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STUDENT LEARNING, CHILDHOOD & VOICES | RESEARCH ARTICLE

Innovative experiential learning experience: Pedagogical adopting Kolb's learning cycle at higher education in Hong Kong

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Abstract: General education constitutes a significant portion of undergraduate curriculum. However, students are not always keen on learning general education. Pedagogy of experiential learning is one of the strategies in arousing their learning motivation. Although many previous pieces of research were conducted in the field, attention on how experiential learning works with information and communication technology (ICT) on teaching general education at higher education deserves more attention. Thus, by adopting Kolb's learning cycle from Experiential Learning Theory, this paper suggests an innovative pedagogical approach of implementing experiential learning with(out) adopting ICT in a general education course offered by one of the universities in Hong Kong and has been successfully implemented for three years within classroom setting to enhance learning motivation and consolidate learning experience. Data were collected from auto-ethnography and then analysed through conversation analysis and qualitative content analysis. Through proposing the pedagogical approach, this study is significant in transforming experiential learning beyond personal level and extending students' learning from within to beyond classroom setting in a cost-effective manner.

Subjects: Education - Social Sciences; Teaching & Learning - Education; Theories of Learning; Higher Education; Teaching &Learning; Theories of Learning; Study Skills; Classroom Practice

Keywords: Experiential learning; Kolb's learning cycle; experiential learning theory; general education; higher education

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Mr. Shui Kau Chiu is currently a full-time PhD candidate in the Department of Applied Social Sciences at The Hong Kong Polytechnic University. His research interests include science, technology and society, risk perception, cultural theory of risk, education and history. This paper deals with the way of innovative and skillful integration of information and communication technology into pedagogy and that contributes further understanding of bridging the link between the fields of education and science, technology and society.

PUBLIC INTEREST STATEMENT

Students tend not having interest in learning general education even though it is an important component in the university curriculum. One of the proposed reasons is that students find it difficult to generate feeling of and attitude towards the content of the general education in classroom environment. Through innovative and skilful adoption of information and communication technology in teaching and learning activity, this paper suggests that it can be done within classroom environment in a cost-effective way. The findings help us to have a better understanding of the way of integrating technology with society. Teachers can take this study as a reference in preparing learning activity.

1. Introduction

Different pedagogical strategies have been proposed to enhance students' learning and arouse their learning motivation. One of them is experiential learning where students can develop deeper understandings and reflections on knowledge through experience. Another strategy is through adopting information and communication technology (ICT). There are many studies focused on how each of them can enhance students' learning experience. However, attention on how the adoption of ICT works with experiential learning in consolidating students' learning experience requires more attention. With a view of bridging this gap, this paper is going to propose a suggested pedagogical approach in experiential learning with(out) adopting ICT, aimed at enhancing students' learning motivation and experience in studying general education. In the followings, a brief account on general education and its development in Hong Kong will be examined first. Experiential learning, Experiential Learning Theory (ELT), Kolb's learning cycle and some of the major studies on experiential learning will then be briefly reviewed. In addition, research questions and methodology of this study, background of the course and rationale behind the task will be explained followed by a description of the suggested pedagogical approach. After that, findings and discussions will be made. Before drawing a conclusion and making acknowledgements, implications for further work, significances and limitations of this study will be stated.

2. General education at higher education and its implementation in Hong Kong

General education is "to understand how everything that we teach in the arts and sciences relates to their lives and to the world that they will confront" (Harvard University, 2007, p. 3). It is about "educational foundation of skills, knowledge, habits of mind, and values that prepares students for success in their majors and in their personal and professional lives after graduation" (Nicholls State University, 2019). General education emerged in the United States originally aimed at helping people to link up with different streams of knowledge (Brint, Proctor, Murphy, Turk-Bicakci, & Hanneman, 2009, p. 607). Nonetheless, this belief has changed since general education is being adopted at higher education when many American universities deployed it just as courses to fulfil part of the graduation requirements (Rudolph, 1977, p. 253). As its importance is underestimated, one of the challenges in implementing general education at higher education is that it can only provide students with basic understanding of the subject matter (Latzer, 2004, p. 20).

Adaption of general education in Hong Kong shares similar mentioned experience. General education has framed as one of the significant components in Hong Kong undergraduate curriculum since an implementation of curriculum reform in 2012 (Jaffee, 2012, pp. 193–194). Hong Kong has also encountered challenges. Like the case in the United States, the status of general education in the whole undergraduate curriculum in Hong Kong has not perceived very significant even among some academic staff. Based on the author's real experiences, teaching hours of general education have always been sacrificed for the sake of promoting admission exercise. Similarly, students usually did not take a serious attitude towards general education. It is an usual practice at higher education in Hong Kong to allow students to select some general education courses (Lau, 2011, pp. 3–6). Based on the observations from the author and other lecturers, in many cases, students always lacked learning motivation, especially on those general education courses offered by non-majored departments. Thus, arousing learning motivation among Hong Kong students is one of the measures in helping them to consolidate and enhance their understanding towards general education. One of the methods to do so is through experiential learning.

