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A pedagogical framework of cross-cultural online collaborative projects in English as Foreign Language (EFL) classrooms

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ABSTRACT

Many researchers have focused on online collaborative learning, cross-cultural communication, project-based learning, digital literacy, and digital storytelling but there is no pedagogical framework that incorporates these elements for English as Foreign Language (EFL) teaching. This study based on the qualitative design established a pedagogical framework from three different types of cross-cultural collaborative projects with the collected data including students' artifacts and project structures. We have found that the pedagogical framework proposed here serves as a guide to facilitate different types of cross-cultural projects in their classrooms. The multiple cases of cross-cultural online collaborative projects in an EFL class were taught according to the theories of project-based learning and content language integrated learning alike, proved to follow this pedagogical framework. Implementation is also described to give more details on how the projects were conducted. In the end, opportunities and challenges are provided for future implementation of online collaborative EFL projects.

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1. INTRODUCTION

Poor motivations due to lack of interest and superficial learning among students, are two problems that educators face today. Boredom, or feeling of lack of interest in school, is recognized by parents and teachers as being common among students although it is usually assumed that good students usually have high learning motivation so do not have the problem of feeling bored, especially those who worked harder and studied better [1]-[5]. Studies, however, showed that even students scoring well on standardized tests also have the problem of boredom [6]. During the late twentieth century, researchers in education found that this type of students are the ones who have low motivation in learning in the classroom [7], specifically, to learn in a meaningful and holistic way. By about 1990, it became clear to education researchers that boredom is associated with the wrong structure of schooling hence there is a need to rebuild the pedagogical framework to make students more motivated and engaged in learning in class.

Moreover, around 1990, from the assessments done on college students, it has shown that what they learned in high school was very shallow. Even the best students from top colleges, still did not deeply and conceptually understand the subject matter – no matter it is science, literature, or mathematics [8].

Research in learning sciences (LS), presented a possible solution to the said problems. Based on the cognitive sciences and other disciplines, scientists have brought out the cognitive structure of deeper conceptual understanding, released learning principles, and proved what students learned at schools was

superficial knowledge, but not deeper understanding. Making use of research findings, education scientists have developed new curricula, with increasing students' engagement and deeper understanding of conceptual knowledge.

Our contribution in addressing the aforementioned problems is to articulate the features of project-based learning (PBL) [9], [10] that allow students to learn by doing and realizing their ideas. We put forward suggestions to help students overcome boredom and gain deeper understanding of the subject matter by engaging in real world activities that are similar to the activities that adult professionals participate in.

In this study, we proposed a pedagogical framework developed for cross-cultural collaborative projects in EFL classes, and show how the framework guided the instructional design of each case. We also discussed the implementation of the design and identified the challenges and opportunities from the design to implementation stage to bridge the gap between the theory and practice.

2. RELATED WORKS

2.1. Project-based learning

Project-based learning is a form of situated learning [11] where students gain a deeper understanding of the learning materials when they actively construct their understanding after applying the ideas. Working in projects, students engage in real world problems that are important and interesting to them and these are similar to what adult professionals and subject experts do. A classroom designed based on project-based learning is student-centered and students can investigate real-life problems, provide hypotheses, discuss their viewpoints, test the methods, and try out new ways. Research has demonstrated that in project-based learning classrooms students perform better in examinations than students in traditional mortar-and-brick classrooms [12]-[14].

Learning environments designed using the project-based approach have five major features [7], [10], [15]: 1) A driving question or a problem to be solved is mentioned by the teacher; 2) From the driving question, students participate in authentic and situational inquiry processes to solve the problem, which are central to professional performance in the discipline; As students inquire on the driving question, they learn and apply important notions; 3) Students, teachers, and community members engage in activities collaboratively to help students find solutions to the problem raised by the driving question. This is very closed to the complex real-life situation of expert problem-solving; 4) While students are engaged in the inquiry process, learning technologies scaffold students' learning and help them participate in activities beyond their ability; 5) Students create their learning products that address the driving question. These artifacts manifest the class's project learning.

Project-based learning is an important teaching strategy which can foster diverse abilities and stimulate learning attitudes amongst students. During the learning process of PBL, students acquire problem-solving, data collection, discussion, presentation, and reporting skills. Learners collaborate with each other by communicating and discussing. It is employed with constructivism viewpoint that originated from Piaget's cognitive developmental theory. Educators working within the field of education and learning have identified reforming measures and promoted project-based learning, especially when the project involves interdisciplinary fields [16], [7], [17], [18].

