

# Critical environmental education in tertiary English language teaching (ELT): A collaborative digital storytelling project

I Gusti Agung Paramitha Eka Putri

*College of Education and Arts, Institute for Sustainable Industries & Liveable Cities, Victoria University of Melbourne, Melbourne, Australia*

*Department of English Education, Faculty of Teacher Training & Education, Universitas Mahasaraswati, Denpasar, Bali, Indonesia*

## ABSTRACT

Environmental issues have recently been incorporated into English materials. Hundreds of ELT materials concerning environmental issues are available worldwide in mainstream or assigned coursebooks and may simply be adapted by teachers for their classroom use. To respond to this, the present study explores an initial endeavor to integrate critical environmental education into ELT in a higher education context. In this study, a collaborative digital storytelling project was enacted. Student teachers created digital stories about *Subak*, their local environment, to evaluate its problems and propose solutions to the problems. Data gleaned from a questionnaire, an interview, and digital stories were thematically analyzed. Findings indicate that digital storytelling served as a multidimensional platform for student teachers to explore economic, political, and social aspects linked to *subak*. Thus, their digital stories could be considered as authentic materials for environmental education. This suggests that digital storytelling (DST) is a form of a powerful campaign against environmental destruction. The main contributions of this article are to provide empirical evidence regarding the implementation of a collaborative DST project in higher education and to show pedagogical implications for English language teaching (ELT) and critical environmental pedagogy.

**Keywords:** Critical language pedagogy; ecoliteracy; greening ELT; higher education; place-based education; student teachers

**First Received:**  
11 October 2016

**Revised:**  
21 May 2017

**Accepted:**  
1 September 2018

**Final Proof Received:**  
24 September 2018

**Published:**  
30 September 2018

## How to cite (in APA style):

Putri, I. G. A. P. E. (2018). Critical environmental education in tertiary English language teaching (ELT): A collaborative digital storytelling project. *Indonesian Journal of Applied Linguistics*, 8, 336-344. doi: 10.17509/ijal.v8i2.13280

## INTRODUCTION

Environmental education has become part of the institutional curriculum that prepares students to become global citizens who contribute to a healthier and more environmentally sustainable community. Internationally, UNESCO (2005) has set a program known as Education for Sustainable Development (EfSD), focusing on (1) incorporating Sustainable Development into pedagogy and curricula from pre-school to university; (2) directing lifelong education, which enables acquisition of significant knowledge,

skills, and values for prospective citizens to enhance and sustain the quality of life in a sustainable world; (3) raising awareness of the concept of EfSD to establish responsible citizenship locally, nationally, and internationally; and (4) providing a continuing program for teacher trainers, pre-service, and in-service teachers to make EfSD a reality. In Indonesia, environmental education and ELT have been manifested in reading texts commonly found in commercial or government-created course books of all grades. This condition differs from what has been reported by Jacobs & Goatly

(2000) where only 2% of the English coursebooks published between 1990 and 1998 used by EFL/ESL learners contained environmental issues. Most of the reading texts presented nowadays touch upon global environmental education issues or global warming in particular. The incorporation of environmental issues into ELT course books aims at not only informing but also inspiring our language learners to engage in environmentally-friendly actions to change the recent problematic condition (Hauschild, Poltavtchenko, & Stoller, 2012).

As what UNESCO (2005) points out, higher education is supposed to provide training for prospective teachers to support their future role in the society regarding EfSD. However, student teachers in ELT departments have yet to be introduced to environmental education. In the 1980s, Freire, an influential scholar in the field of critical language pedagogy, once mentioned the importance of shifting activities in the teacher's official training beyond connecting dichotomy between text and context only. Empirical reports on the inclusion of environmental education pedagogy in science teacher education (Fien & Maclean, 2000; McDonald & Dominguez, 2010) are not hard to find but a completely different case in English teacher education.

To the best of my knowledge, only Jacobs, Lie, and Amy (2006) who conducted a cooperative project with a group of Indonesian English teachers in creating an English textbook with environmental education designed for general university students. Using a localized approach, situating global environmental issues within the Indonesian context, the textbook offered opportunities for students to participate actively in protecting the environment. The project showed a pivotal role of English teachers in designing and implementing ELT, which was devoted to localized environmental education. Therefore, it is necessary for prospective teachers to improve their teaching methodology and language skills while exploring topics involving environmental issues critically. In this case, teacher training is a place where critical environmental education initiatives take place (Cates, 2002). Teacher-training courses, as a matter of fact, offer a wide range of opportunities for prospective educators to learn and gain insights on ways for integrating environmental education into English lessons. In short, these courses may need to be reconstructed or reshaped to offer adequate exposure to sustainability education (Boon, 2014).

