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Making Global Knowledge Accessible to EFL Speakers of an Undergraduate Leadership Program Through a Flipped and Ubiquitous Learning Environment



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Abstract

This paper reports on how an undergraduate global leadership course was designed and implemented at a Japanese mid-sized private university to match the Japanese government's initiative of fostering global individuals through education. By incorporating a flipped learning approach (Bergmann & Sam, 2012) and the content materials from a Massive Open Online Course (MOOC), the university was able to offer a global leadership program to Japanese students with some "hidden" English language assistance. The language support was provided by employing Content and Language Integrated Learning (CLIL), a pedagogical approach that is gaining global popularity (Coyle, Hood, & Marsh, 2010). Flipped learning was introduced to maximise the face-to-face class time for the activities to enhance active learning. Content learning was designed to be done online, before coming to every class. In order to support flipped learning and CLIL, ubiquitous learning was also incorporated to the program design. This paper also focuses on capturing the leadership program and develops the understanding of the roles of each stakeholder by mapping human and nonhuman actors to see what resources were involved in manifesting this highly complex learning environment. Excerpts from in-class interview activities conducted in Weeks 4 and 14 asking about student perceptions on the leadership program, were looked at to get a general idea if the program was successfully perceived as a leadership program or perceived as just another English language program. Some implications of designing this type of multifunctional course are discussed to conclude the paper.

Keywords: ubiquitous learning, flipped learning, MOOCs, CLIL, actor-network theory

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Introduction

Teaching global leadership to undergraduate students in Japan may not be as straightforward as some may think. Most Japanese students rarely have classmates from different cultural backgrounds nor growing up with neighbours speaking different languages other than Japanese. Before commencing higher education, they would typically have had at least six years of English as a foreign language education, while they would have little chance to use the knowledge. In 2012, the Japanese government announced that they were going to provide competitive grants to the universities who designed curricula to promote and cultivate young global personnel. The Ministry of Education, Culture, Sports, Science and Technology (MEXT) outlined their strategic initiative plan for the tertiary education sector for this purpose: cultivate abilities to handle challenging issues in the global arena; ability to use the 21st Century Skills; strengthen English language education; promote study abroad programs; increase opportunities for leading international universities to offer their courses in Japan in collaboration with Japanese universities; and improve Japan's international competitiveness (MEXT, 2012, 2014). Even without the government's grants, many Japanese universities seem to be moving towards the same direction to embrace the rapidly globalising society. Given the fact that the Japanese students have little exposure to intercultural environments, designing and offering a course in Japan that suffices MEXT's criteria and cultivating Japanese students' global mindset would be challenging.

Traditionally, study abroad programs are considered as one of the most effective ways of gaining global leadership competencies (Sandalin, Odom, Linder, & Dooley, 2012). However, intercultural experiences alone would not transform any students into leaders. As Caputo and Crandall (2012) put it; "leaders are the people who are very adept at experiential learning and have the ability to guide their own learning and their learning of others" (p. 60). Learning can occur from our day-to-day experiences, and we all have been practicing this in a certain extent. However, what sets leaders and others apart is that leaders have abilities to observe the situation in hand, interpret the context, make abstractions to understand the new information, and utilise the knowledge (Caputo & Crandall, 2012). Therefore, in order to cultivate leadership, students need to experience the process of how leaders would analyse the issue in hand and tackle the problem. Caputo and Crandall (2012) suggest role-play simulations, problem-based learning, and project-based learning are effective ways of recreating experiential learning in the educational setting. It may be possible, however, to create a learning environment that incorporates experiential learning and some of MEXT's criteria with the help of technology.

This paper analyses how an undergraduate leadership program in a mid-size private university, Meiji Gakuin University (MGU), was implemented as a response to MEXT's global personnel initiatives, and how English language support was embedded in the course. The implementation of the program is analysed by using Actor-Network Theory (Callon, 1986; Latour, 1993) to capture how each stakeholder in the program made connections to each other to create this particular learning environment. The map of stakeholders is further sorted into four social layers based on Ecological Systems Theory (Hooper & Crusto, 2013) to make each stakeholder's the levels of authority in the society more apparent. The paper also reports on how students' mindset changed over the course of time, in terms of their perception the program. The design of the program was highly complex as its learning environment incorporated flipped learning, ubiquitous learning, and content and language integrated learning (CLIL). Even there are many papers on educational technology, it may still be rare to see this kind of learning environment, and there are no studies published describing learning environments with the combination of flipped learning, ubiquitous learning, and CLIL to date.

Background

As delineated in MEXT's global human resources projects, English language education may be

regarded crucial for cultivating young global leaders, but some universities may feel that teaching English is not enough for fostering global leaders. The undergraduate global leadership program described in this paper was designed based on the idea that English skills may be important, but it should not be the focal point of their leadership course. The implementation of the course was faced by many challenges as the project team had to overcome a number of restrictions, for instance, the course was set to be offered to the students from three different faculties (Letters, International Studies, and Sociology) with varying English proficiency and year levels. The course also needed to be related to global leadership or its corresponding skills, but it should not be another English for Foreign Language (EFL) program. In order to overcome the challenges to teach global leadership skills without teaching English skills, the curriculum coordinator put together a flipped, blended, ubiquitous learning environment to for this program. The program was comprised of two elective courses: Current Affairs A (for the first semester) and Current Affairs B (for the second semester), each had different learning objectives which were in line with MEXT's criteria. Some of the criteria incorporated into the program were the 21st Century Skills, the problem-solving skills in global arenas, and English skills. English skills were "hidden" learning objectives which could not be emphasised due MGU's restriction, however, they could not be avoided in terms of global leadership education. In other words, the program incorporated CLIL approaches.