3. Experiential learning, experiential learning theory and Kolb's learning cycle

John Dewey (1938) pathed a modern theoretical recognition on experiential learning. Experiential learning can be understood as "a process through which a learner constructs knowledge, skills, and value from direct experiences" (Jacobs, 1999, p. 51). In other words, it is about learning through experience (Shiralkar, 2016, p. 1). Nevertheless, experience does not necessary to be meaningful and relevant to learning as not "all experiences are genuinely or

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equally educative" (Dewey, 1938, p. 13). Meaningful and relevant experience, however, can link behaviours or realities with mindset and is said to enhance students' involvement in learning (Beard & Wilson, 2006, pp. 16–22; Gross & Rutland, 2017, p. 32).

As one of the proclamations among different notions of experiential learning, David A. Kolb (1984) proposed ELT. It is "the process whereby knowledge is created through the transformation of experience" (Kolb, 1984, p. 38). ELT stresses on the role of experience in constructing knowledge (Kolb, & Kolb, 2005a, p. 2). Knowledge can be constructed through assimilating lessons and feelings stem from experience (Kolb, 1984, p. 41). The ongoing progress of assimilating experience to constructing knowledge, which is referred as Kolb's learning cycle, involves an interplay between "action/reflection" and "experience/abstraction" (Kolb & Kolb, 2012, p. 125). Kolb's learning cycle composes four stages, namely concrete experience, reflective observation, abstract conceptualization and active experimentation. Overall speaking, concrete experience is the time when students engage in the experience to learn. Reflective observation refers to students review from their experience. Abstract conceptualization is that students try to apply the knowledge that they have already acquired to explain and justify what they have experienced. Active experimentation focuses on the way of students in making use of what they have acquired from the experience into future application (Kolb, 1984, pp. 30–31). Apart from learning style, learning also depends on how well a learner embraces and conveys the experience (Kosir, Fuller, Tyburski, Berant, & Yu, 2008, pp. 660–661; Li & Armstrong, 2015, p. 423).

There are two general approaches to apply experiential learning in pedagogy, namely "live" approach and "classroom-confined" approach (Georgiou, Zahn, & Meira, 2008, p. 808). The former approach refers to arrange students to experience in a certain community (Eyler, 2009, p. 24). On the contrary, experiential learning for the latter approach is practised within a classroom setting. With regard to "classroom-confined" approach, lecturers can practice experiential learning inside the classroom through asking students to solve problem (Böcker, 1987, p. 65; Georgiou et al., 2008, p. 808). Solving problem in classroom can be interpreted as experiential learning since, through participation, students can generate, reflect and exchange on the feelings and difficulties that they experienced with the lecturer and among classmates (Böcker, 1987, p. 65). In addition, these exchanges enable the lecturer to have more understanding of the effectiveness of the experiential learning on students (Böcker, 1987, p. 65). In view of this, experiential learning in this paper can be understood as a problem-solving activity practised in classroom environment. With reference to Kolb's learning cycle, stages of concrete experience, reflective observation and abstract conceptualization can be sustained with a pedagogical approach within classroom setting, while the stage of active experimentation may be implemented with assignment (Svinicki & Dixon, 1987, p. 142; Terry, 2001, pp. 77–79).

Experiential learning and ELT have been applied within classroom setting. There have been many previous studies on the area. Some of them have not been supported by ICT while some have. Concerning those previous studies without ICT support, for instance, Bowes and Johnson (2008) conducted problem-solving experiential learning among American undergraduate students in classroom setting. By using card game, they found that students experienced and learned more about the difference between theory and practice over cooperation and non-cooperation in the business environment (Bowes & Johnson, 2008, p. 15). However, their attentions were on the economic field, and ICT was not involved in the activity.

Greene (2011) adopted experiential learning to teach year 1 students on fundamental theories of marketing and general understanding of business. Through integrating Kolb's learning cycle into teaching and learning activity, the study found that the experiential learning helped students to achieve the learning targets while offering them with unreplaced exposure (Greene, 2011, pp. 81, 86). However, ICT did not incorporate into the experiential learning.

Meanwhile, Marschall and Davis (2012) made use of Kolb's learning cycle and introduced some skills in teaching critical reading. While the skills were said to be applicable with various stages in Kolb's learning cycle, the skills did not involve any ICT and the study targeted at adult students only (Marschall & Davis, 2012, pp. 66–67).

Concerning those previous major researches with ICT support, for instance, Kiili (2005) examined the role of digital games in ELT by mainly presenting a model that combined digital games into instructional theory. The study offered an understanding of how the combination contributes to the learning experience in general without referring much to the empirical issues at a specific field. Nonetheless, Kiili (2005) encourages this current study by demonstrating a feasibility of combing ICT, ELT and educational theory.

Pauleen, Marshall, and Egort (2004) studied the role of course management system in ELT among different groups of postgraduate students in information management (p. 92). While Pauleen et al. (2004) pinpointed that adoption of course management system facilitated students' experiential learning, such adoption may not able to fully reflect the role of ICT took within the classroom setting as students could access course management system after lessons (p. 98). That informs the current study to take this factor into consideration when designing and embedding ICT with ELT.