To make the connection between ecological, social, and cultural aspects of English language education situated in Bali, *Subak* can be a site of place-based education in this research. *Subak* is also a way to instill cultural values of farming into young generations (Surata, 2015). Findings of this research can be the basis for implementing critical language pedagogy and place-based education to promote critical environmental education for prospective teachers. Little research explores potential benefits of digital storytelling in

shaping or building prospective teachers' awareness of their local environment. In response to this gap, the present study examines the following questions:

1. To what extent does a collaborative digital storytelling project support a critical environmental education practice?
2. What are challenges and implications for the implementation of digital storytelling for critical environmental education?

### **Digital storytelling**

Digital storytelling is defined by the *Centre for Digital Storytelling* in Berkeley, California, as a task of short duration of 2-6 minutes with a strong emotional content, which incorporates existing photographs, music, video (optional), and voice of the narrator (Kearney, 2009). The concept of digital storytelling (DST) presents accounts in the 21<sup>st</sup> century digital media, such as video, which makes it easier to save, distribute, and share widely (Sepp & Bandi-Rao, 2015). Since then digital stories have been well-received (e.g., a wide range of uses and settings including in the language classroom).

As Robin (2006) argues, DST is a compelling instructional tool for both students and educators that supports teaching instruction as well as encourages students to develop multiple literacy skills. Further, Robin classifies digital stories into three major groups: (1) personal narratives — stories about important events in someone's life; (2) historical documentaries — stories that describe impressive incidents which help us perceive the past; and (3) stories, which are designed to notify or instruct viewers on a specific notion or action. In this article, the creation of fictional stories for some specific purposes is of pedagogical focus.

The idea of using storytelling in ELT is not new. Everyone loves listening to stories as well as telling them. Stories have been considered as a powerful means of delivering not only learning concepts but also values in the society. Heathfield (2015) argues that storytelling is an imaginative part of being human, and a language classroom is an ideal environment for teachers and students to tell stories. In addition, stories are a platform for learners to be heard since they can narrate their experiences (Reinders, 2011). Widodo (2016) contends that storytelling involves a series of socio-cognitive process, such as finding a theme of a story, producing the story, and presenting the story together.

DST has been used in EFL lessons for a wide range of purposes. It is known as a multimodal task, which enables students to develop such four basic language skills as speaking, listening, reading, and writing at the same time to enhance their critical and creative thinking as well as digital literacy skills (Banaszewski, 2005; Churchill, 2016; Gregori-Signes, 2014; Riberio, 2015; Widodo, 2016; Yoon, 2014). Widodo (2016) conducted a study, which engaged young learners in a genre-based DST project. His finding shows that the DST project helped young learners develop multi-literacy skills, such as cultural literacy, information literacy, narrative literacy, visual

literacy, and media literacy. Yoon (2014) reported on an increased motivation of young learners in a rural area in Eastern Dongboo, South Korea. The students believed that the project empowered them to do something new and special which they had never imagined before. Positive attitudes towards the project reflected in Yoon's (2014) study fostered students' self-awareness of improving their quality of work based on peer correction.

Rokenes (2016) conducted empirical research that investigated how digital storytelling (DST) in ESL teacher education situated in Norway enhanced digital teachers' competence especially in promoting an innovative use of information and communications technology (ICT). The study was conducted in two phases in which more than 150 student teachers participated. The findings indicate that the student teachers moved beyond the mastery of basic digital skills towards more advanced ones such as "didactic ICT-competence, learning strategies, and digital Bildung" (Rokenes, 2016, p. 323). Rokenes (2016) concluded that the student teachers gained advantages from language learning with ICT as they were producers of knowledge rather than consumers in the project. The student teachers also acknowledged the use of digital storytelling in their future classes.