With the above, it can be said that project-based learning makes students active learners and collaborative partners. According to Holubec [19], project-based learning facilitates collaborative learning by incorporating five elements: trust, person-to-person interaction, personal performance, interpersonal and group skills, and group process. Project-based learning is also the best way for students to learn to create products or to assess and solve problems using acquired knowledge and skills.

Wang, Huang and Hwang [20] have also shown that project-based learning is an innovative approach that can cultivate students' multiple competencies and boost their learning achievement by acquiring 21st century skills such as problem-solving, higher-order thinking, critical thinking, communication ability, and learning motivation.

There are eight essentials in project-based learning [21] namely: significant curriculum content, a need to know, a driving questions, student voice and choice, 21st century skills, inquiry and innovation, feedback and revision, and publicly presented product. Among these, *a need to know* is crucial in creating a need to know the significant curriculum content and relevant skills, also called 21st century skills [22].

2.2. Learning sciences theory behind project-based learning

Project-based learning can be traced back to over a hundred years ago, to the work done by the educator and philosopher Dewey [23], who had researched on the process of inquiry in the Laboratory School at the University of Chicago. Dewey argued that students' engagement in real, meaningful tasks and problems similar to what experts do in real-world situations will help them develop their involvement in the

learning materials. During the past two decades, learning scientists have elaborated Dewey's original statement that deeper conceptual understanding results from active inquiry. These new discoveries have given insight into how children function cognitively [24].

In the present study, we build upon four major learning sciences ideas: (1) active construction, (2) situational learning, (3) interpersonal interactions, and (4) learning tools. The drawback to having developed materials available is lesser flexibility for teachers to customize the projects. We hoped it would help teachers design student-centered or community-centered projects. Although a few teachers have the professional knowledge of doing it, most teachers are not competent to develop projects. Instead of returning to cookbook experiments or to teacher proof curriculum, models are provided for teachers on how to employ project-based science and strategies to help learners engage more in scientific practices.

Like flipped-classroom, project-based learning is also a student-centered teaching method that aims to cultivate student teamwork, interdisciplinary skills, critical thinking, interpersonal communication, and project management abilities [25], [26]. Projects and group learning are used for students to begin working with group mates rather than merely listening and reading abstract concepts on their own so that they can apply these concepts to real-life problems [27], [28]. Online project-based learning (OPBL) is a popular approach that uses technology to increase the efficiency of PBL [29], [30].

2.3. Online collaborative learning

Online collaborative learning (OCL) provides a framework of learning in which students are encouraged and supported to work together to create and share knowledge, or to invent and to explore ways to innovate and diffuse ideas. They seek the conceptual knowledge needed to identify, assess and solve problems rather than recite what they think is the right answer [31]. Computer-supported collaborative learning (CSCL) is based on a pedagogy where learners construct knowledge through online group discussions [32]. Instructors have based their teaching on the concept of knowledge construction by gradual building of knowledge mainly through asynchronous online discussions between students and instructor. Therefore, discussion or interaction is an essential part of OCL. However, OCL more emphasizes on the cross-cultural communication.

2.4. Content language integrated learning and tele-collaboration

In order to focus not just on the language itself, it is important to adopt an appropriate teaching approach to facilitate understanding. Therefore, Content Language Integrated Learning (CLIL) was adopted in this research. CLIL is widely adopted in European countries where there are different languages spoken by the students. In addition to its dual-focused educational approach, according to Do Coyle, Hood, and Marsh [33], there are four elements included in a successful CLIL lesson: content, communication, cognition and culture. Content refers to progression of knowledge, skills and understanding related to specific elements of a defined curriculum; communication refers to using language to learn while learning to use language; cognition involves development thinking skills which link concept formation (abstract and concrete), understanding, and language; culture means exposure to alternative perspectives and shared understandings, which deepens awareness of otherness and self [34].

In addition, four language skills are focused on in the CLIL lesson: listening, reading, speaking, and writing [34]-[37]. Under the CLIL context with equal focus on content, communication, cognition, culture and four language skills, the research aims to make clear whether students could obtain sustainability literacy and knowledge through intercultural telecollaborative projects.