Jarmon, Traphagan, Mayrath, and Trivedi (2009) probed into ELT through employing digital platform among American postgraduate students in communication (p. 169). Jarmon et al. (2009) pointed out that the employment of ICT in approaching ELT facilitated students in going through the four stages of Kolb's learning cycle (p. 179). While the digital platform facilitated students to go through the stages of concrete experience, reflective observation and abstract conceptualization in Kolb's learning cycle, students applied the experience that they learned from the platform on their assignments and projects (Jarmon et al., 2009, pp. 171, 179). In other words, adopting ICT to approach experiential learning also helped students to achieve active experimentation in Kolb's learning cycle. In this regard, Jarmon et al. (2009) inform this study by illustrating that active experimentation in Kolb's learning cycle can be reified by a project or an assignment.

Similarly, Leggette et al. (2012) conducted experiential learning among students in communication course by making use of an online platform named Second Life. Partly through reviewing the written assignment after the activity, Leggette et al. (2012) pointed out that students did able to apply what they experienced from the online platform (pp. 132–133). While the online platform might not solely approaching experiential learning within classroom setting, Leggette et al. (2012) also inform this study in using an assignment to crystalize active experimentation in Kolb's learning cycle.

In short, previous major literature on ELT mainly shed their lights on the fields other than general education and beyond the Hong Kong context. Therefore, more attention should be focused on researching experiential learning with an adoption of ICT on teaching general education at undergraduate level within the Hong Kong context. While the effectiveness of implementing of experiential learning demands students' devoted participations, attracting students' engagements in "classroom-confined" approach may be a challenge as students may not easy to recognize, immerse and reflect from the experience (Georgiou et al., 2008, pp. 808, 810). With a view of bridging the aforementioned gaps, increasing students' engagements, learning motivation and enhancing their learning experience, ICT was embedded with experiential learning in this suggested pedagogical approach while incorporating with an element of cooperation in an innovative and skilful way. The strategy of asking students to tackle the problem was adopted in approaching general education as it could motivate students to experience, consolidate and reflect on their learnings (Georgiou et al., 2008, pp. 809–810).

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4. Research questions and methodology

Based on the above denotations, the first research question for this study was formed as follows:

(1) Can the suggested pedagogical approach of embedding ELT with(out) ICT motivate Hong Kong university students' learning on general education?

This research question informed this research on the effectiveness of the suggested pedagogical approach. Even when finding of this research question suggests an effectiveness of the approach, an understanding of how it achieves is needed. Because of that, the second research question for this study was set as follows:

(2) In what ways the suggested pedagogical approach of embedding ELT with(out) ICT motivate Hong Kong university students' learning on general education?

The research question helped this study in identifying the ways of the suggested pedagogical approach in motivating students' learning on general education. These two research questions enabled this study to offer more sociological imaginations on the researched area.

When looking for sociological imaginations from the two research questions, appropriate research approach should be chosen. Even though some researchers like Pai (2016) and Witesman (2012) employed a quantitative approach in studying experiential learning, this study adopted qualitative research approach as it offered an in-depth understanding of how the adoption of ICT in experiential learning enhanced and consolidated students' learning experience (Byrne, 2012, pp. 209, 215). Other scholars such as Borredon, Deffayet, Baker, and Kolb (2011), Chan (2012) and Opdyke, Javernick-Will, and Koschmann (2018) also adopted qualitative research approach when studying experiential learning. Empowerment from the qualitative research approach, this research was a three-year auto-ethnographic case study on a course adopted the below-mentioned suggested pedagogical approach. The course was on general education which had been offered by one of the universities in Hong Kong for several years as a part of the graduation requirements. More specifically, the course was about self-advancement as a lifelong learner. Some key concepts covered in the course including digital divide, cooperation and knowledge construction. Enrolment in the course was all non-majored full-time students. Students were required to attend 3-hour lecture and 3-hour tutorial lesson every week, and their attendances were checked. The medium of instruction for both lecture and tutorial lesson was English. Around the middle of the semester, students had to submit individual essays. Lectures covered all the subject matters of the course, while tutorial lessons consolidated and enhanced what students learned in lectures. The suggested pedagogical approach was implemented during the tutorial lessons which covered some significant concepts and ideas that students needed to address on in their individual essays. The entire three-year study covered 210 students from six tutorial lessons with class sizes of 49, 46, 30, 25, 23 and 37 with an average of 35. Most students were studying at year 1 and year 2 of their academic years.

