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Seamless Learning Environment to Support English Course Using Smartphones

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Abstract: In this paper, we propose mobile-assisted vocabulary learning and present learning scenarios seeking seamless transitions between learning in-class and outside-class, incorporating students' self-learning into classroom activities which is expected to result in fruitful vocabulary learning. Two experiments using smartphones are proposed to find out some answers to the following questions: (1) Does the use of smartphones support seamless English vocabulary learning? (2) Can the additional adaptive contents recommended by the system help vocabulary learning?

Keywords: Seamless Learning, Smartphones, Vocabulary Learning, ESL

Introduction

It has been pointed out that Japanese ESL learners are in lack of vocabulary. It is evident that with more unknown words, more difficulty learners face in understanding English [1]. Therefore it is very important to build up vocabulary to improve one's English skill. But vocabulary teaching/learning methods are often considered boring [2]. Then the following question occurs: 1) What if technology can support effective/enjoyable vocabulary learning for ESL learners? If such a system were successfully implemented, its contribution to vocabulary learning or furthermore, language education in general, would be immeasurable.

1. Theoretical Background

1.1 Seamless Learning

Recent progress of mobile and wireless technologies offers us the potential for a new learning environment, namely "seamless learning" [3]. In this paper, by seamless learning, we mean learning which occurs with seamless transitions between in-class and outside-class learning, between handheld use outside-class and desktop use inside-class.

1.2 Cyclic Model of Learning

Takeuchi (2007) proposed the concept idea called 'cyclic model of learning' [4] (Figure 1), where 'class', in a broad sense, means not only learning in-class but also learning outside-class and it allows teachers to incorporate students' self-learning into classroom activities [5]. Seamless learning and cyclic model of learning, these two concepts share the same idea that learning can occur wherever they are, and that every learning experience both in-class and outside-class interacts each other.

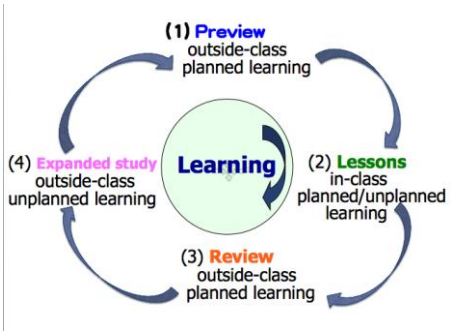

Figure 1. Cyclic Model of Learning
(adapted from Takeuchi, 2007)

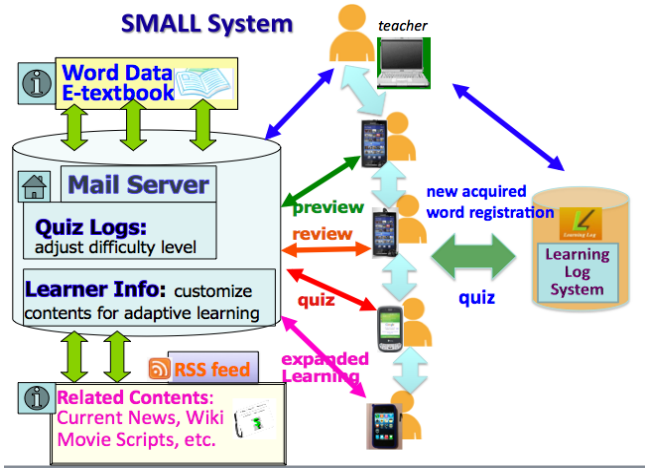

Figure 2. SMALL System

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).

Word Data in Figure 2 consists of target words to be learned through one semester. Data is imported to the system from an electric or OCR scanned textbook.

Quiz Logs consist of all the quiz results the students, which are analyzed and evaluated. This newly gained data reflect review quizzes and difficulty level adjustment and facilitate their learning processes.

Learner Info contains the students' English levels and their fields of interests for the distribution of the customized contents.

Related Contents are obtained through RSS feed and delivered to the students' mobile devices according to their English levels and their interests for the expanded study.

Learning Log System supports the students to register their newly acquired words and the system give them quizzes made by new words.

The scenarios based on Figure 1 are as follows. Students will be beforehand given vocabulary tests and questionnaires to grasp their English levels and the fields of their interests. They are assigned to write about their current interests on the designated website on a regular basis so that the system can grasp them which reflect the contents to be delivered for extended study.

(1) **Preview (mobile-based outside-class planned learning):** Students receive messages which show the URLs to read the text for preview and take target word quizzes. They answer multiple-choice quizzes until they make correct answers.

(2) **Lessons (PC-based in-class planned/unplanned learning)** :In the electronic/scanned textbook, target words are hyperlinked and when the teacher clicks them, new windows will be opened and they show names of the students who made wrong answers so he can pay attention to them during class. They are given web-based quizzes to make sure if they learn the target words in the lesson.

(3) **Review (mobile-based outside-class planned learning)**: Students receive messages which show the URLs to read the text for review and take target word quizzes. The system reports the review test results with most frequently mistaken word ranking lists and the instructor will review these words in the next class. So the learning occurs continuously.

(4) **Expanded Study (mobile-based outside-class unplanned learning)**: SMALL System recommends the contents of each student's interests which include target words. The

students register newly acquired words. If some students have read the same contents or register the same word, the system will let them know, which will lead to peer-to-peer discussion and let them interact each other. Each student is supposed to present in-class in turn what he/she has learned through his/her expanded study. Students are encouraged to collaborate other students who have the same interests during presentation task.

3. Methods

3.1 Experiment 1

Twenty four students will be divided into two groups. Each group of students engage with the two conditions with and without SMALL System in turn (Phase 1 and 2) over six weeks. Pre- and post-tests will be conducted, and their test results and all the students' learning logs will be analyzed to see if there is any significant difference between the two conditions. The questionnaires will be used to assess advantages and disadvantage of SMALL System.

3.2 Experiment 2

The purpose of this experiment is to verify the validity of adaptive Expanded Study of SMALL System. Twenty four university students will be divided into two groups (Group A with adaptive Expanded Study & B with Expanded Study without adaptation) to see if there will be any significant difference in vocabulary learning. Questionnaires and learning logs will be analyzed to assess its availability.

4. Early Insight

Possible advantages of SMALL System are: 1) Learners are provided with anytime-anywhere-based learning environment 2) Its implementation is easy. 3) In-class and outside-class learning are closely related so that learners can learn under the guidance of their teachers. 4) It compensates the lack of learning time in class. 5) Automatic message/contents delivery helps reduce teachers' heavy workload. 6) Customized contents help students enhance their motivation to learn more.

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