Twenty-first century skills are a collection of skills categorised under four different skill sets: *Way of thinking*, which are creativity, critical thinking, problem solving, decision-making; *Way of working*, which are communication and collaboration; *Tools for working*, which are ICT and information literacy; and *Living in the world*, which include citizenship, life and career, and personal and societal responsibility (Griffin & Care, 2015: 7). The learning materials for these courses were from FutureLearn, one of the major Massive Open Online Course (MOOC) providers, which were chosen by the curriculum coordinator based on the relevance to the government's criteria. The content for Current Affairs A was from the course entitled "Logical and Critical Thinking" offered by The University of Auckland, and "Developing Cultural Intelligence for Leadership" offered by Common Purpose was used for Current Affairs B. These MOOCs were typically completed in five weeks, however, they were reorganised into two 14-week courses to fit the university calendar by the curriculum coordinator. The idea of using MOOCs as the course materials was to make the latest global knowledge available to undergraduate students in Japan.

Massive Open Online Courses (MOOCs)

Since the advent of the Internet, information has become more accessible and affordable to many of us around the world. Not only did this change how we obtain the information that we want in general, but it also increased the accessibility and delivery of educational information. In recent years, both commercial and non-profit MOOC websites, such as Coursera, edX, and FutureLearn, made a wide variety of educational courses developed and taught by world-class universities and their academics available free of charge. In some cases, they may even offer certificates or institutional credits upon completion of these courses with a fraction of the actual tuition fee that students would have to pay if they physically attended these universities. According to Class Central MOOC Report, there were 11,400 courses offered by more than 900 universities, registered by 101 million students as of December 2018 (Shah, 2018). While MOOCs sites have shown its strong prominence on the web, the research into MOOCs is still in its infancy. In recent reports on MOOCs suggested that the completion rate of MOOCs is very low, hovering at around 10% (Jordan, 2014, 2015; Onah, Sinclair, & Boyatt, 2014; Liyanagunawardena, Parslow, & Williams, 2014; Yang, Sinha, Adamson, & Rosé, 2013). The reasons for dropping out from MOOCs were identified by Onah et al. (2014) that people enrolled out of curiosity, failed to devote the necessary time to study, the courses too difficult and lacked support, lack of learning skills, negative experiences related to peers, technical problems, and/or poor learning

materials, unrealistic expectations of their own abilities or course requirements, late enrolment, and peer grading system. In Jordan's study (2015) about MOOC participants' behaviour, of the 59 courses she studied, students' engagement dropped by half by the second week. She also found that the courses used peer grading had lower completion rates compared to the courses that employed automatic grading (e.g., multiple choice). Jordan (2015) acknowledges that further studies on MOOCs need to be conducted; however, she suggests that the attrition could have occurred due to the participants' insufficient English proficiency to provide peer feedback, and the disengagement of the students from minority backgrounds as their peers tend to give higher marks to those students from the same country. In Liyanagunawardena, Parslow, and Williams's (2014) paper, however, maintains that these 'dropout' rates need to be used with caution, as MOOCs attract more students because they are inexpensive. The backgrounds of these students may not be similar to those with full-fee paying students enrolled at universities so that the definitions that describe dropouts in traditional ways may not be applicable. In their study, they interviewed six people who registered in one to seven MOOCs, totalling 27 MOOCs among themselves. The backgrounds of the participants varied with one PhD, two Masters, two undergraduate, and one Certificate in Higher Education holders with their age ranged from 36 to 55-year olds, and the average was 46.7. According to them, the age bracket, 35 to 55-year olds, represented 45% of the several thousand students who registered in their MOOC course offered at their university, University of Reading. From the interviews, they found out that the interviewees did not see the people who did not submit all the required assignments or stopped submitting assignments but still watching all the videos as dropouts—they were still learning and participating in different ways. They also responded that if a MOOC participant learns something new from the course, reflect upon it, and conclude the learning on his/her own term. The above papers indicate that a MOOC can be used as a source of information where participants can choose what, how long, and how much they learn, but it may not always be an optimal platform of learning for those participants without sufficient English skills, and from minority backgrounds. Considering these short comings, only using MOOCs without language support and easier assessment methods would be unsuitable for undergraduate students in Japan. Using MOOCs as the source of knowledge with teacher and peer support may be a more viable way of internalising the knowledge available on MOOCs.

Flipped Learning and Ubiquitous Learning

Flipped Learning has become a popular approach of organising class structures and activities, in order to promote more active learning in the classroom (Bergmann & Sam, 2012a; Cockrum, 2014). Instead of teaching the content during the class, the students are to study the content outside of the classroom, before coming to the class so that the class time may be used for more engaging activities (Bergmann & Sam, 2012b).

The recent surge of interest in flipped learning is exemplified by a wide variety of research articles published in different disciplines, including engineering (Priyaadharshini & Sundaram, 2018), language learning (Moranski & Kim, 2016), and teacher education (Angelini, 2016). Each of these studies also look at different aspects of flipped learning, for instance, Priyaadharshini & Sundaram (2018) examined higher-order thinking skills and task performance of undergraduate engineering students during the class after studying flipped study materials. Moranski and Kim (2016) compared learner attitudes and performance of learning a Spanish pronoun *se* in flipped and a non-flipped Spanish class in a US university. Flipped learning is also used for teacher education for teacher trainees to simulate learning scenarios how their potential students might learn through flipped learning (Angelini, 2016). All these papers from different disciplines reported positive aspects of flipped learning that it enhances problem-solving skills, critical thinking skills, and creative thinking (Priyaadharshini & Sundaram, 2018); provides better learning experience, better performance (Moranski & Kim, 2016; Priyaadharshini & Sundaram, 2018); and it promotes more opportunities of