After conducting the proposed pedagogical approach, there was a debriefing session. In the session, students were invited to casually share their results and, most importantly, all sorts of feelings and difficulties they encountered in the activity. In order to create a comfortable setting for students to freely express their opinions, they were not required to do sharing in front of the class. In addition, students were permitted to use their mother tongue, Cantonese, to do the sharing. When some students did their sharing, other classmates were welcome and encouraged to join the sharing and voice out their respectful comments or responses, no matter they were approvals, disapprovals or supplements. The lecturer gave some comments and illustrations whenever appropriate. This would fill up the session with constructive and interactive chitchatting not only between the lecturer and students but also among classmates themselves. Key contents of chitchatting were then immediately marked down on field notes. By doing so, data on students'

opinions and reflexivity towards the suggested pedagogy were collected during the session. In addition, as students may need time to develop and generate reflections, casual conversations between the author and the students or their comments after the tutorial lessons constituted another source of data. For the sake of data triangulation, the author also adopted observations and took a role of an observer as participant (Seale, 2012, p. 535; Walsh, 2012, p. 250). To record the data, field notes were taken immediately after the end of the activity and the casual conversations with the students. Data were analysed by conversation analysis and qualitative content analysis.

Conversation analysis looks into activities that involve social interactions (Mondada, 2013, p. 33). Reasons for adopting conversation analysis as a data analytical method are as follows. First, activities in the classroom can be treated as social interactions (Huth, 2011, pp. 297–298). Second, as Kolb, Baker, and Jensen (2002) proclaimed, engaging into conversation is one of the measures in generating meaningful ideas which lead to experiential learning and it also fits into Kolb's learning cycle (pp. 52–53). Through conversation analysis, the effectiveness of the suggested pedagogical approach in facilitating students' experiential learning has been unveiled. Nonetheless, procedures of adopting conversation analysis in this study did not follow traditional way of taking and transcribing video or audio records (Hepburn & Bolden, 2013, pp. 57–58; Liddicoat, 2007, p. 8). With a view of further encouraging students to freely express their views, actively involve into conversations among lecturer and classmates and minimizing the Hawthorne effect which can change the natural behaviour of the research participants, conversation analysis was adopted as non-invasive and non-aggressive as possible. The author tried not to create an impression among students that they were being studied. Having that consideration in mind, intervention from the author as a sole researcher and an instructor of the tutorial lessons was kept minimal. It eventually led to an unconventional adoption of conversation analysis in this study as the author did not want students' experience on experiential learning was affected by data collection procedure. Therefore, as afore described, no audio or video recording and no photograph was taken. In the same vein, neither formal interview nor focus group discussion was conducted. No transcription was prepared.

In this study, while conversation analysis was helpful in analysing how students felt and reacted to the suggested pedagogical approach for Kolb's learning cycle of concrete experience, reflective observation and abstract conceptualization, qualitative content analysis was deployed to apply on Kolb's learning cycle of active experimentation. Drisko and Maschi (2015) describe qualitative content analysis as "a systematic method for searching out and describing meanings within texts of many kinds" (p. 87). It is applicable to study if a person already acquired a knowledge (Graneheim, Lindgren, & Lundman, 2017, pp. 29–30). Since students had to internalize and apply what they experienced from the suggested pedagogical approach through submitting individual essays at the middle of semester, the whole process took time and that it might not be easily identified through conversation as it was embodied in written format. After taking those concerns into considerations, instead of employing conversation analysis, qualitative content analysis was used to look into the effectiveness of the approach through analysing students' performance on the essays. Students, however, had no idea that their essays were analysed for research purpose. Therefore, similar to the way of applying conversation analysis in this study, adoption of qualitative content analysis also minimized the explicit or implicit influence on students during the data collection process.

5. Rationale behind the activity

Apart from the theoretical foundation as mentioned earlier, another rationale behind the activity is on digitalization of daily life, especially among teenage. Even though whether students are belonging to a generation of digital native or not, as suggested by Prensky (2001), is beyond a discussion of this paper, generally speaking, students are now living with digital media. Almost wherever they are, their attentions are always attracted by their ICT devices such as smartphones, laptops and tablets, even when they are attending lessons. To minimize distractions and better managing the classroom

behaviour, some teachers in higher education are now working very hard and set up various rules to regulate usages of ICT devices inside the classroom. Nonetheless, as Livingstone (2014) expressed, adoptions of ICT in pedagogy can facilitate and enhance teaching and learning experience (p. 58). Shek, Yu, Wu, and Chai (2015) also indicated cooperative pedagogy is much preferable by students to conventional lecturing (pp. 1024–1025). Kayes, Kayes, and Kolb (2005) further proposed to enhance the learning experience through embedding group activities with ELT. In addition, adoption of ICT can help students to develop reflections from their experience, especially when such experience is missing from their surroundings (A. Y. Kolb & Kolb, 2005b, p. 208). What is more, Bontchev, Vassileva, Aleksieva-Petrova, and Petrov (2018) and Sung, Hwang, Lin, and Hong (2017) also illustrated the importance of arousing students' learning motivation when adopting experiential learning.

6. Description of the suggested pedagogical approach

With a view of arousing students' learning motivation and enhancing their learning experience, an idea of creating this proposed pedagogical approach was formed. The learning objective of the tutorial lesson was to enhance students' understanding of the concepts of the digital divide and the importance of cooperation in constructing knowledge. Even though the two concepts were already covered in the lecture, students in Hong Kong often find these concepts too abstracts and difficult to reflect on. They seldom think about the importance of cooperation in knowledge construction. Besides, well-developed ICT infrastructure and affordable cost in accessing to the Internet make most of them difficult to imagine, experience and recognize the issue of digital divide. Arousing reflections related to relevant areas among Hong Kong students through experiential learning may face challenges, but skilful incorporation with ICT offers an envisaging here.