2.5. Digital storytelling

Lambert [38] indicated that Digital Storytelling (DST) originated in 1980s and was used by community theater workers to record, produce and disseminate stories. However, it has gradually transformed the art of storytelling into personal tales with technical tools by using images, music, sound, and author's own voice. It proved to be a successful way to trigger students' interest [38]. Collaboration motivates and helps students to present knowledge in a meaningful way. With systematic teaching instruction, user-friendly software and appropriate evaluation, DST provides an effective way to motivate students in creating narrative which generates both knowledge and meaning. The fundamental components of storytelling can be understood in four phases: pre-production, production, post-production and distribution [39]. Shelby-Caffey [40] also defines the seven elements of a digital story namely: 1) point of view, 2) dramatic questions, 3) emotional content, 4) economy, 5) pacing, 6) the gift of voice, and 7) soundtrack [41]. With scaffolding, teachers can use digital storytelling to enhance students' information and communications technology (ICT) literacy and also help struggling language learners.

Digital storytelling is a way to demonstrate a learner's learning process. In this research, DST was used in a language project to motivate students, and enhance students' ICT literacy and learning achievement.

Online collaborative learning, cross-cultural communication, project-based learning and digital storytelling have been discussed in various educational researches [1]-[5]. The individual pedagogical frameworks for the said areas have been established but there is still no integrated pedagogical framework for English as Foreign Language (EFL) teachers to incorporate all these elements into their EFL teaching.

3. RESEARCH METHOD

In this study, a qualitative design was adopted by establishing a pedagogical framework from different types of cross-cultural collaborative projects. Data including students' artifacts and project structures are collected to form a pedagogical framework for online collaboration project.

From the literature, we have noticed the process of cross-cultural collaborative projects where students begin from the stage of knowing to the stage of doing with the CLIL approach. In the Knowing stage, a need to know is a crucial point when starting the cross-cultural projects. Students' knowledge has to be constructed to solve a real-world problem by means of online collaborative learning. In the stage of doing, students have to apply what they learn in the knowing stage to produce project products which are the digital stories. In this research, under the idea of project-based learning with the CLIL teaching approach, it is explored whether students can obtain deeper conceptual understanding through cross-cultural collaborative project. The framework is shown in Figure 1.

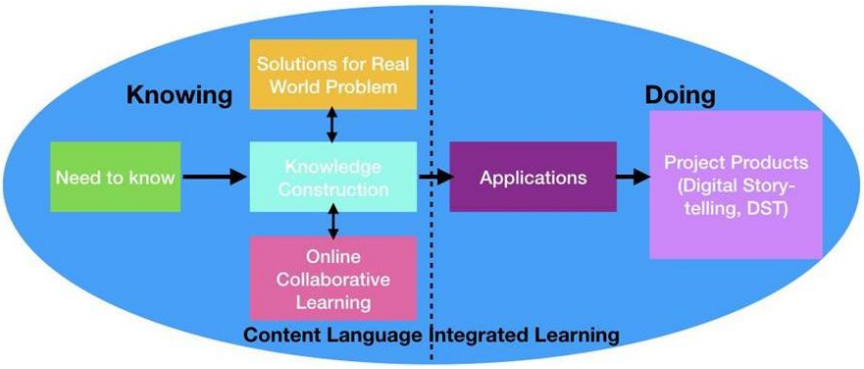


Figure 1. Proposed pedagogical framework for project-based learning

With the project on Cyber Academy, in the beginning stage of the project, students will be aware of why ICT helps them to learn in their daily lives. In this way, Students' needs to know have been raised. The teacher structures the project in order to construct students' knowledge about introducing different ICT approaches. Students submit their task assignments on the site through collaborative learning by watching and reading others' works, commenting and evaluating on them. After the knowledge-constructing tasks, students are able to apply what they learn to make a digital story to introduce the best ICT approach for learning they have found. The digital stories are their project products in the doing stage.

