

論文内容要旨

報告番号	甲 先 第 245号	氏名	Erdenesaikhan LKHAGVASUREN
学位論文題目	Design and Development of the Learning Log Dashboard for a Ubiquitous Learning Environment (ユビキタス学習環境のための学習ログダッシュボードの設計および開発)		
<p>内容要旨</p> <p>This doctoral dissertation mainly describes the design of a learning log dashboard (L2D) and its development. The L2D works together with SCROLL (System for Capturing and Reminding Of Learning Log) system, which supports language learning for oversea students. SCROLL helps learners log their learning experiences with several types of media such as photos, audios, videos, and sensor data. Moreover it provides a sharable space of them with other students. Each recorded object in SCROLL is called ubiquitous learning log object (ULLO). A ULLO indicates a digital record of what a learner has learned in the daily life using ubiquitous technologies. For instance, a ULLO can be an English word or a piece of Japanese sentence taken down by a language learner.</p> <p>The system developed as a first version focuses on how to apply ULLOs regarding analysis and feedback for students. In addition, how to track learning activities and analyze them in traces of reflection thereof are proposed. However, there are little contributions directly follow these motivations.</p> <p>Therefore, this study originally proposes a learning log dashboard model in the study to improve the first version. The main objective of this paper is to design and implement the L2D model applied for a ubiquitous learning environment. It reuses, analyzes and visualizes traces of learning activities in order for learners to promote awareness and enable them to reflect on their own activity and induce them to recall what they have learned.</p> <p>An evaluation is conducted to evaluate the usability of L2D and influence for learners through the experiment. The subjects consists of 14 international students who enrolls in Tokushima University. Through the evaluation, the following things are found out: 1) The experimental setting shows a larger improvement in both tests (Post test 1, Post test 2) than the control setting. It means that experimental setting students actually upload fewer words, but learns more words than control setting students. 2) Therefore, it can be said that L2D system is more effective and supportive than normal SCROLL by way of its quiz function. According to the questionnaire result by subjects, it is found out that the system adds some efficient way in vocabulary learning. 3) During the experiment, 1,339 learning logs (mean=47.82, SD=46.99) are uploaded and 4,439 quizzes (mean = 158.53, SD=81.09) are done. For a student, his or her records are 2.27 learning logs and 7.54 quizzes in average every day. It means that they engage in the system well.</p>			

The correlation between the number of uploaded logs and each student's times of quiz taking is examined. The coefficient of correlation between the two factors is 0.3184. It means that the result is detected statistically significance in correlation between the number of uploaded words and times of quiz taking.

Moreover, students are less active when they use SCROLL with L2D than the normal SCROLL from uploading activity viewpoint. Nevertheless, when students use SCROLL with L2D, quiz activity is higher than using normal SCROLL. 4) Besides open-ended comments from students, most part of their comments are positive. Especially contents with dashboard gained good reputation. L2D seems to enhance students' motivation of learning Japanese.

In terms of future works, it is necessary to give appropriate contents as a recommendation and present past learning logs on the system in accordance with each learner's condition. In addition, it is also necessary to prepare a guideline for effective use of SCROLL with L2D based on long-term evaluation.

論文審査の結果の要旨

報告番号	甲 先 第245 号	氏 名	Erdenesaikhan LKHAGVASUREN
審査委員	主査 上田 哲史 副査 獅々堀 正幹 副査 松浦 健二		
学位論文題目 Design and Development of the Learning Log Dashboard for a Ubiquitous Learning Environment (ユビキタス学習環境のための学習ログダッシュボードの設計および開発)			
<p>審査結果の要旨</p> <p>本論文は、ユビキタス学習環境に対する学習ログダッシュボードを提案するものであり、その設計および開発を主旨として論じられている。問題意識から研究目的が整理され、関連研究のサーベイを通じて、研究の位置づけが述べられている。さらに、提案手法の前提となるユビキタス学習環境のシステムが論じられ、それに対する要件が整理されている。要件に基づいた設計論、開発論が展開され、評価実験およびその考察がなされている。以上から、論文の構成としての問題は無いものと考えられる。</p> <p>提案手法として、ユビキタス学習環境としての、場所情報や位置情報に基づいた学習ログの収集および分析手法が設計されている。また、実装されたシステムでは蓄積されたコンテンツからのクイズ形式での確認が行われる際に記憶システムに鑑みたモデルを適用することで、学習者の知識定着が図られている。さらに、ダッシュボード機能としては、蓄積されているコンテンツの概要作成およびグラフィカルな表示が実装されており、学習支援、特に語学学習への寄与が論じられている。最後に、開発されたシステムを適用した評価実験では、実験群と統制群に分けての比較がなされ、実験群において顕著な学習効果が確認されている。</p> <p>以上本研究は、ユビキタス情報社会における学習支援環境に対するダッシュボード機能の設計と開発および評価を取り扱い、本論文は博士（工学）の学位授与に値するものと判定する。</p> <p>なお、本論文の審査には、九州大学の緒方広明教授の協力を得た。</p>			