Widodo (2016) suggests that when using digital storytelling (DST), teachers need to consider a genre approach, which enables learners to identify language use in context, let learners consider teaching more as a form of support, encourage learners to be more independent in learning, and provide learners with a chance to recognize how stories, socio-historically situated texts, are composed and written to personify different social meanings. The modified genre approach to the incorporation of digital storytelling in this article includes four steps:

1. building knowledge of a digital story: guide learners to familiarize themselves with digital storytelling and with ways to produce digital stories.
2. scaffolded story construction: scaffold learners to write a story with their peers and fabricate digital stories.
3. story construction: assist learners in writing a story script, preparing necessary equipment, recording video and narration, and editing the digital story.
4. story circles: provide learners the opportunity to share their digital stories with others.

### **Collaborative digital storytelling: *Subak***

*Subak* refers to Balinese agricultural practice that interweaves four elements of organization: rice terraces, irrigation, membership of *Subak* (water user farmers), and networks of temples (Surata, 2015). The *Subak* system or *Subak Cultural Landscape* earned the UNESCO World Heritage status in June 2012. It covers 19,500 hectares of agricultural lands and water temple networks all around Bali. A philosophy called *Tri Hita*

*Karana* is the foundation of *Subak*. *Tri Hita Karana* comes from the word *Tri* (three), *Hita* (prosper), and *Karana* (cause). It is defined as three sources of life (e.g., God, human beings, and environment) that bring prosperity. Surata (2015) argues that this concept holds the beliefs that God, humanity, and nature are inseparably linked; thus, happiness and prosperity can only be attained if all human beings live their lives in balance and harmony with (1) God (*Parahyangan*), (2) other human beings (*Pawongan*), and (3) the environment (*Palemahan*). In other words, *Tri Hita Karana* creates harmonious relationship among elements of *subak*.

In addition to being a main source of rice for Balinese people, *Subak* also plays a role in safeguarding Balinese cultures from rapid mass tourism development and pressure of modernization. Moreover, *Subak* is rich in biodiversity. Unfortunately, it has been recently affected by the rapid conversion of its agricultural land into tourism purposes and houses, water shortage, and soil and water pollution. For instance, more than 1,000 hectares of *Subak* in Bali has been sold in the last five years. It is afoot that Bali would have lost its *Subak*, say in the next 60 years. Another problem is a growing stereotype about being farmers considered as being uneducated, poor, and dirty. This condition, of course, would likely put *Subak* and sustainability of agricultural production in Bali at risk.

Bali's *Subak* has not been used as place-based education in EFL classes. As *Subak* can be found in almost all parts of Bali, it is actually a promising place for Balinese students to learn and explore issues around it critically. It provides a direct connection to nature, and thus, it would likely raise students' awareness of their surroundings while learning outside their classrooms. In the meantime, this position potentially answers a challenge in the development of environmental education in English teacher education where active investigation of real problems with the emphasis on problem solving and decision-making is encouraged (Riordan & Klein, 2010). The prospective teachers would be able to immerse themselves in the issues of *Subak* and their solutions through the creation of digital storytelling (DST).

Since most of the Indonesian classrooms have heterogeneous and mixed abilities groups of students, collaborative learning is appropriate to use to elicit students' maximum participation and responsibilities. An empirical research by Tsay and Brady (2010) confirms the benefit of cooperative learning as an active pedagogy which accelerates higher academic achievement while simultaneously builds a positive engagement among peers. The research further suggests that cooperative learning stimulates the university students to participate actively in achieving group's targets, prepare themselves before coming to class, contribute to giving constructive feedback to their peers, and collaborate with their group. Tsay and Brady (2010) also recommends the reconceptualization of cooperative learning as a pedagogical concept with an increasing use

of digital media technologies in today's higher education. This research then specifically explores collaborative digital storytelling projects in assisting prospective teachers with experiential language learning, which would give them concrete experiences in using the English language, solving complex problems in the real-life, perceiving a creative process of composing their own products, and visualizing shared goals of their team. As Brenner (2014) argues, collaborative work in doing DST will enable tech-savvy students to assist others who find it difficult undertaking the project.