exchanging feedback from classmates (Angelini, 2016). Apart from the studies that relate to academic performance and experience in different disciplines, there are also a number of studies investigating more psychological and mental aspects of learners in flipped learning environments. For instance, in a study conducted by Mattis (2014) the efficacy of two instructional styles typically used for the traditional classroom and the flipped classroom were compared in students' accuracy and mental effort in solving mathematical problems at three levels. Second year college nursing students (20 control and 40 experimental) in the US received basic algebra instructions involving fractions (highly complex), decimals (moderately complex) and percentages (low complexity). The control group received a traditional text-based instruction, and experimental group received the same instruction in a video and audio format. The study time allocated for both instructional styles lasted for 13 minutes between pre- and post-tests which had a set of 15 algebraic problems each. The results of the flipped classroom cohort indicated that the students' accuracy of problem increased while their mental effort decreased, especially for the highly complex problems. The author suggests that when students need to deal with highly complex problems, flipped learning may be recommended.

While a number of studies reported that flipped learning generates more active learning and demonstrate better understanding during the class (e.g., Baepler, Walker, & Driessen, 2014; Kim, Park, Jan, & Nam, 2017), there are studies suggest otherwise. Estriegana, Medina-Merodio, and Barchino (2019) analysed competence acquisition of undergraduates in Computer Engineering and Information Systems using a flipped learning approach. Acquisition and development of three competences: systematic, personal, and cooperative. They found that the competence acquisition does not necessarily match the academic results while only cooperative competence led to positive outcomes. This means that teacher commitment for in-class activities is pivotal for succeeding in the flipped learning approach, which can increase the workload for the teacher. The major problem with this learning model was that some students lacked commitment of studying at home. Estriegana *et al.* (2019) are not only researchers that reported negative aspects of flipped learning. In Burke and Fedorek (2017) paper that describes the differences in performance between a traditional class, an online class, and a flipped class for undergraduates for their required subject in Criminology. All students in different environments were required to complete three essays and three examinations, while online students used a discussion board for communication and flipped classroom students had activities involved walking around the campus for analysing defence and crime prevention techniques, etc. Even with the extra activities that the flipped learning students had in class, the results showed that the students did not respond that they felt more engaged than the students in other environments. They also scored much lower for understanding other people from different backgrounds than the students in the traditional classroom. Similarly, in terms of using active learning to promote critical thinking and analytical skills in the flipped classroom, the students in this class scored lower than that of the traditional class.

Among the articles presented in this section, Sun's (2017) study about content-based flipped classroom may be the most relevant to this paper. Sun's case study looked at English as a Foreign Language (EFL) students' perceptions and attitudes on knowledge acquisition in a college-level content-based flipped classroom in Taiwan. In-class activities involved roundtable sharing discussion and seminar presentation, and out-of-class activities included reading one article on cutting-edge science per week for the in-class discussion and presentation sessions. Through a website developed for this course, the students were also required to write summaries of their reading materials, ask questions, provide comments on other students' summaries on a weekly basis. By the end of the course, they completed 14 roundtable presentations, two public presentations, and 54 posts of written reflections. The results indicated that the students learned a wide variety of scientific topics, became confident in giving presentations, and improved public presentation skills and speaking skills. The students also appreciated that English was used in communicative ways, rather than being taught in a traditional way (i.e., lecture style). The student attitudes towards this mode of course delivery was positive,

however, they had mixed opinions on the teacher role as a facilitator.

Although the outcomes of studies in flipped learning have mixed results, the use of in-class time seems to play the major role in determining the probability of success. Another factor that needs to be discussed in this section is ubiquitous learning. With regards to the program described in this paper, ubiquitous learning was incorporated into the design of the learning environment to enhance the flipped classroom and language support.

Ubiquitous learning transforms the time and the space that were formerly not recognised as an educational milieu (Cope & Kalantzis, 2009). The physical location where learning should take place in the traditional sense may no longer be relevant, and formal and informal learning events may also exist in a continuum in a ubiquitous learning environment. Apart from the common understanding of ubiquitous learning as a learning approach that encompasses “anywhere and anytime,” Ogata, Akamatsu, and Yano (2005) maintain that it provides permanency, accessibility, and immediacy in learning. Similarly, Yahya, Ahmad, and Jalil (2010) characterise ubiquitous learning as, permanency, accessibility, immediacy, interactivity, and context awareness. They claim ubiquitous learning enables to provide the right information at the right time and place, for accommodating life and work style. In relation to language learning, Jung (2014) has a different approach in viewing ubiquitous learning that it is limited particularly to developing new learning technology in a certain context, rather than learning about learner behaviour. These views of ubiquitous learning may be true in some respects, but they can limit the affordances and applications of ubiquitous learning.

According to Cope and Kalantzis (2009), ubiquitous learning has an obvious connection to ubiquitous computing in that “ubiquitous learning is a new educational paradigm made possible in part by the affordances of digital media” (p. 4). Thus, the ubiquitous support that ubiquitous computing can offer for learning ubiquitously makes it possible to realise ubiquitous learning. In Cope and Kalantzis’s book (2009), appropriately entitled *Ubiquitous Learning*, seven moves of ubiquitous learning are delineated in relation to ubiquitous computing: 1) to blur the traditional institutional, special and temporal boundaries of education; 2) to shift the balance of agency; 3) to recognise learner differences and use them as a productive resource; 4) to broaden the range and mix of representational modes; 5) to develop conceptualising capacities; 6) to connect one’s own thinking into the social mind of distributed cognition; and 7) to build collaborative knowledge cultures (pp. 9-13).