To implement the suggested pedagogical approach, the tutorial lesson has to be divided into six units and students will all be assigned a task of problem to tackle, for instance, "based on the behaviourism as suggested by Burrhus F. Skinner, explain the difference between negative reinforcement and punishment". The lecturer needs to divide the class into different units based on whether students have prior knowledge on the assigned task or not. This can easily be done by directly asking students whether they have acquired knowledge on the subject matter of the task or not. The number of students and the instruction given to each unit are not the same.

For the tutorial lesson with a class size of 35, unit 1 attaches with 10 students. Students in this unit should all have already acquired knowledge on the subject matter of the task. They can use their own different types of ICT devices and browse any pertinent websites they wish during the activity. They are allowed to discuss the question within unit members.
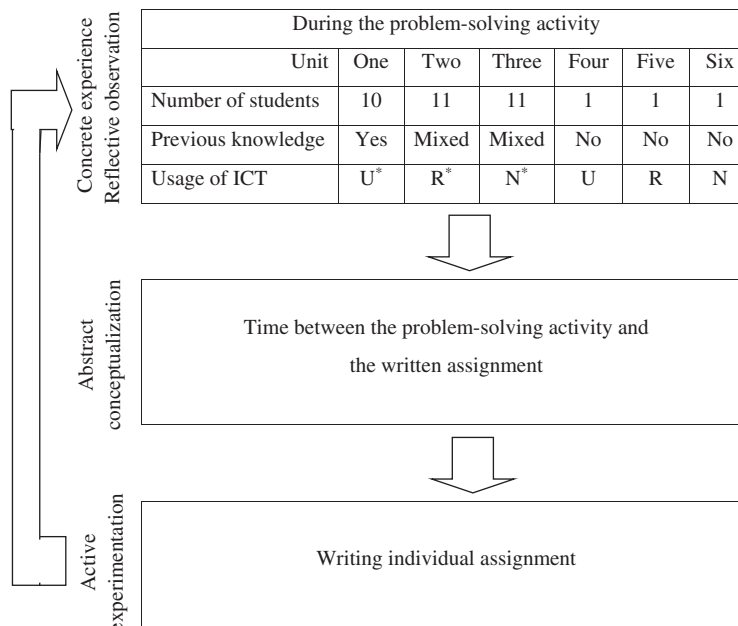
Unit 2 is formed by the other 11 students. Students in this unit can be mixed between those who have already acquired knowledge on the subject matter of the task and those who have not. They can use ICT devices to surf an assigned online material only, which can be a little bit relevant but must not be useful for solving the problem. For the problem in this proposed pedagogical approach, webpage introducing a life history of B. F. Skinner compiled by Swenson (1999) can be one of the many options. However, it should be noted that this is just one of the suggested online materials. Students are allowed to discuss the problem within the unit.

Unit 3 accommodates another 11 students. They can be a mixture between those who have already acquired knowledge on the subject matter of the task and those who have not. While students cannot use any kind of ICT devices during the activity, they are allowed to discuss the question within the unit.

For unit 4, it consists of one student only. That student cannot have knowledge on the subject matter of the task. He or she can use ICT devices and access to any related webpages during the activity. However, the student cannot discuss the problem with other units.

Figure 1. Operationalization of Kolb's learning cycle.

* U: unrestricted; R: restricted; N: not allowed.

Concrete experience / Reflective observation

During the problem-solving activity						
Unit	One	Two	Three	Four	Five	Six
Number of students	10	11	11	1	1	1
Previous knowledge	Yes	Mixed	Mixed	No	No	No
Usage of ICT	U*	R*	N*	U	R	N

Abstract conceptualization

Time between the problem-solving activity and the written assignment

Active experimentation

Writing individual assignment

Unit 5 composes of one student only. The student cannot have knowledge on the subject matter of the task. He or she can use ICT devices to access the same online material as assigned to unit 2 only. That student should work alone and cannot discuss the question with other units.

Another student alone forms unit 6. That student cannot have knowledge on the subject matter of the task. He or she can neither use ICT devices during the activity nor discuss the problem with other units.