There are three cross-cultural cases discussed in this research namely the Cyber Academy, Global Issues and Global Forest Link. The design of the three projects is in line with the proposed pedagogical framework for project-based learning. In the Cyber Academy project, Taiwan has collaborated with the Philippines to have a cyber-to-cyber project for eight months via the online collaborative platform, the Cyber Academy [42]. The Global Issues is a project with Japan, which is being done every semester through Moodle or Skype. The Global Forest Link is a year-long project associating with Russia and America via Global Forest Link, an online collaborative DST website.

a. Projects with the Philippines

The project with the Philippines and the United States in 2013 was operated via Cyber Academy with digital storytelling films as students' learning projects; in 2016; however, the project just involved the Philippines and Taiwan. The project website is shown in Figure 2.

In these projects, students were grouped into five. Each team introduced themselves using PowerPoint. After the teacher has introduced the project, students explored the topic, "What is the best approach for ICT learning?" The students worked on the project collaboratively and created a narrative through Digital Storytelling. After the team projects were completed, the students uploaded their DST outputs into the Cyber Academy. The last phase was the peer evaluation where students view other teams' DST outputs and gave comments. The teacher assigned grades for each student after the presentation and peer evaluation.

In this case, we observed how the stage of knowing led to the stage of doing. These two stages constitute the elements in this pedagogical framework. In the project, students first need to obtain the knowledge related to the topic and then they are guided by teachers to inquire on the best approach of ICT learning. It shows that students' learning goes from the stage of knowing to the stage of doing.

(a) Cyber Academy Webpage (b) Participants from Taiwan and the Philippines

Figure 2. (a) The Cyber Academy and (b) screen capture of the submitted student outputs from Taiwan and Philippines.

b. Projects with Japan

The projects with Japan were conducted through Skype video conferencing. There were one or two sessions of Skype conferencing in a semester since the semesters start at different times in Taiwan (Wunshan Senior High School) and Japan (Toyama Minami High School). Approximately 30 students from each country participated in the Skype® sessions. The Skype® sessions served as venue for students' introductions. In the four years of implementation starting from 2015 through 2018, topics included pop culture, teenager's life, sustainable development goals, and the GOMI (garbage) project.

During the project, students were paired up with students in Japan. Students were notified of the topic before the Skype session so they will be able to read on the topic and practice the dialogue with their peers first. During the Skype session with Japanese students, students introduced themselves first and then discuss the selected topics with the aid of computers, pads, and other smart devices.

With regard the teaching procedure, Taiwanese students were grouped and were asked to complete a self-introduction worksheet and then practice in pairs. After the students have completed the self-introduction worksheet, they formulated questions related to the discussion topic for a particular session. Resources on the subtopics were also provided. Through the above, the students were trained with problem-solving skills to deal with communication problems and technical problems. During the Skype session, students were asked also to fill in the Skype session worksheet. After the session, the students were asked to reflect assess, and self-evaluate. The activities are shown in Figure 3.


2/21 Japan Skype Conference

Questions to ask Japanese students: （提供視訊問題與參考答案）

1. Q: Hello, how are you? A: Fine, how are you?
2. Q: I am _____. What's your name? A: My name is 陳佳潔_____
3. Q: Which year are you in at your school? A: I am a first grader.
4. Q: What is your favorite subject? A: _____ is my favorite subject because _____
5. Q: Besides studying, what do you like to do at school? For me, I like to _____ because _____
6. Q: How many exams do you have in a semester? A: We have 3 exams in a semester.
7. Q: Do you study hard for your exam? A:Yes, I study very hard but sometimes I don't get good grades.
8. Q: Do your parents care about your test results? A: Yes, they care about it a lot.
9. Q: Do you like to study? A: Yes, I like to study, especially Math.
10. Q: Do you go to cram school to learn more? A: Yes, I go to cram school to learn more.
11. Q: When do you go to cram school? A: I go to cram school on Wednesday and Friday evenings.

What I have talked with Japanese students?
How old are you ? 16 and 17
Do you like study ? no
What is your favorite food? shishi
Do you like hot spring? Yes I very like it?
What is your favorite subject?PE
Do you know where is Taiwan ? I know .it's under the japan

What do I think about this Skype conference? Any comments and suggestions?
我覺得這次的視訊讓我收穫很多 讓我了解到他們英文很棒 讓我需要去了解一個單子要
學會其他們的用法 讓他們去了解 希望下次還能有機會跟他們視訊
建議 他們的發音太小聲 也不太會英文 對面的視訊畫質都很差 然後都很受遮蔽

I benefitted a lot from the Skype session with Japan this time. Their English is not very good but I need to learn to explain words to them by knowing the other explanations of the same word so they can understand what I said. I hope have another chance to have Skype conference with them.
I think their voice was not loud enough and they didn't understand a lot of English. The resolution of their image was n good enough and they covered their faces too much.