These moves complement the flipped learning approach; for instance, in terms of 1) and 2), the technology used for flipped learning can be ubiquitous, and the teacher role may be shifted to a facilitator role, and students can be teachers, collaborators, and critics. The third move can be found in Sun’s (2017) flipped learning context. Students may work within the same framework to find, read, and present papers that related to cutting-edge science, the choice of article is up to each student. Ubiquitous learning allows students to learn different materials in the shared context and they can also share a variety of newly acquired knowledge among them. In relation to 4), as multimodality is one of the characteristics of ubiquitous computing, which allows both teachers and students to create, share, learn, communicate in the formats of which ubiquitous computing can offer to enhance learning in and outside of the classroom. The fifth move concerns putting arbitrary information in order by using higher-order abstraction and metacognitive strategies. Conceptualising capacities needs to be developed to sort through a sea of new and existing information to store and retrieve that the teachers and the students required in meaningful ways. Learning materials for flipped learning, for example, should be presented systematically according to the purpose. Cope and Kalantzis (2009) claim that “you are not what you know but what you can know” (p. 12) in the age of ubiquitous computing that a smartphone can act as an extension of our mind and knowledge. They warn about how educators need to understand our capacity of how to know and set new ways of evaluating student performance.

This approach is also applicable to flipped learning that educators need to identify their evaluative criteria for both in and outside of the classroom, and also decide what methods of knowledge extraction is permissible. The final move concerns ubiquitous computing's ability to create communities of practice. As for the flipped learning context, educators are able to create the arena for collaborative learning for their learners for knowledge building. Some of the negative issues reported about flipped classrooms earlier may be reduced by ubiquitous learning approaches. Lack of engagement (Burke & Fedorek, 2017), for instance, may be changed through providing learners out-of-class discussion activities, to create the kind of environment that allows the third and seventh moves to work. However, in both flipped and ubiquitous learning environments, the roles of the teacher need to be flexible to adapt to various situations that may arise.

Content and Language Integrated Learning (CLIL)

CLIL has its root which originated in Europe in the mid-1990s as a solution to European integration and multilingualism development as the world was going into the era of information technology. It is a pedagogical approach that teaching nonlanguage content with and through a second or a foreign language (Coyle, Hood, & Marsh, 2010; Marsh & Martín, 2013). While the globalising society tend to emphasise in English education, Coyle et al. (2010) maintain that CLIL is not an educational approach exclusive to English education. It promotes learners' access to and use of the principal language and its terminology that is specific to the subject, and also stimulates cognitive development. In terms of what the term, CLIL signifies, it may be used to describe different teaching contexts, including partial or total immersion, or a foreign language-medium instruction (Aguilar & Muñoz, 2014). According to Aguilar & Muñoz (2014), CLIL is different from Content-Based Instruction (CBI) in a way that CBI can be regarded as pre-CLIL approach, which is a language-oriented approach and is instructed by language specialists. CLIL, on the other hand, aims to fully integrate the content and the target language. The program that the current paper analyses as a case study is considered as a CLIL program as the instructors were language teachers, however, they acted as facilitators. Also, the use of MOOCs warrants the fact that these teachers were "not" teaching the content, but the MOOCs were.

Other factors that are often discussed in academic papers on CLIL include CLIL makes the learning process less stressful and meaningful, especially when the content is related to the learners' interests (Heras & Lasagabaster, 2015). However, Heras & Lasagabaster (2015) pointed out that much of the existing literature focuses more on CLIL's effect on language acquisition [see Agustí-Liach and Alonso (2016) for vocabulary growth; Azkarai and Agirre (2015) for negotiation of meaning; Kikula (2007) for English use in Finnish Biology and Physics classes], but its effect on content learning is still scarce. This paper, on the other hand, represents a snapshot of development of student mindset in perceiving the program over the course of time, therefore, it would be an interesting addition to the research area in CLIL that still needs more documentation of.

Implementation of the Learning Environment

The program described in this paper was implemented in 2016 by a working group who were selected from three faculties at a mid-size private university (MGU) near Tokyo, Japan. One of the members of the working group was selected as the program coordinator, who is also the second author of this paper. The working group put together a proposal for the program, which later was selected by the university as the main response to MEXT's educational initiatives. The two courses set for the program were both elective, and offered to the students in three faculties, Letters, International Studies, and Sociology. The structure of the program, learning materials, activities, tasks were all decided by the program coordinator. Each course attracted about 40 students from first to fourth year levels, who were put into

two classes. The classes were run concurrently by two teachers; one of them was the coordinator and the other was from the Faculty of International Studies. In the mid-semester, the member of these classes was changed by mixing the two classes. The average students' English proficiency was considered intermediate, which is equivalent to B1 level of Common European Framework of Reference for Languages (CEFR), however, there were also a few students who spend a considerable amount of time overseas while growing up. The courses were all instructed in English and one overseas student, mainly from the US, was assigned to a group of three to four Japanese students, as a tutor. The roles of the tutors were to boost the Japanese students' in-class discussion and assist them with their group assignments in or outside of the classroom. The students met 90 minutes a week for 14 weeks. As explained in the Background section of this paper, the course materials were drawn from FutureLearn: "Logical and Critical Thinking" (Current Affairs A—Semester 1) and "Developing Cultural Intelligence for Leadership" (Current Affairs B—Semester 2). Current Affairs A was not Current Affairs B's prerequisite so that students had the liberty to take one or both courses, and there was no restriction on the order of the courses they could take.