## **METHOD**

### **Research context**

This article reports on a study of using digital storytelling to develop critical perspectives of sophomores at one of the private universities located in Bali. This university was selected for three reasons. First, the university had a Faculty of Teacher Training and Education whereas a well-established ELT Department is situated. Thousands of students have graduated since its first commencement in 1979, and the graduates worked as English language teachers at elementary, junior, and senior high schools all over Bali. Second, the author gained entry access to this university because the project was relevant to the university's vision and mission. One of the missions was organizing good quality education directed towards national development goals specifically with sustainable environment and cultural tourism. This focus was further elaborated in learning activities. Thus, a topical theme of digital storytelling for the sophomores was about *Subak*, a comprehensive system of Balinese agriculture being preserved and developed as a culturally rich tourism destination. Third, the department was concerned about initiating the integration of Information and Communications Technology (ICT) and language learning. In a response to global advancements in the field of ELT, the department began to include ICT-based ELT learning activities.

The ELT department had been accredited B (effective until March 2017). Each class consisted of thirty to thirty-five students. Classroom activities were designed to equally combine theory and practice. In the seventh semester, the students were assigned to conduct a teaching practicum at schools. A depiction of real-life teacher's work environment was provided as early as possible. Hence, the implementation of digital storytelling (DST) project was geared to prepare prospective teachers to analyze environmental issues in their living environment, e.g., *Subak* as well as to create learning materials about it for kids by using simple tools in a collaborative way.

### **Ethical consideration and participants**

One hundred and fifty-five sophomores agreed to participate in the research. They were asked to produce

digital stories in groups of five students. Thus, thirty-one groups of sophomores were involved in the research. They were given freedom in deciding the technique of digital storytelling such as using photographs, own drawings, and cartoons. In addition, the students could choose using a smartphone or a pocket camera to record their digital stories. They could use free video editor applications, video editing software, or free digital stories following video production.

Regarding the students' background information, they had been given formal English instruction for twelve years. Their English language proficiency ranged from pre-intermediate to intermediate based on placement test result by using Test of English as a Foreign Language-Institutional Testing Program (TOEFL-ITP). Most of the students were competent in two languages: Indonesian (Bahasa Indonesia) and one of the local languages (e.g. Balinese, Javanese, Manggarainese).

### **Research design and procedure**

To address the two research questions, an instrumental case study was conducted. The instrumental case study refers to investigating a particular case as a means to some larger goals (Fraenkel, Wallen, & Hyun, 2012). The present study aimed to understand how a collaborative DST project promoted the critical environmental awareness of prospective teachers in an ELT department. It spanned over one academic semester. Triangulation was gained by distributing a questionnaire to the students, conducting an informal interview, observing some classes, and analyzing students' digital stories. The role of the author was a teacher-researcher. The author immersed herself in the department community to look closely at four steps of creating digital storytelling through a genre-based approach proposed by Widodo (2016). There were four stages through which the prospective teachers and I had to navigate in the collaborative storytelling project (see Table 1).

### **Data collection and analysis**

Data were collected through an observation, a questionnaire survey, and prospective teachers' digital stories. The observation was video recorded at Stages 1 and 4 where the camera was placed unobtrusively in the class corner. The camera could provide prospective teachers' interactions during Stages 1 and 4. Simultaneously, the author used a journal to write any incidents from observation and reflection for each meeting. Then, after the completion of Stage 4, the questionnaire survey was administered to the prospective teachers. Three points of research were highlighted in the questionnaire: (1) what are the benefits of developing digital stories as perceived by prospective teachers? (2) what are perceived obstacles to creating digital stories and how can they be overcome? and (3) under what conditions do prospective teachers take ownership of their digital

stories? (see also Barrett, 2005). Finally, the prospective teachers' digital stories were also analyzed. The results of the three data collection methods illustrated teacher-student and student-student interaction during the project. Corpus data were then sorted into a set of data, and these data were analyzed further by using a thematic analysis. The thematic analysis is defined by Braun and Clarke (2006, p. 6) as "a method for identifying, analyzing, and reporting patterns (themes)

within data." The thematic analysis involved a familiarization of self with data, production of initial codes, theme search, theme review, theme definition, and report production. The corpus data gleaned from the observation, the survey, and the documents of digital stories were categorized into repetitive themes. From this step, relevant data sets for the three research questions were yielded.

