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研究課題名（和文）Assessing the Validity of a Ubiquitous Learning Environment through a Holistic Assessment Approach

研究課題名（英文）Assessing the Validity of a Ubiquitous Learning Environment through a Holistic Assessment Approach

研究代表者
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研究成果の概要（和文）：本研究の目的は1）ブレンデッド、ユビキタスラーニングでヒューマン・ノンヒューマンのアクターを特定し、2）学習者の学習結果を詳しく測定し、3）オンライン学習のツールを正確、効率、効果面で分析し学習目標の到達度をみた。1）ではタブレットコンピュータの影響力が1番強かったが、教室の家具の配置も学生同士の対話に強く影響していた。2）では2回のインタビューでコースの内容の理解度と英語の流暢さを比べたが、流暢さの変わりはなかったが内容の理解度が英語の流暢さと強い関係性がなくオンライン学習頻度が高い学生ほど内容が濃かった。3）ツールよりも自主性が大きく影響し英語のレベルはかなり低くない限り影響がなかった。

研究成果の学術的意義や社会的意義
ユビキタスラーニング環境で学習のサポートをしていても、CEFR B1以上の学生でなければ、内容を理解することは難しい事が分かったが、逆に一部の上級の学生は自分の流暢さに頼り過ぎて専門用語の使用や内容を学習した証拠が乏しかった。これは英語レベルよりモチベーションが高い学生の方が内容の理解度が高い事がクラス内でのプレゼンテーション等で確認できた。また、リーダーシップコースとされている本コースが学習者において、英語で授業が行われる為、授業開始当初、英語クラスという認識が強かったが、このマインドセットを「英語学習」からコース終了時には「リーダーシップ」に移行できた学生ほど習熟度が高いことがわかった。

研究成果の概要（英文）：The purposes of the study were to: 1) capture a blended-, ubiquitous learning environment by identifying what human/nonhuman actors are involved in constructing the learning environment; 2) measure learners' learning outcomes in more detailed manners in order to make more accurate assessments of their learning outcomes; and 3) online teaching and learning tools are critically analysed for their suitability, efficiency, and effectiveness for achieving teaching and learning goals.
The results suggest that 1) tablet computers were the most influential nonhuman actor; however, the opsitions of classroom furniture played a big role in the interaction. 2) Through pre- and post-course interviews, the students who spent more time online achieved higher goals. English proficiency did not afftect their learning outcomes. 3) Learning materials or environment did not influence so much with their learning outcomes. The student autonomy played a bigger role in achieving the class objectives.

研究分野：Computer-Assisted Language Learning

キーワード：Ubiquitous Learning　CLIL　Leadership Skills　Blended Learning　Flipped Learning

様　式　Ｃ－１９、Ｆ－１９－１、Ｚ－１９（共通）

１．研究開始当初の背景

Poor English-speaking skills have always been recognized as one of the typical attributes of learners of English as a foreign language in Japan. Many scholars and educators have tried almost every method they could think of, in order to help improve Japanese learners' English-speaking skills. This research also follows on such tradition; however, we intend to take a more holistic approach to unveil what needs to be done to design and construct a learning environment with technology.

