

Title	過去の写真を利用する日記スタイル単語学習アプリケーションW-DIARYの開発
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Research for W-DIARY, a diary-style-application for English vocabulary learning, with existing photos

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Abstract :

The main purpose of this research is to propose W-DIARY (W: Word D: Diary I: Image A: Addict RY: memoRY) which helps learners to study English vocabulary as an Android smartphone application. In the rapid progression of globalization, Japanese companies have recently expanded overseas markets. In other words, English as a global common language has become increasingly important. Such companies are actively involved in English education. However, English language skills of Japanese adult are 22nd in 25 countries in 2012. This is one of the big problem in globalization for Japan. According to the research of Higgs, language learning was divided into vocabulary, grammar, pronunciation, fluency and social linguistics element and the vocabulary element was recognized the most important one for improving learning skills of novice learners. Even for advanced learners, the vocabulary element was recognized important one next to the grammar element. In other words, we can say that vocabulary learning is important for most of the learners. The problem with English vocabulary learning is "forgetting English words" and "decreasing motivation for learning". The learners might forget the English words learnt since they cannot often retrieve the words from their memory. In addition, it is difficult for them to keep their motivation for learning because they sometime learn the words in a reactive way. The target of this research is beginner and intermediate level learners (CEFR level A1 ~ B1). In order to improve their English vocabulary learning, we propose an application called W-DIARY with an "active learning environment". It promotes continuous learning by using the gamification approach which solves the problems by the game production technology.

After surveying the related work, we describe design and implement of W-DIARY in more detail. In the W-DIARY learning process, the learners put tags and make comments related to certain English words to the taken/selected photos by themselves. It makes them to increase "linked information" in their memory. The more liked information is made, the easier they remember the words. Therefore, we believe they would be able to learn English vocabulary more efficiently.

W-DIARY consists of the following three functions, i.e. "writing function", "reviewing function", and "testing function". The following procedure is a typical learning flow in the "writing function". (1-a): The system displays a list of the data set which is a group of English words to be remembered in a certain topic/goal. We will use the public word database on the web. The data set is a part of the database. They can select the data set that they want to learn. (1-b): They select a photo from the photo gallery. (1-c): They drag and drop the words as tags to the photo. This is called "tagging". (1-d): They make the comments for the photo and tags. (1-e): The system saves the photo and tags to the learning database. At this time, the system gives a point to the learners as a part of gamification. The "reviewing function" provides the following learning process for the learners. (2-a): They select the learning sheet to be reviewed from the list of their learning sheets. (2-b): They can review it repeatedly. W-DIARY connects the state-tagged location and English words of information in the "writing function". The "reviewing function" would increase connectivity among these information. The learning points are also added at this time. The process of "testing function" is as follows. (3-a): The system shows the English words tagged by the learners. They would take a test whether they remember the words or not. (3-b): If there are the words that they cannot remember, the system moves to the "reviewing function ". If they can answer all the words, the system would temporarily hide the English words from the learning process. In the end of the "testing function", the system also provides the learning points to them. In these learning processes, they can see their status and learning situation on "function selection" screen of the In addition, the learning points would increase or decrease depending on the time of the last login. For example, if the login interval is short, the system provides additional learning points.

In this study, we also investigate the effectiveness of the "linked information" as a preliminary experiment. We invited a couple of Japanese subjects and compared the learning process with traditional vocabulary flash cards and proposed W-DIARY. We got the results of pre, post and 3 days after test scores, and questionnaires in regard to the way of learning of English vocabulary. As the results, three of the four subjects were able to memorize the English word learnt by W-DIARY more than by the flash cards, especially in the post test. In other words, the results indicate the proposed method might be more effective for short-term memory. In addition, tagging and photo selection phases worked effectively in improving learning motivation of the subjects. We also evaluated the usability of the implemented application with questionnaire about how W-DIARY interacted with them and whether W-DIARY kept "learning continuity". From the small surveys of two subjects, the results show there were diverse interface problems in the prototype system, but the system might have a potential to learn English vocabulary effectively. They also suggested a couple of improvements of the system. We will update the system to increase efficiency of learning.

In conclusion, we discuss modeling, system design, implementation, and preliminary experiments about W-DIARY. From the preliminary experiments, it would be effective for short-term vocabulary memory. Although current W-DIARY system might not be able to reduce cognitive loads of the learners because of poor usability, it will be a future challenge to improve the sophistication of the user interface and gamification. We will also have to evaluate the effectiveness of learning process and outcomes of the updated system through large-sized evaluation.