Table 1. Stages of a digital storytelling project

Stages	Details		
Stage 1: Introduction	Introduce prospective teachers to the digital storytelling project	Prospective teachers explore three types of digital stories: a personal narrative, historical documentary, and specific purpose narrative	Assist prospective teachers to use Windows Movie Maker and Powtoon
Stage 2: <i>Subak</i> Site Visit	Guide prospective teachers to do a site visit to <i>Subak</i>	Prospective teachers identify problems found in <i>Subak</i> , conduct interview with a source person (if necessary), review related literature, and propose feasible solutions to the problems	Prospective teachers report their findings in the classroom accompanied by photos taken during the site visit
Stage 3: Creation of Digital Stories	Prospective teachers create story lines with their groups based on a text type, such as a specific purpose narrative	Prospective teachers consult and edit their story drafts	Prospective teachers prepare equipment, shoot, and edit their digital stories
Stage 4: Presentation of Digital Stories and Reflection	Provide opportunities to prospective teachers to present their digital stories	Facilitate peer feedback and give feedback to each team	Assist prospective teachers in reflecting the whole process of digital storytelling project

## FINDINGS AND DISCUSSION

### The emergence of five themes under a topical theme about *Subak*

In the first meeting, the author introduced the participating prospective teachers to digital stories. Some relevant examples of digital stories were presented. Then, a workshop was conducted to familiarize the prospective teachers with digital stories (e.g., types, functions, and forms of media used) and the technique of creating and editing digital stories. In the third meeting, the prospective teachers were assigned to visit a *Subak* site. As Gruenewald (2008) argues, to inspire learners to take social and ecological action in their local place, which is an aim of place-based education, as well as encourage them to "challenge the assumptions, practices and outcomes taken for granted in dominant culture..." (Gruenewald, 2003, p. 3) and to make critical pedagogy happen, educators should equip students with guiding prompts. The author provided some guiding questions for the site visit:

1. What is happening here?
2. What needs to be transformed, conserved, restored, or created in this place?
3. Who am I in this place?
4. Whose voices do we need to hear in this place?

5. What can I do to solve problems in this place? What can I change?

Following the site visit, the prospective teachers reported their findings based on the guiding questions in the classroom. Since each group visited different *Subak* sites in some districts of Bali, various unique problems were documented. This critical reflection leads students to decide their own definitions about a case (Horwitz, 2012). This engagement was more beneficial rather than being told about *Subak* and its challenges by the author as a lecturer. From this observation, the prospective teachers brainstormed possible topics to be written into a draft of their digital stories. They were given three weeks to draft a story, prepare essential equipment, create a digital story, and edit the story. Finally, the seventh meeting was dedicated to watching the digital stories and reflecting on the presentation of the digital stories. During the reflection process, peer and author's feedback was given. Encountered challenges and solutions taken were also presented by each group.

Five themes emerged in the collaborative digital storytelling project, including: (1) land selling, (2) pollution in the *Subak*, (3) the beauty and biodiversity of *Subak*, (4) water shortage, and (5) the impacts of preserving *Subak*. More than a half of the digital stories narrated about the disadvantages and circumstances that

might occur in the future if the Balinese surrendered their lands to investors. Land selling was further elaborated into *Subak* land conversion into tourism and housing purposes. There were five forms of digital story generated by the prospective teachers: (1) photographs, (2) stick figures, (3) Balinese puppets, (4) original drawings, and (5) cartoons with the help of *Powtoon* and *Flash Generator*. The use of *Flash Generator* was not anticipated by the author considering that it was prospective teachers' first time in producing digital stories. Yet, this fact was a good sign that the prospective teachers were aware of technology development, and they tried their best to finish their digital stories. This finding challenges one of the results of empirical research concerning developing the digital information literacy (DIL) in higher education reported by Jeffrey, Hegarty, Kelly, Penman, Coburn, and

McDonald (2011) where technophobic participants tended to prevent taking a risk or exploring an unknown digital territory in technological project engagement. Although most of the prospective teachers were unfamiliar with DST by using a cellphone or camera, they were able to solve solutions and steer their project by using even more complex software. It was an extraordinary effort into producing a cartoon movie by using *Flash Generator*. This responsiveness may lead to a greater impact in the future where the prospective teachers use their creativity and innovation in designing learning materials to cope with its unavailability. Moreover, all the groups included popular songs and music available in the video editing application. In Table 2, a mapping of themes projected in the digital stories produced by prospective teachers is presented.