(a) Skype Conference Worksheet


2017年（平成29年）6月14日 （水曜日） 県内総合 （20）

とやまワイド

台湾の高校とスカイプ交流

富山南高国際コース

(b) Skype Conference on Japan local newspaper

(c) Skype session with Japanese students

(d) Skype happily with Japanese students

Figure 3. Clockwise from the top picture: (a) sample worksheet, (b) the news feature in a local paper in Japan, (c) students engaging in mobile learning, and (d) computer-based interaction.

c. Projects with USA and Russia

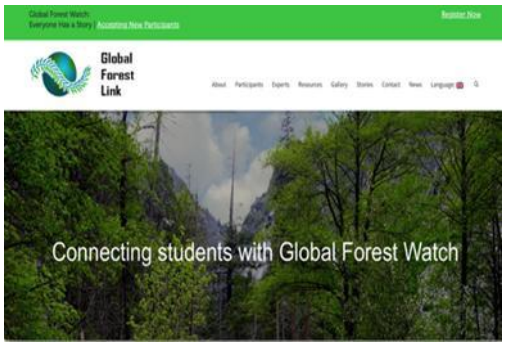
The third project mentioned in this research involved Taiwan, the United States of America (USA), and Russia. The project made use of the Deforestation via Global Forest Link [43], a website where the students can upload their digital stories. It took approximately two semesters (eight months) for students to make their digital stories and upload them in the said site.

In this CLIL classroom, an intercultural tele-collaborative project with the theme A Global Forest was facilitated by the teacher from the USA, Russia and Taiwan, which is shown in Figure 4. Students from the USA, Russia and Taiwan worked collaboratively to complete the project, the final product of which were short videos about deforestation (DSTs) uploaded to the website.

For this project, the students also worked in groups of four. Each team introduced themselves by using PowerPoint slides. Students completed the worksheets on deforestation after which they created their own DST outputs in the form of short videos on deforestation. The Table 1 shows the schedule of project activities.

Table 1. Timetable of activities

Week	Activity
Week 1-2	Introduction of Deforestation
Week 3-4	Photo Collection and Description
Week 5-8	Video-making Skills
Week 9-10	Action-taking to Preserve Forests
Week 11-12	Project Final Presentation



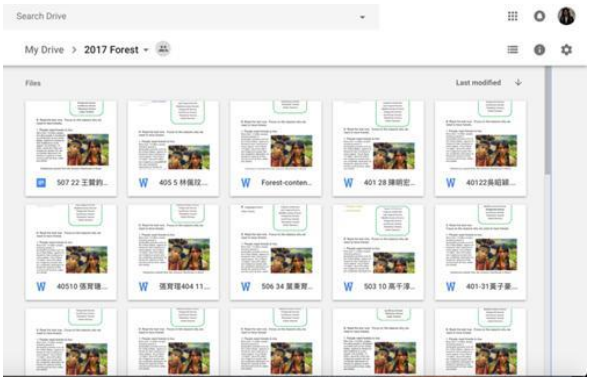
(a) The Home Page of the Project Site

(b) Video-conference with American and Russian Teachers

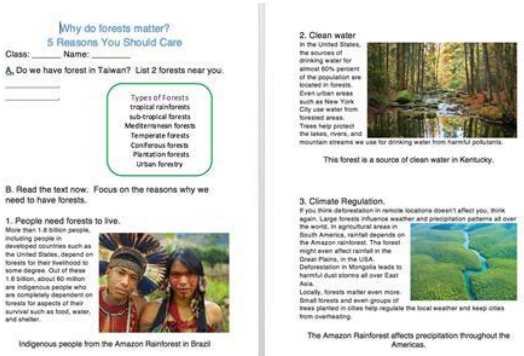
Figure 4. (a) The Global Forest website and (b) Students participated in a video conference in the project.

The project was also facilitated on a class Facebook group with CLIL teaching instruction where content and language are dual focus in the classroom. Students had to complete the tasks and submitted their worksheets to the Google Drive. Students' worksheets were also digitally stored in the Google Drive. Students' worksheets and students' forest photos on the site are shown in Figure 5 and Figure 6.