Computer-Assisted Language Learning (CALL) has increasingly been popular for the past 30 years, and the research field has been embracing multi-disciplinary studies, including Applied Linguistics, Computer Science, Social Sciences, and Education. Many theories employed in CALL were, however, often borrowed by these disciplines and, thus, CALL has been criticized for its immaturity as an academic research field. Another problem that is often voiced about CALL as an academic research field is that there are too many studies that focus on technology aspects of CALL, and they fail to look at the nature of tasks and learning environments that teachers provide for their students. That is, many CALL practitioners are able to provide state-of-the-art facilities to teach L2, however, they have not been able to holistically analyse how learning can occur in these environments. Learning environments are getting more diverse as many teaching materials has been introduced recently, and how these materials are delivered and presented to learners. For example, Blended Learning (BL) has gained more popularity due to its flexibility of having face-to-face instructions as well as online components. Along the same vein, flipped classroom is getting more popular as a timesaving teaching method that allows educators to spend more time on hands-on exercises in their classrooms, rather than spending lengthy time on giving lectures and going over task instructions (Bergmann & Sams, 2012). However, providing online learning materials and lectures through different forms of media do not necessarily guarantee learners with improved L2 skills. Educators need to know if students actually used the materials, and if they did, how often they used them, how much time they spent on each material, and how much motivation they had to engage in the tasks provided through technology. Ubiquitous Learning (UL) environment (Liu, 2009; Ogata et al., 2005) seems to support students with different needs, however, it is very difficult to monitor their learning progress, due to its elusive structure. This learning environment becomes even more complex if it is combined with BL and it seems almost impossible to determine how learning can occur in that context. Then the question is how educators and researchers know what component of BL and UL works and what what doesn't.

The purposes of this study are three-fold: First, we attempt to capture a BL/UL environment by determining what actors are involved in the learning environment under study and how each actor influence learners' learning behaviours. Second, we attempt to measure learners' learning outcomes more accurately in a few different ways. New analytical tool is to be introduced to see if it can measure L2 oral outputs produced by low-proficient learners more accurately than the traditional CAF measures. Third, online learning materials are critically analysed for their efficacy and efficiency by determining what materials should be included online, and what tasks are more efficient than the other. Each purpose is explained in detail in the next section.

２．研究の目的

The applicant shall indicate the general nature of the research and the specific purpose of the research, after succinctly summarizing it and providing an outline at the beginning, and with the existing academic literature referred to where necessary. In particular, details shall be given clearly with a focus on the following points. [Refer to the rules concerning the screening and assessment for Grants-in-Aid for Scientific Research. (cf. Application Procedures for Grants-in-Aid for Scientific Research)] 1) Scientific background for the research (e.g., domestic and overseas trends related to the research and positioning of the research; how the applicant has reached the concept based on his or her achievements in earlier research work; and details of achievements of past research work where the purpose of this project is to attain a greater level of knowledge in a similar area) 2) What will be elucidated and to what extent will it be pursued during the research period 3) Scientific characteristics, originality and expected results and significance of the research in the area

３．研究の方法

The course we are going to investigate is currently offered by the English Department at Meiji Gakuin University. It is a semester course, with 40 to 60 students enrolled from different departments. The majority of the students are 1st and 2nd year students, however, 3rd and 4th year students are also eligible to enroll. The course is mainly taught in English, and students are able to access Massive Open Online Course (MOOC) lectures and online tasks through different modes of hardware, including smartphones, tablets, and PCs. The university has provided an iPad for each of the student who is enrolled in this course.

In order to capture a BL/UL environment, we are going to break a learning environment into 3 sections to develop understanding of how this particular environment is constructed: 1) what human and non-human actors are involved; 2) how learners choose one learning device over the other; 3) how learners choose one task over the other. For this research component, Actor-Network Theory (ANT) will be used to analyse how human actors (i.e., teachers, researchers, and students) and non-human actors (i.e., computers, tablets, software, tasks, etc.) influence each other to form a network of learning environment. Stemmed from sociology, ANT, analyses a situation by looking at the dynamics of both participants and artefacts as actors that construct a network of an event or a situation (Latour, 1997), which can be used to capture the dynamics of relationships between actors, human or nonhuman, of an event or a situation (Latour, 1987). ANT has been used for studies in education, to capture diffusion of knowledge through a network of human and non-human actors in a classroom setting (Barab et al., 2001; Roth, 1997), and is used as one of the useful tools to deconstruct networks in various sizes, such as classroom activities to program or school-wide policies, in educational settings (Fenwick & Edwards, 2010; Fenwick et al., 2011). ANT is also considered useful to depict who/what is involved and how they relate to each other in the process of participating in learning activities. For instance, "collaborative learning" is usually perceived effective as a learning/teaching method. Dillenbourg (1999), however, claims that the notion of collaborative learning is "black boxed," and educators automatically associate "collaborative learning" with successful learning. Like "collaborative learning," concepts or matters that are no longer questioned because of their "common sense" status needs to be reassessed of their true effectiveness. ANT is, therefore, considered useful to unveil what is contained in a black box, by identifying the actors and their dynamics within a network. In Tanaka-Ellis's previous study, she has successfully applied ANT as an analytical tool to capture the dynamics of human and non-human actors in a BL class and its curriculum. The result of this study was presented at a conference and published [published as Ellis, not Tanaka-Ellis] (Ellis, 2012, 2013). In terms of the points 2) and 3), we are able to trace log in status for mobile devices and computer devices so that we will know how long each student stayed in the system and what tasks they were engaged in. To supplement this data, we are going to distribute surveys to see students' preference in learning devices and task types in relation to motivation types.