Table 2. A mapping of theme produced in the digital stories

Theme	Number of Stories Produced Related to the theme
Land Selling	16
Pollution	5
The Beauty and Biodiversity of <i>Subak</i>	7
Water Shortage	2
Impacts of Preserving <i>Subak</i>	1

**Analysis of criticality in some of the digital stories produced by prospective teachers**

Land selling was brought about by most of the prospective teachers in their digital storytelling project. In this case, the project encouraged the prospective teachers to view themselves being capable to do something about issue faced by *Subak* and actively seek for solutions to improve the situation (Alter, 2015). Foreigners were generally described as prospective investors who were attracted to the scenery of *Subak* and willing to transform it into villas or hotels although they had to spend a large amount of money on a site strategically located close to a main road. Farmers were illustrated in doubt, whether to sell their only legacy or endure hardship of economy for the rest of their lives. They were also notified that the only skill they have is farming. Therefore, giving away their lands could be a bad luck starter not only for themselves but also for other Balinese people. As their big money was spent materially on a car, a house, and other secondary needs, farmers contributed to the loss of Balinese heritage for the next generation. Some groups narrated how land selling had been responsible for the loss of kids' playgrounds. For instance, Sonia's group illustrated the issue as follows:

The rice fields were very large. Therefore, kids were able to play kites over there. Farmers planted their rice paddy, and they brought their cows to get grass there. One day, there was a strange thing in the middle of the rice field. "What is that, *Bapa*?" asked the son to his father. "Maybe they want to give us *sela*," said the father. In the other case, there was a transaction between a rice field owner and the investor. Few days later, there was a

construction of a big building at the place. A large and luxurious hotel stood over there. There was no place to play kites for kids and no place for the cows to get grass. So, the kids were playing their kites on the top of the hotel and, the funniest thing, a cow entered the hotel to get grass in the hotel's garden....

(Excerpt of a digital story entitled "Save *Subak*")

The excerpt of a digital story entitled "Save *Subak*" above shows that there was a case where a farmer and his kids did not know that the land they cultivated would be sold to an investor by the land owner. They did not know the word *sale* which was set up in the rice field. They misinterpreted it into *Sela*, a Balinese term for "yam." The father (*Bapa* in Balinese) did his job gracefully while, on the other hand, the land owner sold his rice field easily. The climax of the story was when both the farmer and his kids were forced to leave the hotel since they played kites and fed their cows in the hotel yard. The ending was presented in a sad tone, one of some consequences following the land selling. The group closed their digital story by reminding young learners the importance of *Subak* in our life, and thus it was not justifiable to give it up to investor. This digital story was completed by original drawings of the prospective teachers and Balinese *gamelan* (traditional Balinese musical instruments), which provided the viewers (Figure 1) with sentimentality. The story was explored in the economic, political, and social implications of *Subak* unsustainability as a form of prospective teachers' critical reflection on their own environment, "to identify non-viable elements in their own lives as well as the tensions among conflicting aims" (Lutge, 2015, p. 10).

Environmental issues were also explained carefully under this theme such as loss of rich biodiversity in *Subak* site as they had no more source of food left. Changes in the ecosystem of *Subak* and possible pollutions occurred after construction of villas and hotels. The first solution proposed by the prospective teachers regarding this issue was for the government to make stricter regulations about land selling and land conversion into tourism purposes since the number of tourist facilities has been excessive. The second solution was encouraging farmers and other parties to oppose the conversion of productive agricultural lands into any non-agricultural purposes. They expected that the message could be transferred through the medium of digital stories. The prospective teachers agreed that further actions to disseminate these digital stories were extremely needed to ensure that necessary information, recommendations, and criticism could reach more viewers. These findings are a response to *a day of reckoning* assertion proposed by Grimm (2015) where apparently prospective teachers were aware of connecting the scientific dots quickly. In short, a local campaign against the destruction of *Subak* to raise awareness was carried out through the DST project. The prospective teachers were fully informed about the effect of selling land not only on the Balinese ecosystem but also on future generations.



Figure 1. The climax of "Save *Subak*"

The second most produced topic was about the beauty and biodiversity of *Subak*. The DST project motivated the prospective teachers to look at their local environment and assist them to be more mindful about the beauty and value of nature and, thus, these student-created materials included concrete references for environmental education in ELT (Alter, 2015). Sociocritically speaking, a digital story entitled "The Money Tree" illustrated how biodiversity of *Subak* was the truest wealth for both the Balinese in general and farmers in particular. Plants in the site were extraordinarily valued not only for money gained during the harvest moon but also for their vital function in the ecosystem which created balance in life. The story further described how land and water pollution led to extinction of particular species, a source of food for many animals, and failing harvest. Some actions that created pollutions were represented in the video such as

throwing rubbish into the river and irrigation system, using artificial fertilizers, and burning rice straws. Money, in the end, would mean nothing without nature.