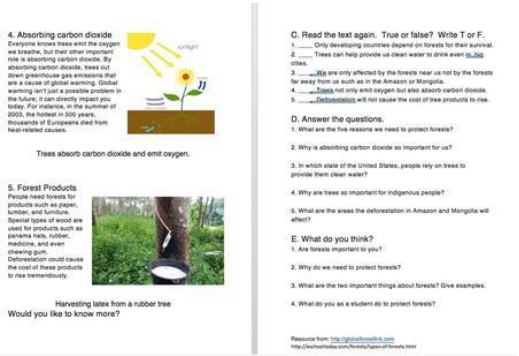
(a) Project Facebook Group



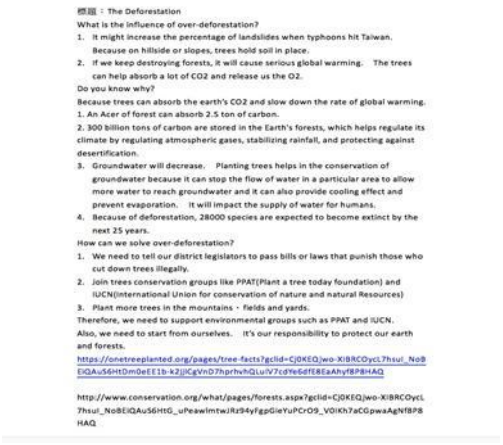
(b) Project Google Drive



(c) CLIL Reading Worksheet 1



(d) CLIL Reading Worksheet 2 with Questions



標題：The Deforestation
What is the influence of over-deforestation?
1. It might increase the percentage of landslides when typhoons hit Taiwan. Because on hillside or slopes, trees hold soil in place.
2. If we keep destroying forests, it will cause serious global warming. The trees can help absorb a lot of CO2 and release us the O2.

Do you know why?
Because trees can absorb the earth's CO2 and slow down the rate of global warming.
1. An Acer of forest can absorb 2.5 ton of carbon.
2. 300 billion tons of carbon are stored in the Earth's forests, which helps regulate its climate by regulating atmospheric gases, stabilizing rainfall, and protecting against desertification.
3. Groundwater will decrease. Planting trees helps in the conservation of groundwater because it can stop the flow of water in a particular area to allow more water to reach groundwater and it can also provide cooling effect and prevent evaporation. It will impact the supply of water for humans.
4. Because of deforestation, 28000 species are expected to become extinct by the next 25 years.

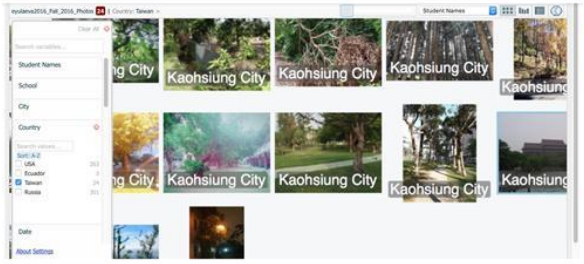
How can we solve over-deforestation?
1. We need to tell our district legislators to pass bills or laws that punish those who cut down trees illegally.
2. Join trees conservation groups like PPAT(Plant a tree today foundation) and IUCN(International Union for conservation of nature and natural Resources)
3. Plant more trees in the mountains、fields and yards.

Therefore, we need to support environmental groups such as PPAT and IUCN.
Also, we need to start from ourselves. It's our responsibility to protect our earth and forests.

https://onetreeplanted.org/pages/tree-facts?gclid=CJ0KEQjwo-XIBRCOycL7hsuI_NoBEiQAuS6HtDm0eEE1b-k2jJCgVnD7hprhvhQLuIV7cdYe6dfE8EaAhyf8P8HAQ

http://www.conservation.org/what/pages/forests.aspx?gclid=CJ0KEQjwo-XIBRCOycL7hsuI_NoBEiQAuS6HtG_uPeawImtwJRz94yFgpGIeYuPCrO9_V0IKh7aCGpwaAgNf8P8HAQ

