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Supporting English Class using Mobile Devices: How Can We Intertwine In-class Learning with Out-class 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. An evaluation experiment is scheduled to be conducted soon.

Keywords: Mobile Assisted Language Learning (MALL), Seamless Learning

Introduction

English has been a dominant language in the world due to globalization and internationalization in recent decades [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 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. 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 [4].

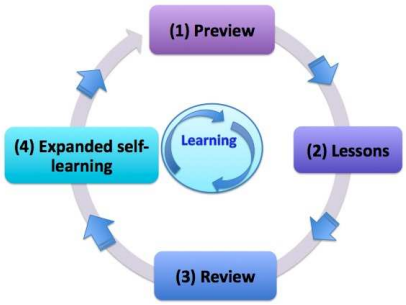

Figure 1. Cyclic Model of Learning
(adapted from Takeuchi, 2007[3])

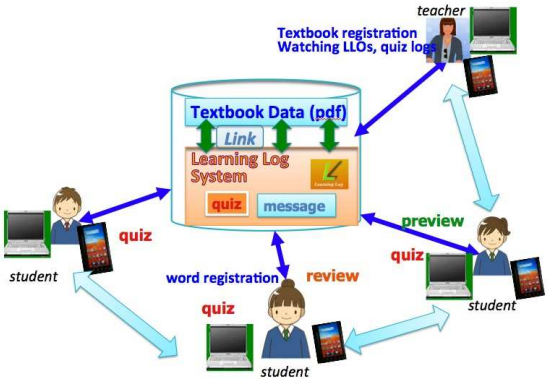

Figure 2. SMALL System

2. System Design

Based upon the above ideas, we designed the following Seamless Mobile-Assisted Language Learning Support System (hereafter SMALL System) (Figure 2).

Texbook Data 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 [5].

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 massages 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 in not there outside-class self-learning.

The scenarios based on Figure 1 are as follows:

(1) **Preview**: Students resiger 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.

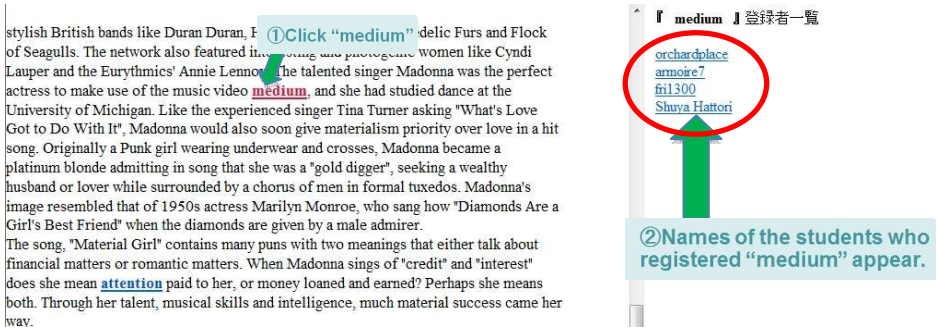

Figure 3. textbook interface

(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).
(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.

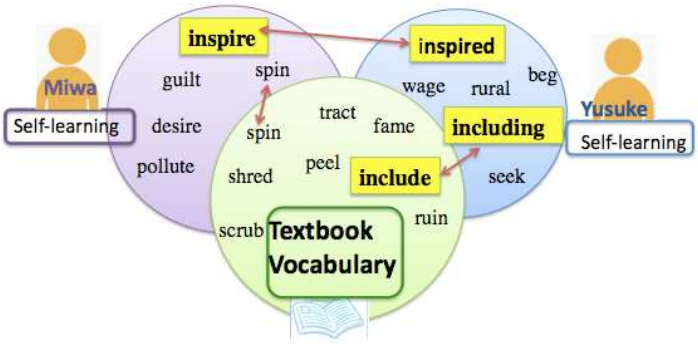

Figure 4. Link between in-class and outside learning

Figure 4 shows how in-class vocabulary learning and out-class vocabulary learning are linked. When Yusuke registers 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 the context [6]. Therefore in order to retain vocabulary in our memory, we need to make much of the contexts. The system provides the contexts to let them learn how the word is used. With the help from the system, students can be aware of what they have learned before, and what other students are 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 caliculated 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 above mentioned 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. In 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 reinforces in out-class learning and vice versa. 2) Since we learn words from contexts, its linking context 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.

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