#### Challenges and implications: the implementation of the digital storytelling (DST) project

60% of the participants indicated an editing process as the most challenging part of this collaborative task. Some of them experienced difficulties in dealing with editing application on their smartphone, especially some failures that occurred during the editing process, and thus, it took too much time to edit their short video. The rest reported that much time was spent because they believed that some scenes needed improvement. Thus, they drew new pictures and prepared extra properties prior to re-shooting.

Story development became the second most challenging process for the students. They faced challenges in deciding what to include in their stories as they had many ideas, which could not be covered comprehensively in their stories. For example, Angga, a male student, reported:

Writing a story was challenging for us. We need to discuss again and again since we have too many ideas on our minds. In the end, we only needed to choose one idea and transform it into a nice story. Another debate session occurred during video shooting. We had different perspectives on angles and ways to narrate our stories.

(P1, Informal Interview, 20 December 2015, Author's Translation)

Angga's statement was supported by Agus, a male student:

It was very hard for us to decide a story to be used in our digital stories. We have different ideas. We have debated a lot of arguments. But, we successfully solved it and here is our works.

(P2, Informal Interview, 20 December 2015, Author's Translation)

While some students stated writing story as one of the most challenging processes during the creation of digital stories, other students found difficulties in language use especially in word choice. Many terminologies were hard to acquire as the prospective teachers had little knowledge of their heritage, *Subak*. All the prospective teachers recounted that they had not got any information on *Subak* from their schools and textbooks. This suggests that schools and textbooks serve as socio-institutional agents of "creating understanding about the role of language in representing and shaping natural and social realities," which play a crucial role in the future (Lutge, 2015, p. 9).

In a nutshell, there were three major challenges faced by the prospective teachers in finishing their digital stories. Some students experienced technical problem during the editing process as they lacked



technological proficiency. Several students identified problems encountered in the phase of writing story. They had different opinions and imagination that made them hard to choose which ideas deserved to be included in their digital stories. The rest acknowledged that their limited competence on the issue of *Subak* was due to little to almost no information about it gained from their formal education.

The prospective teachers further suggested including *Subak* in the curriculum of Balinese school considering the vital role of *Subak* and its current problematic conditions. 90% of the participants recounted that they would create digital stories for their own classroom as it was important for teachers to introduce environmental problems, such as those related to *Subak*. A female participant narrated:

I think that I am going to use digital stories in my classroom because this tool is attractive especially for kids. It has a great possibility of increasing students' motivation to learn. Complex information on *Subak*-related problems/issues can be interestingly presented through the medium of digital stories. A digital story is an appealing instructional tool for integrating environmental education into EFL classes.

(P3, Informal Interview, 20 December 2015,  
Author's Translation)

## CONCLUSION

This article has presented how a collaborative digital storytelling (DST) project could be implemented in Indonesian higher education. The use of DST could promote language learners' awareness of environmental education in which a localized theme could be presented. As was evidenced by this research, DST is a compelling instructional tool for prospective teachers especially in nurturing their criticality of their local environment to establish critical language pedagogy in the ELT department. The findings show that prospective teachers delivered multidimensional problems regarding *Subak* as well as feasible solutions to the problems. In other words, multiple perspectives with different layers of analyses were discovered in their digital stories. Considering these findings, the student teachers-created materials were worth using in the context of Bali or Indonesia in general. The prospective teachers could reap such benefits as the development of academic skills, enhancement of creativity and innovation, and multimedia literacies. Moreover, the production of digital stories could be completed without the use of high-tech equipment. The prospective teachers simply utilized their mobile phone and video editing applications on it. This study provides an example of how a collaborative digital storytelling (DST) project can be enacted in higher education through the use of varied technological tools, software, and forms for a specific purpose of environmental education. Further research needs to investigate how DST values diversity

among students. It may also examine learner's identity and diversity which may influence the production of digital stories about students' living environments. Critical perspectives of prospective teachers from a diverse cultural background of their local environment can be taken into account.

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