Duration of the whole activity is around 30–45 minutes but that must be based on the actual situation and should be flexible. However, the whole activity should be conducted coherently. Depending on the actual class size and the need for classroom management, the number of students in a unit can be adjusted, while the number of units should be kept at least six. In other words, the number of students in unit 1, unit 2 and unit 3 is not fixed, as long as they have more than one student in a unit. Besides, to avoid too many students in a unit due to a large class size, certain units such as unit 1, unit 2, unit 3 and the likes can be duplicated. Meanwhile, to facilitate the running of this proposed pedagogical approach, this activity is better to be held in a classroom that equipped with floating tables and chairs. In addition, despite the regulation on medium of instruction, students can use their mother tongue to discuss with others when they are allowed to do so. To avoid costing unnecessary mobile Internet fee, students are highly recommended to use free campus Wi-Fi throughout the whole activity, provided that it is stable, and its connection speed is reasonable. It is not necessary for every student in unit 1 and unit 2 to have ICT devices, even though nowadays almost all young people in Hong Kong have at least one ICT device with them. In case students in unit 4 or unit 5 have no ICT device, the lecturer should provide a special arrangement to them such as allowing them to use instructional computer in the classroom or swap the student with another one in unit 2, unit 3 or unit 6. The assigned problem-solving task can also be changed to suit for different teaching needs of course. Theoretically, the subject matter of the assigned problem-solving task can be irrelevant to the course as well. After all, the problem-solving task and its answer themselves are not important, but the way of organizing, conducting and debriefing the activity is the keys in this proposed pedagogical approach.

The way of proposed pedagogical approach at a whole in operationalizing Kolb's learning cycle is visualized in Figure 1.

7. Findings and discussions

Based on the conversations among students and lecturer and students, results of implementing the proposed pedagogical approach will be presented and discussed below with reference to four stages of Kolb's learning cycle, namely, concrete experience, reflective observation, abstract conceptualization and active experimentation. All names are pseudonymous.

7.1 Concrete experience

This proposed pedagogical approach itself already provided students with concrete experience. The activity offered them with a special and unique opportunity to really taste various levels of digital divide and cooperation that, as suggested before, they could rarely experience in their daily life. By doing so, concrete experience accomplished. Overall speaking, the proposed pedagogical approach was well received by students. Based on the observations, students were actively participated in the activity with fun. Some students commented that:

> You are a few among other tutors in this university that can really let me taste of what mean by the tutorial lesson and your activity (the proposed pedagogical approach) make me learn something. (Herbert)

> Frankly, your teaching (the proposed pedagogical approach) is more practical and concrete than he did (the lecturer of the course). (Angel)

As suggested, the pedagogy is designed with an aim at creating a relevant and meaningful experience to students to create knowledge, either individually or cooperatively, under different levels of digital divide and cooperation. While students in unit 1 experience with free flow of information and cooperation with others in the society, student in unit 4 experience with handling information without cooperation and questioning by others. Unit 2 and unit 5 allow students to experience an environment where the flow of information is limited or restricted due to, for instance, Internet censorship and desire of authority. Difference between these two units is the element of cooperation. Under the given environment, students in unit 2 can still try to experience cooperation in creating knowledge through mutual discussion and challenging, while student in unit 5 cannot. On the contrary, unit 3 and unit 6 allow students to experience an environment of digital divide where the Internet or even radio cannot be accessed due to poverty, ICT competencies, geographical locations and the likes. Again, the difference between these two units is also on cooperation. Therefore, it is critical to remind students that any forms of discussions, cooperation or assistance between units are not allowed. Students also have to comply with the given instructions, and their active participations in the activity are expected. For the sake of providing students with the mentioned meaningful and relevant experience, the lecturer thus has to deliver the instructions clearly enough to the students so as to avoid any misunderstandings.

At the end of the activity, each unit had to briefly present their own understandings on the problem-solving task. Nonetheless, as mentioned, this should be treated as a detonator, and the lecturer should not spend a lot of time on that. Rather, based on students' presentations, the lecturer should lead students to further develop and share their reflective observations and abstract conceptualizations from what they experienced from the activity.

7.2 Reflective observation and abstract conceptualization

Lecturer can help students to achieve reflective observation through asking the difficulties that they encountered with and the associated feelings generated from the activity. When students presented their solutions to the problem, the author asked students if they could assert the correctness of their solutions and what difficulties they encountered in the activity. Through

asking students with some of these enlightening questions, students could be stimulated to further review their experience in the activity. For instance, among those units with only one student, students always replied me by saying that they had no idea whether their answers were correct, especially for those who could not use ICT devices during the activity. They also related this to the difficulties that they faced with by expressing that

> How can I assert that (the solution is correct)? I do not know Skinner before. I can't (use) google (to find the answer) and I can't ask others. (Sharon)

> I (feel) puzzled in the whole activity. I am alone, and no one can help me. (Peter)

> The webpage (the assigned online material) is useless to solve the problem … … . I just count myself (in finding the solution). (Agnes)

It shows that some students developed feelings of loneliness and helplessness in the whole activity and they may because they could not obtain any help from the Internet, other classmates or both. Even though the student in unit 4 was allowed to use ICT device and access any related websites in the activity, the student told me in this way:

> I think the solution is correct, if the information that I surf are not fake. (Darwin)

For those units having more than one student, even though they could not assert the correctness of their solutions to the problem, their responses showed that they had confidence in their solutions.

> Some websites also say in this way. (Patrick)

As shown above, in the problem-solving activity, students may generate a feeling of loneliness and they may also catch into dilemma without knowing the correct answer. Such a feeling or dilemma did not mark a downside of the suggested pedagogical approach. On the contrary, the feeling and dilemma symbolized an achievement of reflective observation among students as it showed their reviews over their experience from the activity.

