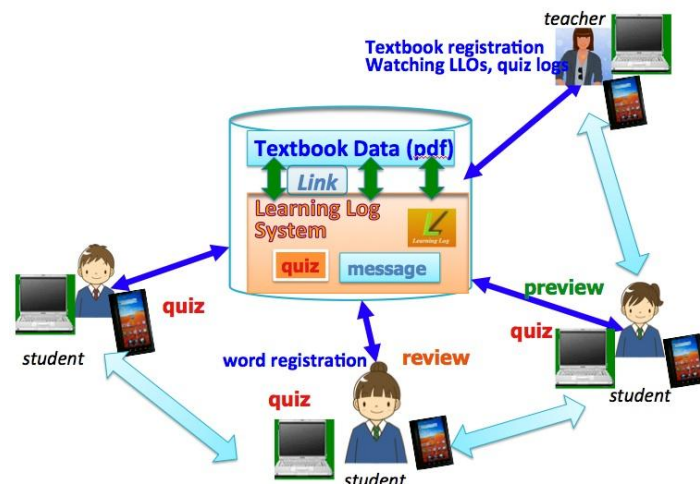


Figure 2. SMALL System (Seamless Mobile-Assisted Language Learning Support System)

The scenarios based on Figure 2 are as follows:

- (1) **Preview:** Students register textbook target words instructed by the teacher and read the text for preview and take target word quizzes. They answer multiple-choice quizzes. Quizzes will be generated until they make correct answers.
- (2) **Lessons:** In the textbook, student registered words are hyperlinked and when the teacher clicks them, a side bar will appear and it shows names of the students who registered them so that the teacher will be able to know how many students have learned them (Figure 3).

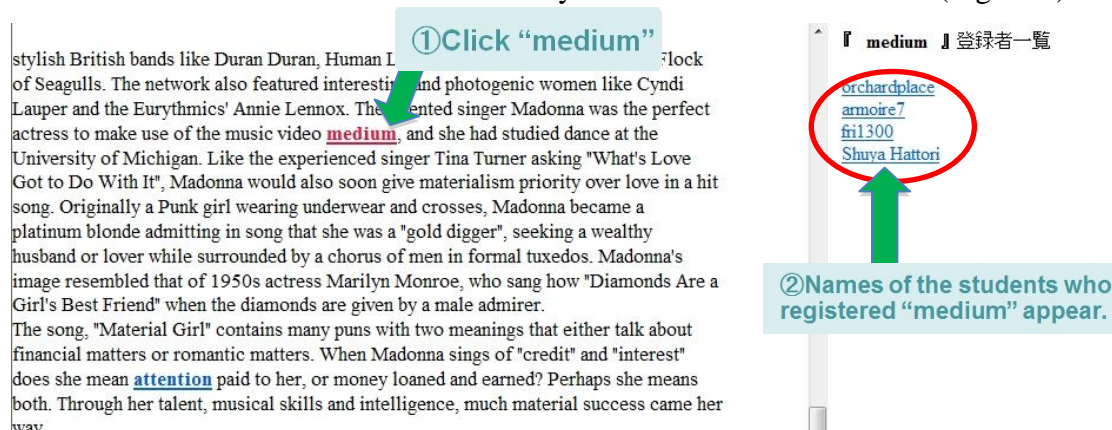


Figure 3. textbook interface

- (3) **Review:** Students read the text for review and take target word quizzes. The quiz logs show the results with most frequently mistaken words and the teacher will review these words in the next class. So the learning occurs continuously.
- (4) **Expanded Self-learning:** Students are assigned to do self-learning and register new words to the system. This system aims to intertwine outside-class learning with in-class learning. The system let them aware that they have learned it before when they come across the same word in the different contexts. Figure 4 shows how in-class vocabulary learning and out-class vocabulary learning are linked. When Yusuke registers a new word, “including”, which he already learned in the textbook, then the system shows him the textbook context where it appears. Our premise is that we learn words from contexts [8]. Therefore in order to learn vocabulary, we need to know its contexts. The system links the same word in different contexts so that they can learn how the word is used in various

situations. In addition, people learn and forget easily. This linking function helps learners be aware of what they have learned before, and also what other students are learning.

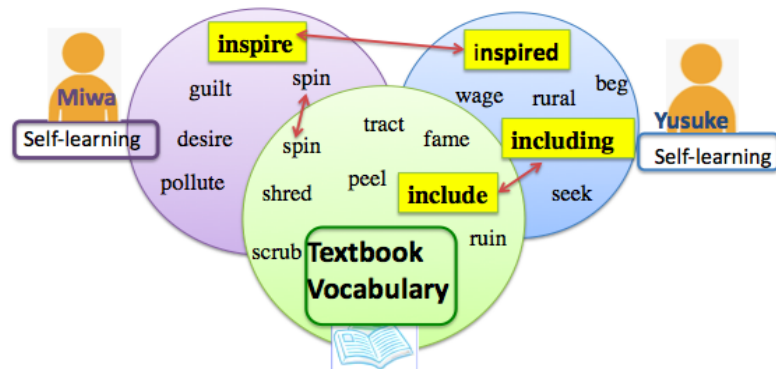


Figure 4. Link between in-class learning and outside learning

As one of the scales to show how out-class vocabulary learning is linked with in-class one, we propose *link rate* which is calculated as follows:

$$\frac{\text{number of registered words}}{\text{n. of words in the textbook} - (\text{n. of words learned during 7}^{\text{th}} \text{ grade} + \alpha)^*}$$