The courses were both delivered in a flipped and ubiquitous learning environment with CLIL as to assist the understanding of the MOOCs courses and embed the foreign language learning. In order to facilitate the ubiquitous and flipped learning environment, the university provided one tablet computer each (9.7inch iPad) to all registered students and the tutors for the duration of each course. The relevant MOOC materials from FutureLearn were reorganised by the Program Coordinator and uploaded to the content management app, Handbook. Handbook is primarily an app for mobile devices, however, it can also be accessed from desktop computers. The MOOC materials were mainly comprised of lecture videos, reading articles, online quizzes, and discussion board, which were to be completed in five weeks.

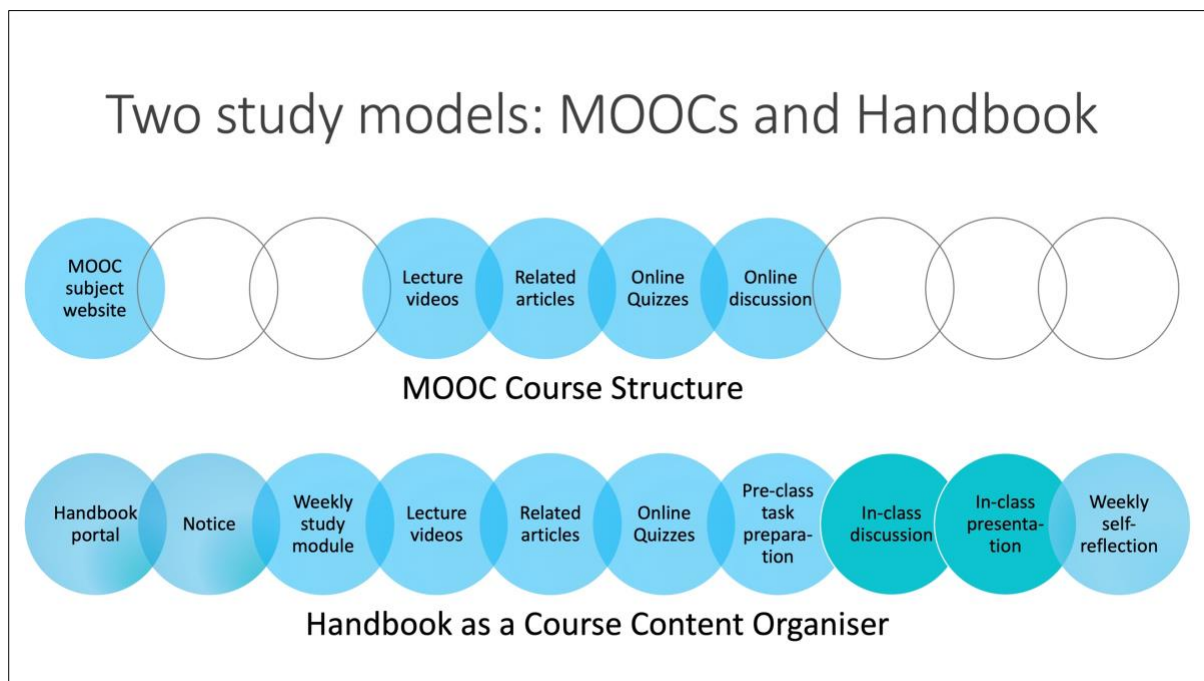


Figure 1 *The original MOOC course structure and the Handbook version of a MOOC course in a flipped environment.*

The Program Coordinator spread these materials into 14 weeks and added weekly noticeboard to notify the learners of the weekly study objectives, and corresponding flipped and in-class activities. The Handbook version of MOOCs also had online quizzes and pre-task preparation activities to assure their participation in the in-class activities (Figure 1.). After the students finished their in-class

activities, they were asked to submit their self-reflection notes to the coordinator. As in Cope and Kalantzis's (2009) fourth and fifth moves, the learning materials were organised and labelled systematically in Handbook, and the materials contained various forms of information such as, videos, reading materials, quizzes, message fields, etc.

The following table (Table 1.) shows how the activities were categorised and assessed. The activities could be categorised into two: habit-developing activities and leadership developing activities.

Table 1 *Activity categories and objectives*

Activity categories	Activity types	Goals and objectives	Weight
Habit-developing activities	Class participation (in-class)	Demonstrate effort to carry out in-class activities	15%
	Homework (flipped/in-class)	Completion of assigned homework	15%
	In-class tasks	Group presentations Group discussions	20%
Leadership-developing activities	Debate (in-class) (Mid-term assessment)	Knowledge on leadership (MOOCs) Application of leadership skills	20%
	Poster presentation (in-class) (Final assessment)	Knowledge on leadership (MOOCs) Application of leadership skills	30%

The former concerned self-regulation and autonomy and the latter was related to the actual MOOC content and the application of the skills explained in the MOOC lectures. The activities were designed to maximise the opportunities for student-student or student-tutor interactions in the face-to-face mode. Although the tutors were native or near native speakers of English, they were also undergraduate students so that watching and reading the MOOC materials could challenge their cognitive skills.

In order to analyse how the program was implemented, operated, and joined by the students and all other stakeholders, Actor-Network Theory (see Callon, 1986; Latour, 1993 for the theoretical background) was employed. Actor-Network Theory (ANT) was stemmed from Sociology of Science but is it now widely used in the research fields, such as, Humanities and Social Sciences, including Education (for education see Barab, Hay, & Lynch, 2001; Fenwick & Edwards, 2010, 2018; Tanaka-Ellis, 2017). ANT perceives nonhumans as equally important actors as human actors, which allows to shed light on overlooked "things" or actors. It would also help developing our understanding of a certain event or a situation by tracing the actions taken by each of the actors. Barab et al. (2001), for instance, capture the emergence, evolution and diffusion of practices and knowledge, and artefacts that existed and acted in an undergraduate Astronomy course. Firstly, action initiators were identified in a timeline and their actions were traced by looking at the lapsed time and who joined their actions to look for collaborative activities. They then looked at issue at hand to see what each student was working on and how the information or knowledge was shared between these students. In a larger context, Tanaka-Ellis (2017) looked at how an undergraduate EFL course for Science and Engineering students was created, how the course objectives set by the institution (the university language centre for Science and Engineering) were translated, and if there were any discrepancies between the course objectives and the classroom activities in two different classroom environments (a traditional classroom and a computer room). The network of the human and nonhuman stakeholders (e.g., the institution, teachers, students, syllabus, textbook, classroom, etc.) and the types actions taken by each of the actors were analysed. This paper focuses on capturing the leadership program and develop the understanding of roles of each stakeholder by mapping human and nonhuman actors to see what resources were involved in manifesting this highly complex learning environment.