For the second purpose of this research, we are going to measure learners' L2 output and learning outcomes in a few different ways. Firstly, we are required to assess learners' current L2 levels to observe how this course can help improve learners' L2 skills. The commercial test like TOEIC and TOEFL are specialised in measuring business English or academic English skills, therefore, it would not be able to accurately assess low to low-intermediate learners' proficiency levels. Therefore, we are planning to give Michigan English Test (MET) that covers A2 to C1 (high-beginner to low-advanced levels) of CEFR scale that tests listening, grammar, and reading skills in English. MET will be used for pre- and post-tests after each semester of the BL course. We are also running pre- and post-speaking tests to see how learners' speaking skills are changed over the course of program. The speech samples are analysed by using new analytical tool that Tanaka-Ellis has used in her previous study (Kiban C: 2012-2015). The primary challenge in Tanaka-Ellis's previous study was that the existing analytical tools failed to accommodate as tools for analysing data collected from low-proficient L2 speakers. In studies regarding L2 speech, CAF (Complexity, Accuracy, and Fluency) measures (e.g., Ellis, 2009; Norris & Ortega, 2009) that use T-unit if often used to analyse complexity in speech. However, most of the low-proficient L2 speakers in Tanaka-Ellis's study were not able to form utterances that could be counted as T-units, due to the absence of predicates in each unit. Consequently, C-unit (allows to count a one-word sentence as a unit) was used to analyse complexity. However, this

also had some problems with determining whether an utterance can be counted as a C-unit, as some of the data samples lacked coherence in an overall speech, or a long pause existed in between potential C-unit words. In order to overcome these problems, C-unit was tagged and classified according to its difficulty and each classification was given a numerical value so that complexity can be analysed systematically. This "hierarchical C-unit" is ordered from simple to more complex levels due to acquisition sequences of L2 morphosyntax (Eskildsen, 2015; Hulstijn et al, 2015). In this way, singular-plural, irregular nouns and verbs, subject-verb agreement, and other basic words in C-units would be able to be scored according to difficulty in acquiring each L2 form.
Finally, online learning materials are critically assessed to see if presentation of the tasks is clear enough to their users to understand the objectives of each task. This is crucial for making this kind of project a success. For instance, if teachers are not clear enough with the purpose of tasks in hand, learners are left working on their tasks without knowing what the outcome of their efforts might be, which would affect their motivation and success of the entire project (Tanaka-Ellis, 2010a, 2010b). In Blended and Ubiquitous Learning environments, learners may feel that they are drown in too many different tasks, activities, and diverse information in L2, if not guided and monitored by their instructors throughout their learning processes.