Meanwhile, students also encountered difficulties in solving the problem. When asked them if disagreement occurred within the unit and how they reached consensus, some of their responses are:

> some (of my) unit members have their ideas but I don't agree with them. (John)

> At the beginning, I think the answer is this one. But after searching in google and listening my unit members, I am not sure if I am right. (Amy)

> I don't know the question at all, and I just listen to their (unit members) saying. (William)

> it doesn't matter (when disagreement occur among us). I just give in. (Pauline)

> Voting, (by) majority (Sam)

On one hand, the above suggests that some students also experienced certain kind of disparities over the solutions with others and that may because of the individual difference on attitudes, perspectives, value judgement and the likes. On the other hand, these conversations also indicated that students did try to apply the knowledge that they already acquired on the problem-solving task. Even though their attempts might suffer from many drawbacks and could not be regarded as a successful one, their efforts in tackling the task already demonstrated that abstract conceptualization did occur.

The above questions suggested some measures in helping students to further realize, consolidate and reflect their reviews towards their experience in the proposed pedagogical approach. The reflective observations as listed above formed part of the experience of students from the pedagogy. For the sake of consolidating and reflecting from the experience, the lecturer should also try to help students to develop their abstract conceptualizations from their experience as well. Without proper channelling, students may not only miss a chance of transforming their reflective observation into potential learning opportunities but also, for this case, even turning it into a negative sentiment towards the lecturer (Sims, 2002, pp. 183–184). The negative relationship between students and lecturer can affect students' learning motivations (Naude, van Den Bergh, & Kruger, 2014, pp. 222–223).

One of the methods for the lecturer to help students in further developing their abstract conceptualizations from the proposed pedagogical approach is through debriefing so as to facilitate students in further associating their reflective observations from the pedagogy with the knowledge that they learned in the lecture (Cant & Cooper, 2011, p. 44; Reed, 2012, p. 212; Zigmont, Kappus, & Sudikoff, 2011, pp. 52, 54). Concerning this proposed pedagogical approach, the author makes use of students' feeling of loneliness and helplessness generated from the activity as a way to lead them to associate and apply their reflective observations with the concept of digital divide and importance of cooperation in knowledge construction which they already be taught in the lecture before. What is more, together with their experience of disagreement and way of reaching consensus in the activity, the author further pointing out the essential legal and social conditions for the successful cooperation in constructing knowledge. By providing students with a relevant and meaningful experience, the concept of digital divide and the importance of cooperation in knowledge construction no longer become abstract knowledge to students. On the contrary, after this proposed pedagogical approach, students found themselves much ready to digest and transform the knowledge that they learned in the lecture to more meaningful and relevant experience and applied them on other application. That was unveiled in active experimentation.

7.3 Active experimentation

After consolidating those of knowledge that they experienced and learned from the suggested pedagogical approach, it is important for the students to apply them. In Kolb's learning cycle, it is referred as active experimentation. Kolb (2015) indicated that assignment or project a possible and appropriate way to attain active experimentation (pp. 281, 303). What is more, in line with Hawk and Shah (2007), Svinicki and Dixon (1987) and Wynd and Bozman (1996), Mobbs (2003) also proposed that one of the strategies in arousing students' active experimentation from experiential learning is through assignment. As mentioned earlier, students had to submit an individual essay a few weeks after the tutorial lesson which required them to demonstrate their abilities of applying the knowledge that covered in the proposed pedagogical approach. Before submitting their essays, when the author asked the students if they had any difficulties in completing the essays, some of them responded in these ways:

> Not so much (Eva)

> When I starts writing your essay, I have a clear idea on what I need to write by recalling the game (problem-solving activity). It sounds like I am listening your explanations (of the concepts). (Alan)

> I don't understand the lecturer's teaching, but (after participating into the activity) I understand yours. (Emily)

The above seems to indicate that the proposed pedagogical approach successfully generated certain experience of digital divide and cooperation among students and that helped them in preparing their individual essays. Nonetheless, even if it was the case, it did not mean that students could successfully generate active experimentation from the activity that they

experienced. In a sense, contents and results of their essays could allow us to have a general picture on that. As a marker for the essays, the author fully complied with all of the assessment rubrics set by module coordinator in evaluating the essays, and the results of the assessment were further verified by the lecturer of the course, external reviewer and Board of Examination. In general, the author found that students' performances in their essays were up to the standard and could meet the assessment requirement. Especially, most of the students in their essays demonstrated their understandings on digital divide and were able to point out with illustrative examples on the importance of cooperation in knowledge construction. About digital divide, students not only able to state its meaning but also able to pinpoint and discuss the significant role that it played in influencing capability of a person as a lifelong learner. Concerning cooperation in knowledge construction, the essays reflected students' realizations on the potential weakness, constraints and limitations when developing knowledge with one's effort only. Based on the above discussions, the author believed that most of the students successfully achieved active experimentation through transforming and applying what they experienced and learned from the pedagogical approach on their individual essays.