This figure shows the rate of overlapped vocabulary learned in- and out-class learning. This notion is still in progress and we are far from being sure whether this rate shows the effectiveness rate of vocabulary learning. Further exploration would be necessary.

### 3. Pilot

Before the actual classroom use, 6 university graduate students and 1 undergraduate were asked to give a trial use of the system to see if any serious problem exists to carry out the classroom experiment. The subjects were asked to register 5 recommended words with their contexts, click the words they registered in the textbook pages to learn other contexts and send messages to other users. At the end of the experiment, they were asked to answer the questionnaire. Table 1 shows the result of the questionnaire.

Table 1 Questionnaire Results (five-point-scale)

Questions	M	SD
Did you like it when the system let you know that you can find your self acquired vocabulary in the textbook?	4.57	0.49
Did you like it when the system let you know that your self-acquired vocabulary is also registered by other users?	4	1.07
Was it useful for your vocabulary learning to read textbook contexts where your registered words appeared?	4.57	0.49
Was it useful for your vocabulary learning to read other contexts of your self-acquired words which were registered by other users?	4.43	0.73
Was the message system useful for collaborative work?	3.71	1.16

### Open Comments

- It would be better if I can see the meaning and contexts of the word registered by others at the same time (by one click)

- The letter size and space between lines of the textbook were small. it would be more convenient if I could see the meaning of the words not by clicking but by just positioning the cursor.
- Color coding of the words in the textbook was helpful for me to know if those are my registered words or those by others. Linking my newly registered words with textbook page would be more convenient.
- The textbook interface and layout were not user-friendly. I wanted to see the illustrations in the web textbook just like its paper textbook version.
- I could not check if I could send the message successfully.
- If I click the words in the textbook, it shows the names of the learners who registered the word, but I'd like to know the contexts rather than the authors.
- Word registration in this system helped me retaining the word in my memory.

#### 4. Early Insight and Future Works

Upon the above questionnaire results, we have found that we need to improve textbook interface and linking function of registered words and textbook contexts. We have not acquired any data on the classroom use, but possible advantages of the System that we expect are: 1) In-class and out-class vocabulary learning are closely linked so that what they learn in-class will be reinforced in out-class learning and vice versa. 2) Since we learn words from contexts, its linking function can lead to effective vocabulary learning. 3) It encourages out-class self-learning, which is expected to compensate the lack of learning time in class. The disadvantage of this system is that it may be unfair for the students who do not own mobile phones unless the project team could provide them.

#### Acknowledgements

This research work was supported by Japan Science and Technology Agency, PRESTO, and the Grant-in-Aid for Scientific Research No.21650225 from the Ministry of Education, Science, Sports, and Culture in Japan.

#### References

- [1] Uosaki, N., Li, M., Hou, B., Ogata, H., & Yano, Y. (2010). Supporting an English Course Using Handhelds in a Seamless Learning Environment. *Workshop Proc. of the 18th International Conference on Computers in Education (ICCE2010)*, 185-192, Putrajaya, Malaysia.
- [2] Lan, Y-J., Sung, Y-T., and Chang, K-E (2007). A Mobile-device-supported Peer-assisted Learning System for Collaborative Early EFL Reading. *Language Learning & Technology*, 11(2007), 130-151.
- [3] Takeuchi, O. Autonomy and self-learning: Necessities and methods (in Japanese). *Teaching English Now* 8 (2007), 02-05.
- [4] Mizumoto, A. (2010). Exploring the art of vocabulary learning strategies: A closer look at Japanese EFL university students. Tokyo: Kinseido.
- [5] Wong, L-H. & Looi, C-K. (in press) What Seams Do We Remove in Mobile Assisted Seamless Learning? A Critical Review of the Literature.
- [6] Sumi, S. & Takeuchi, O. (2008) Using an LMS for Foreign Language Teaching/Learning: Attempt Based on the "Cyclic Model of Learning". *Information and Systems in Education*, 7, 59-66.
- [7] Ogata, H., Hou, B., Li, M., El-Bishouty, M.M., Uosaki, N. & Yano, Y. (2010). What if we can log our ubiquitous learning? *Proc. of the 18th International Conference on Computers in Education (1 ICCE 2010)* , 360-367, Putrajaya, Malaysia.
- [8] Nagy, W.E, Herman, P.A & Anderson, R.C. (1985). Learning Words from Context. *Reading Research Quarterly* 20, 233-253.