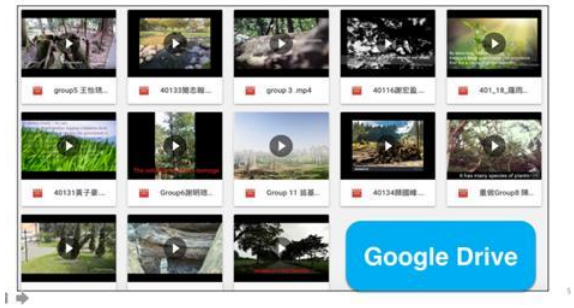
(e) CLIL Comprehension Questions



(f) Urban Forest Photos Taken by Students

Figure 5. (a), (b), (c), (d), (e), and (f) are sample works of students

(a) Photo Taking and Presentation



(b) Students' Video Files on Google Drive

Figure 6. (a) Students giving their report and (b) The uploaded final video of each group

4. RESULTS AND DISCUSSION

Feedbacks from students from Taiwan were positive, saying that this project enhanced their teamwork, and English writing and speaking skills. The students mentioned that through the project, they learned to communicate with their peers about the global problem of deforestation and gained broader perspective, awareness, and appreciation of the earth's resources with their critical thinking skills. They even brainstormed for creative ideas to solve those problems. This echoes with the PBL experiences students gain in Science Technology Engineering and Math (STEM) High Schools because the 21st century skills include communication, collaboration, critical thinking, problem solving and creativity prepare students for their academic performance and future career pursuits in [44]. Besides, students said that after learning from the project, they need to work together to curb deforestation, adding that humans should find a balance in ecosystems protection and economic development. These projects also bridge socio-economic gaps because students who cannot afford to go abroad to study were able to interact with international students through the cross-cultural collaboration aspect of the projects. All students should have the opportunities to strengthen their language and literacy skills in spite of their socioeconomic background. On the other hand, teachers own the decision to include students from different cultural, linguistic, physical and academic backgrounds in [45]

For teachers, the projects offer an opportunity for continuous professional development on the area of global citizenship using various teaching technology. With the emergence of an international leadership community, teachers from all over the world can share their ideas and initiate projects easily. With the international partnership for projects, teachers as change agents at an international level collaborate with international partners and practice action research, which will all contribute to teacher growth in [46]

Collaborative projects are not without challenges. However, for teachers, the biggest problem is how to secure stable funding sources for the purchase of software and hardware, expenses during field trips, and budget for other resources. A study done in Nigeria in [47] suggested that government should provide sufficient computers and ICT devices for school administration, teaching and learning. Because of the cross-cultural nature of the projects, teachers also need to consider the time differences between Taiwan and partner countries when arranging real-time online sessions. This findings in accordance with the research done in Jakarta in [48] with 32 EFL teachers on their perception of using ICT show that when the teachers are faced with the issues about facilities and technical expertise, they asked help from technicians or colleagues and they recognized the importance of attending training to strengthen their skills in ICT uses in teaching.

English teachers also need technology know-how and assistance to deal with a variety of technical problems students face in the online classroom such as how to edit video clips and how to upload files to the Google Drive. Sometimes, the technical problems came from the instability of school Internet connection. Moreover, they need to develop cross-cultural communication skills to coordinate efficiently with their foreign counterparts regarding how to facilitate the projects. Copyright issues for artifacts that were obtained from the internet are also a concern for the teachers. In one recent research in [49], it mentioned that preservice elementary teachers also had science teaching anxiety when working on 3D printing technology, which will be the field of research for further research on teacher education.

Cross-cultural collaborative projects can be challenging for students who are non-English speakers because they need to focus/double up efforts on their language skills such as listening speaking, reading and writing, especially when they encounter obstacles. Completing the project at different time zones, and at a distance from each other could also be a challenge for students especially when they have to do it outside regular class hours without the supervision of the teacher. One study in [50] also proved that learning and activation can both exist inside and outside the classroom and this kind of learning provides optimal language learning environment with four case studies from the classroom to the wider world.

5. CONCLUSION

Cross-cultural projects in EFL classes can be carried out using the pedagogical framework presented in this paper. The integration of project-based learning, online collaborative learning, CLIL, tele-collaboration and digital storytelling into this framework offers a solution to student behaviors such as boredom and surface-level learning that hinder quality and meaningful learning. Implementing the projects would require considerable time and efforts from the teachers but the pedagogical framework that we have proposed could serve as a starting point and a guide to facilitate more holistic and integrated cross-cultural projects in their classrooms.

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