In order to identify the stakeholders and map them in the context they are in, one of the key concepts

of ANT was used. In the early years of ANT, Callon and Latour (Callon, 1986; Latour, 1993; 1996; 1999) proposed “4 moments of translation,” which consists of problematisation, intressment, enrolment, and mobilisation. These moments represent a sequence of how human-human, human-nonhuman, nonhuman-nonhuman entities come together, connect with each other, and disconnect within an event or a context. The outcome of the connection, however, may be unpredictable and may not be permanent. One example of this concept in a research setting would be that when a researcher tries to capture a class activity, he or she uses a video camera (connection between the researcher and the video camera). However, soon the researcher notices the video camera alters student behaviour (unpredictability and impermanence) so that the video camera is later replaced by a much smaller audio recorder (disengagement between the researcher and the video camera and new connection to the audio recorder). In order to describe the program setting in this paper, first two of the four moments were looked at. Problematisation refers to the emergence of a network. Some networks begin with problematisation that an actor establishes itself as an obligatory passage point (OPP), a core of an emerging network. An OPP frames an issue, such as an idea or a problem, intermediaries, and other related entities in a particular way. In other words, an OPP demonstrates its motives of forming a new network. In the next stage (intressment), other entities are attracted or invited to this framing, and negotiate their roles in the emerging network. During the moment of intressment, decisions of inclusion or exclusion of the attracted or invited entities are made, and the validity of problematisation and the implications of the alliance are confirmed. Enrolment refers to the moment when the attracted or invited entities actually register themselves in the network. When the alliance between the actors become stabilised, they can be mobilised as a stable entity, for example, a project proposal can be mobilised after making a decision on the ideas to be included.

A network of a large project can look disorderly, especially when a number of different actors are involved to form a network. Also, this paper tries to identify the actors in different social stratifications to see how they connected to each other to build the context under study. Four nested levels of ecological systems by Bronfenbrenner (1979) was applied to the map of actor network. The four levels of ecological systems are comprised of micro (e.g., individual, family, friends, or research participants), meso (e.g., work place, local community), exo (e.g., political, educational, economic, religious institutions), and macro (e.g., societal, cultural, global, historical views and elements) systems, which are widely applied in the research fields of cross-cultural psychology, intercultural communication, applied linguistics (Hooper & Crusto, 2013; Lafford, 2009; Neuliep, 2018).

The following diagram (Figure 2.) illustrates the actor-network of how the leadership program was implemented, and in which level of the ecological systems each actor belonged in. The blue lines represent the enrolment with in the same tier and the purple lines represent the connections across different ecological tiers. The actors in blue dotted boxes are nonhuman actors and human actors are in the orange boxes. The boxes filled in blue are obligatory passage points.

According to the analysis, at the exo system level, the government initiated the global leadership movement, and many universities in Japan reacted and responded to it. At the meso system level, MGU also made a decision to create a program to follow the government’s intention. In order to launch a program based on MEXT’s initiatives, an internal competitive grant was set to invite outstanding proposals from their faculties. The Faculties of Letters, International Studies, and Sociology collaborated to put together a proposal for the grant, and the program coordinator was appointed within the project committee members. As the Figure 2 indicates, there are a number of connections extended from the program coordinator, which suggest that the coordinator was the most connected actor, also an important OPP, who had multiple connections with both human and nonhuman actors, across different ecological levels. This is also the visualisation of the program coordinator’s roles to design the learning environment, decide the pedagogical approach, choose the course materials, prepare the