As the instructor of the tutorial sessions, the author was able to observe students' reactions towards the proposed pedagogical approach. In afterwards lessons, every time when the author reminded students on the problem-solving activity, some students showed their positive response by showing different forms of apprehending gestures. Some of them enlivened and immediately recorded my reminders by using their writing instruments or digital devices. In addition, before submitting individual assignment and sitting for final examination, usually, some students asked whether the instructions of the problem-solving activity could be uploaded to the course management system for their preparations and revisions. Observations from both students' reactions and request sketched a picture which was consistent with the above denotations that the proposed pedagogical approach did constitute Kolb's learning cycle of concrete experience, reflective observation, abstract conceptualization and active experimentation among students.

8. Implications for further work

This proposed pedagogical approach as outlined above can be a vital message for higher education in teaching courses on general education and other fields. Strengths of embedding Kolb's learning cycle into this pedagogical approach are as follows. Students can have treasured opportunity to have a certain form of experience and immerse in abstract concepts or ideas that they can hardly be experienced with under particular context of their social and cultural settings. Moreover, Kolb's learning cycle can help students to reflect and consolidate the knowledge that they learned with greater impression. What is more, through integrating Kolb's learning cycle with this pedagogical approach, experiential learning can be implemented beyond the outdoor environment. This can offer an alternative for institutional concerns on balancing students' learning needs and the issues of safety and health. However, students need adequate time transferring experiences to knowledge. Course with intensive schedule and heavy workloads may have difficulty when adopting Kolb's learning cycle.

To ensure the proposed pedagogical approach a successful one, certain conditions are recommended to meet. First, the lecturer should able to identify a problem with its associated knowledge that able to distinguish the class. Second, students' active participation is expected. Third, stable Internet connection with floating tables and chairs.

In a sense, it may be difficult for higher education to change the role of general education in fulfilling graduation requirement as it involves many complicated considerations. However, when teaching general education, especially for those non-majored students, this proposed pedagogical approach raised an important message of motivation and engagement to higher education. One of the methods in arousing students' learning motivation and engagement is to make use of the

thing that they are connected with and interested in, which is ICT in this case. By doing so, they are much easy motivated to engage in and draw reflections from different learning experience. For the sake of students, therefore, educationists should consider how to arouse students' learning motivation and engagement when designing teaching and learning activities, no matter inside or outside the classroom context.

9. Significances

Significances of this study stem from its competence of facilitating students' experiential learning through, first, transforming and empowering experiential learning to mutual beneficial nature and, second, bridging and extending experiential learning from within to beyond class-room environment. Brief accounts are as follows.

One of the significances of this study lays on its capability of transforming experiential learning to mutual beneficial nature through stretching its boundary beyond the personal level. Usually, experiential learning relies on students' self-reflection. The self-reflection, how-ever, may be mediated by personality and past experience and can only offer a very limited personal perspective. In this regard, students' self-reflection mainly serves for personal attain-ment and is hardly to be challenged. Through encouraging students to share their comments or responses with other students, this approach provided different perspectives to each student by offering them non-personal views and even challenges for their reflections and internaliza-tions. As a result, students' self-reflections over their experience in the approach need not to be solely relied on their own accounts and incorporation with certain external inspections and even rectifications become possible. By doing so, this approach transforms and empowers experiential learning to a more cooperative and mutual beneficial nature.

Another significance of this study is on its endowment of connecting and elongating teaching and learning activity from within to beyond classroom setting. Students can assimilate the experience within the classroom and are then able to apply what they experienced from the approach when they are preparing their assignments after the lesson. Even though other experiential learning activities may also able to perform a similar role, this approach offers a feasible and resource-saving way of conducting experiential learning within "classroom-confined" setting (Georgiou et al., 2008, pp. 808, 810). When comparing with other experiential learning activities within classroom setting, this approach gains a comparative advantage through satisfying teaching and even institutional considerations since it can be conducted by one person within ordinary classroom setting without inducing additional burden of man-power, resources or even funding. Unlike community-based experiential learning, this approach avoids administrative work of arranging and bargaining with different internal and external parties.

10. Limitations

Owing to various constraints, students in the study were formed into different units according to their previous knowledge on the problem-solving task by treating no difference among their learning needs, learning desires, learning styles and so on. Educationists may need to take the individual difference into consideration when practising the approach. Also, participants in this study were almost all Hong Kong students sharing the same mother tongue. Whether culture and even language play roles in mediating students to receive the activity deserve further studies.

11. Conclusion

To sum up, through presenting a pedagogical approach of innovatively and skilfully embedding ICT with ELT, this study demonstrated a feasible and resource-saving way in conducting experiential learning within a normal classroom setting. Based on the above denotations, the approach facilitated students to assimilate and apply the experience under four stages of Kolb's learning cycle. Because of its flexibility, this approach is suitable for classes with

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different sizes. As long as utilizing something like ICT that is already connected with students, with some modifications, it is possible to apply this approach, practice experiential learning and enhance students' learning motivation and engagement in other academic disciplinaries.

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