４．研究成果

The main purposes of the study were to: 1) capture a blended-, ubiquitous learning environment by identifying what human and nonhuman actors are involved in constructing the learning environment under study; 2) measure learners' learning outcomes in more detailed manners in order to make more accurate assessments of their learning outcomes; and 3) online teaching and learning tools are critically analysed for their suitability, efficiency, and effectiveness for achieving teaching and learning goals. In our research, we have identified several nonhuman actors which are pivotal for succeeding in running an efficient ubiquitous learning environment. For instance, tablet computers are the most influential actors in this learning environment. However, the furniture in the classroom also played a significant role in this study because it affected how the students interacted with each other.
Learning outcomes were looked at by analysing the use of course-content related terms and concepts in two interviews data collected before and after the course. The interview data were also used to compare fluency in their target language over the course of 10 weeks. In terms of measuring their learning outcomes, their learning autonomy was looked at though their use of online learning tool. We looked at when and how often they accessed their learning materials before, during, and after each class.

論文

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５．主な発表論文等

〔雑誌論文〕　計4件（うち査読付論文　4件／うち国際共著　4件／うちオープンアクセス　4件）

１．著者名 Tanaka-Ellis Nobue、Sekiguchi Sachiyo	４．巻 1
２．論文標題 Making global knowledge accessible to EFL speakers of an undergraduate leadership program through a flipped and ubiquitous learning environment	５．発行年 2018年
３．雑誌名 Technology in Language Teaching and Learning	６．最初と最後の頁 3〜20
掲載論文のDOI（デジタルオブジェクト識別子） https://dx.doi.org/10.29140/tltl.v1n1.141	査読の有無 有
オープンアクセス オープンアクセスとしている（また、その予定である）	国際共著 該当する

１．著者名 Tanaka-Ellis Nobue、Sekiguchi Sachiyo	４．巻 -
２．論文標題 EVALUATING EVIDENCE OF LEARNING IN A MOBILE-ASSISTED UBIQUITOUS LEARNING CLIL CLASSROOM	５．発行年 2017年
３．雑誌名 INTED 2017 Proceedings	６．最初と最後の頁 6092-6099
掲載論文のDOI（デジタルオブジェクト識別子） 10.21125/inted.2017.1423	査読の有無 有
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１．著者名 Sachiyo Sekiguchi, Nobue Tanaka-Ellis	４．巻 -
２．論文標題 Integrating a MOOC in a Japanese University Curriculum with a Flipped Classroom Approach: A Case Study	５．発行年 2017年
３．雑誌名 INTED 2017 Proceedings	６．最初と最後の頁 7493-7496
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１．著者名 Tanaka-Ellis Nobue、Sekiguchi Sachiyo	４．巻 -
２．論文標題 Not a language course (!): teaching global leadership skills through a foreign language in a flipped, blended, and ubiquitous learning environment	５．発行年 2019年
３．雑誌名 CALL and complexity: short papers from EUROCALL 2019	６．最初と最後の頁 350〜355
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オープンアクセス オープンアクセスとしている（また、その予定である）	国際共著 該当する

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1．発表者名
Nobue Tanaka-Ellis, Sachiyo Sekiguchi

2．発表標題
Not a language course (!): Teaching global leadership skills through a foreign language in a ubiquitous learning environment

3．学会等名
EuroCALL 2019（国際学会）

4．発表年
2019年

1．発表者名
Nobue Tanaka-Ellis, Sachiyo Sekiguchi

2．発表標題
Making Global Knowledge Accessible to English as a Foreign Language Speakers of an Undergraduate Leadership Course through a Ubiquitous Learning Environment

3．学会等名
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4．発表年
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Nobue Tanaka-Ellis, Sachiyo Sekiguchi

2．発表標題
Evaluating the Efficacy of a Flipped and Blended Ubiquitous Learning Environment for a Japanese Undergraduate Leadership Course

3．学会等名
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4．発表年
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２．発表標題 Evaluating Evidence of Learning in a Mobile-Assisted Ubiquitous Learning CLIL Classroom
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１．発表者名 Sachiyo Sekiguchi, Nobue Tanaka-Ellis
２．発表標題 Integrating a MOOC in a Japanese University Curriculum with a Flipped Classroom Approach: A Case Study
３．学会等名 INTED 2017（国際学会）
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〔図書〕　計0件

〔産業財産権〕

〔その他〕

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６．研究組織

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