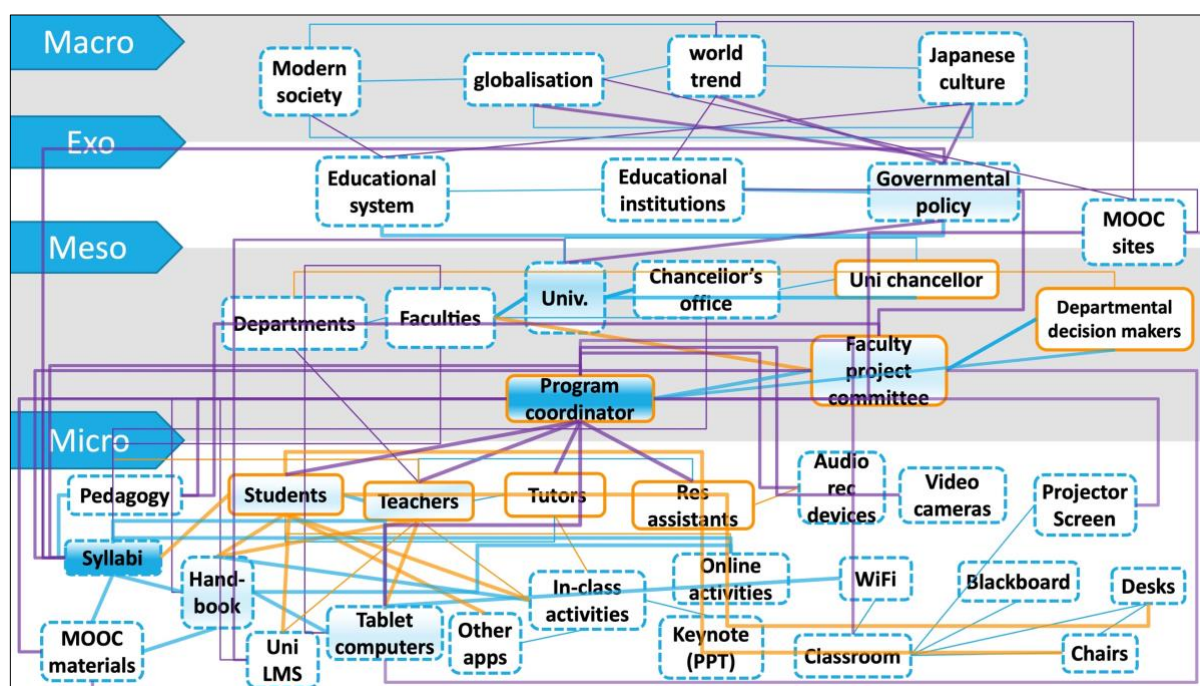


Figure 2 Network of the program stakeholders in ecological systems

syllabi for both Current Affairs A and B, manage the teacher, manage the tutors, monitor the students' learning progress, prepare the Handbook content, set the in-class and flipped activities, and report the entire progress to the project committee and the university. Within the micro system level, the program coordinator's intentions, which are in line with and translated version of both the university and the government's intentions, were manifested as the syllabi of the two courses. The syllabi became the most prominent OPP in this ecological system level that all the actors in this level needed to comply with. In order to create the flipped and ubiquitous learning environment, a variety of nonhuman actors were incorporated, in which the tablet computers and Handbook became the key actors of creating the ubiquitous learning setting. The tablet computers provided accessibility and immediacy to the students' learning, and Handbook provided the permanency, accessibility, immediacy, and interactivity as in Ogata *et al.* (2005) and Yahya *et al.* (2014).

Student Perception and Mindset

As the program was launched as a leadership program, not an English language program, the success of the program may be depending on how the students perceived the program. That is, if the students perceived the program as a language program, the language learning component was too explicit, on the other hand, if the language level is too high, they would fail to learn both the content and the language. In order to find out the student perception of the course and their mindset, the program coordinator set up one-on-one interview activities in week 4 and week 14. The tutors were the interviewers and asked each student the same set of questions. Each student had two minutes for the entire process. Both Current Affairs A and B had these interview activities with more course specific questions, however, the following questions were the common questions to see their perception of the course and the global leadership mindset.

Interview questions for Week 4:

Q1: Tell us why you decided to take this course.

Q2: What do you want to learn in this course?

Interview questions for Week 14:

Q1: What did you learn from this course?

The interview activities were audio and video recorded, and the students were informed that these activities are not assessed in any way. The research underwent the ethics committee of the first author and the second author's respective universities. Below is some of the examples how the students responded to the interviewees, therefore, they only give a general idea of how their perception changed over ten weeks.

Week 4

Q1:

Student A (F) Average proficiency

Actually, I wanted to study abroad in next year and I have to take this course, but I have a good opportunity to talk with other, talk with UC students and also I can improve my English skills so I take this course.

Student B (F) Low proficiency

Because I'm not good at speaking English. So I improve my English, yeah.

Student C (F) Average proficiency

Because my professor recommended this class. This class is useful for my career.

Student D (M) High proficiency

I think this course allow me to speak English with native speakers so I think it's good chance for me to talk with you guys. So that's why I chose this course.

Student E (F) Average proficiency

Because I want to improve my English skill like speak English write English and things about important?

Student F (M) High proficiency

Ah, last session, I took this class, and ah this class help me to improve my study skills and ah critical thinking is, it's important for me to, my future studies. So and yes so I decided and this session also *leadership* and I'm not confident to be *a leader*. So be *a good leader*, so I chose this class.

Student G (F) Low proficiency

Uh... Because I want to progress my English skills...?

Student H (M) High proficiency

I thought it's an opportunity to learn something in English with exchange students. So that's why I chose it.

Q2:

Student A

Ah, hmm, I'm now studying about *cultural intelligence*, so I can learn about the thinking or races of other countries' people. For example, what other countries people think to the same problem so, hmm. I want to know about the difference between Japan and other countries thinks.

Student B

Hmm.. to ... understand many different ideas and to speak my opinions in the class.

Student C

I want to learn how to presenta... how to present and I want to be good at presentation.

Student D

I want to learn more about *different cultures* in the world. Especially the difference between Japanese cultures and other cultures.

Student E

Ah I want to learn like things I haven't learned before.

Student F

Firstly, I want to learn, I want to express in English and I want to, I want to learn how can be *good leader*. And most, ah, every week, I have to, I need to talk with group members so it is also good for me to improve my communication skill.

Student G

I want to...ah... communication skill...?

Student H

Well, obviously *CQ*. Because people are likely to judge with their own basic, you know, perspectives or. I don't wanna do this and I want to know what other *culture* is and what other people are. So that's why I want to learn.

By looking at some of the excerpts from the interviews, students with lower English proficiency seem to have a tendency of perceiving their course as an English language course or English related course. They expressed their desire to improve their English skills, however, Students D and H, who were both fluent speakers also wanted to communicate with native speakers rather than referring to the course content. One student (Student F) mentioned that he had taken the course offered in the previous semester, and he learned study and critical thinking skills so that he wanted to learn about leadership skills in this semester. Some students referred to the course content or keywords like "CQ" or "cultural intelligence" and only one student mentioned about leadership (Student F). Low proficient students were, however, not able to answer the questions satisfactorily. Considering the fact that this interview was conducted in the fourth week, it seems that the students had not yet grasped the true intention of the program well into the first month of the course.

Week 14

Student A

I learned the *cultural intelligence* mostly and also I learned about *core* and *flex*, and core was the things that people have strongly and do not move by the other people or in the other people, and *flex* is easy to learn, easy to [inaudible (0:35)] by friends or other people and so on.

Student B

I learned about *IQ*, *EQ* and *CQ*.

Student C

Yeah, I learned how to be *a good leader*.

Student D

OK, I learned about *cultural intelligence*, *core* and *flex*, and what do *leader* needs. Or like, yeah such things.

Student E

Ah, to, well, first of all I learned about *core* to *flex* and *flex* to *core*. It's really important to understand other cultures and also *CQ* is really, umm, made me realize that other *cultures* have different opinions and different language and different *cultures*, and it realize me about the, to understand different *cultures* is really important.

Student F

Mainly, *cultural intelligence*.

Student G

Ah, I learned ah... *CQ*, *EQ* and *IQ* in this class.

Student H

OK, let me define. *CQ* is ability to, you know, counter boundaries with people and perspectives in different *cultures*.

After 10 more weeks, most students were able to mention the keywords from the course content and some of them even attempted to explain the terms in detail. In this session, different students mentioned about leadership, compared to the previous interviews. Also, unlike in the previous session, none of the students mentioned about English skills, communication skills, or presentation skills. Therefore, the students' perception about this course seem to have changed over 10 weeks. Although only a couple of students mentioned about "leadership," therefore, the presentation of the relationship between "cultural intelligence" and "leadership" may not have been salient enough for the students to make that connection.

For some students with lower English proficiency, weekly dealing of high-level English materials, discussions, and presentations seemed to be too much to handle. The evidence of nonunderstanding was seen in their weekly discussions and presentations. Those students with lower English proficiency did not seem to understand the course content nor did they improve their English skills. The students with average L2 skills showed clear improvement in their learning outcomes. Interestingly, the learning outcomes for the advanced English skills differed. Some students used their fluency to get through the interviews without referring to the class content. Therefore, the learning setting may impact positively on those with average or higher L2 users with the right mindset.

Implications and Conclusion

This paper attempted to illustrate how a global leadership program was implemented by employing a highly complex learning environment in order to harness different pedagogical approaches. As ubiquitous learning is a relatively new learning approach and it changes its shape as the technology advances, it creates more convolutions in designing, assessing, and even understand the efficacy of ubiquitous learning environments. As Cope and Kalantzis (2009) pointed out that educators need to be aware of the affordances that the new technologies can bring to the educational milieu and develop the appropriate ways to use them and assess their students. It is hard to conclude if this program at MGU was a success, as both positive aspects and possible drawbacks can be identified.

Using MOOCs as the source of information or course materials has its benefits, for instance, the materials are most likely authentic, visually attractive, systematically arranged, and the level of the content may not be too challenging. This is because many of the MOOCs are offered to novice learners of the field, therefore, the level should be set to those without any relevant training in the study field. However, this does not mean that for the students with higher English proficiency do not need much support in learning. As Jordan (2014) mentioned that English proficiency could be one of the factors that MOOC participants fade out from the course. Also, because the average age bracket for MOOC participants is 35 to 55-year olds (Liyanagunawardena et al., 2014), some of the courses may be cognitively challenging for younger learners. Using MOOCs may also benefit educational institutions in terms of human resources. Because the content may not be too technical or too advanced, existing faculty members may be able to use the materials and teach the course to their students. In this sense, the course still can be considered as CLIL, rather than CBI, because the teaching materials were created by the experts of the field. In some cases, since MOOCs are already structured courses, teachers could teach the course only with little preparation of its syllabus or activities.

With regards to CLIL, using MOOCs can be too difficult for some students, which means that teachers need to provide more support, for instance provide a vocabulary list or incorporate comprehension check on the key terms and concepts. If they do not understand the materials, then they would not able to participate in the active learning component in the classroom even they can access to supportive information in a ubiquitous learning environment. Unfortunately, because MOOCs can be both cognitively and linguistically challenging to lower proficient young English learners, even with these

supporting materials in place, they may not be able to enjoy the full benefit of using MOOCs course materials. The samples from the student interview activities presented in the previous section implied that lower proficient students may gain far less benefit from this program than those with higher L2 proficiency. Especially, even at the end of the course, they still struggled to see the key ideas (e.g., EQ, CQ, IQ) in the MOOCs materials were only some of the components that construct the concept of “leadership” that they were supposed to learn about in the entire course. Therefore, students with lower than average L2 proficiency would learn more efficiently in CBI than CLIL settings, by using simpler materials with more pronounced language learning modules. As for the student mindset, although higher than the average L2 students seemed to have perceived the course as a leadership course by the end of the course, perhaps more guidance from the educators could be provided to reinforce their mindset. Especially, this program employed multiple learning approaches, together with the rare opportunities to interact with English native speakers, the learning context can contribute to causing fluidity in students’ attention.

If a flipped and ubiquitous learning environment can be implemented, it would be sensible to look at the division of labour as well. As the ANT diagram (Figure. 2) revealed that the workload of the program coordinator was far more than other actors, which may not be sustainable if the program needs to continue in the long term. The learning environment illustrated in this paper is not the panacea for transforming the traditional classroom into a ubiquitous and experiential learning environment. However, it presented one example of how educators may be able to incorporate various requirements into designing a multifunctional course with innovation, and hopefully to generate more critical discussions of technology and learning.

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