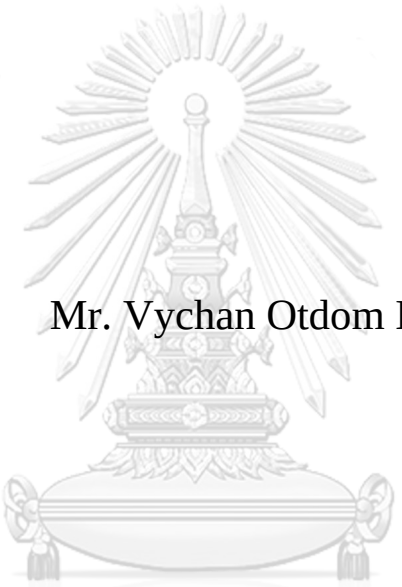
Digital Storytelling for Cambodian Undergraduate Students' EFL Reading and Digital Literacy

Mr. Vychan Otdom Hon



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การเล่าเรื่องแบบดิจิทัลสำหรับการอ่านภาษาอังกฤษและการรู้ดิจิทัลของนักศึกษาระดับปริญญาตรีชาวกัมพูชา

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วีจันทร์ อุดม ฮอน : การเล่าเรื่องแบบดิจิทัลสำหรับการอ่านภาษาอังกฤษและการรู้ดิจิทัลของนักศึกษาระดับปริญญาตรีชาวกัมพูชา. (Digital Storytelling for Cambodian Undergraduate Students' EFL Reading and Digital Literacy) อ.ที่ปรึกษาหลัก : ผศ. ดร.อาภัสรา ชินวรรโณ

งานวิจัยนี้มีวัตถุประสงค์เพื่อ (1) ศึกษาประสิทธิผลของการเล่าเรื่องแบบดิจิทัลที่มีต่อทักษะการอ่านภาษาอังกฤษของนักศึกษาระดับปริญญาตรีชาวกัมพูชา (2) สำรวจทัศนคติของนักศึกษาระดับปริญญาตรีชาวกัมพูชาที่มีต่อการรู้ดิจิทัลหลังเรียนด้วยการเล่าเรื่องแบบดิจิทัล และ (3) สำรวจทัศนคติของนักศึกษาระดับปริญญาตรีชาวกัมพูชาที่มีต่อการเล่าเรื่องแบบดิจิทัล กลุ่มตัวอย่างที่ใช้ในการวิจัยได้แก่ นักศึกษาระดับปริญญาตรีชั้นปีที่ 1 สาขาวิชาเอกภาษาอังกฤษ คณะภาษาต่างประเทศ มหาวิทยาลัยกัมพูชา จำนวน 18 คน ข้อมูลเชิงคุณภาพและปริมาณถูกนำมาวิเคราะห์ โดยใช้ Wilcoxon Ranked Sign Test ในการวิเคราะห์ความแตกต่างของผลทดสอบก่อนเรียนและหลังเรียน ตามด้วยค่าขนาดของผลเพื่อให้บรรลุวัตถุประสงค์ของการวิจัยข้อที่ 1 สำหรับวัตถุประสงค์การวิจัยข้อที่ 2 ใช้สถิติเชิงพรรณนา การวิเคราะห์เนื้อหา และ Friedman' Test และใช้การวิเคราะห์เนื้อหาสำหรับวัตถุประสงค์การวิจัยข้อที่ 3

ผลของการวิจัยพบว่าค่าคะแนนการอ่านภาษาอังกฤษหลังเรียนด้วยการเล่าเรื่องแบบดิจิทัลของนักศึกษาสูงขึ้นกว่าก่อนเรียนอย่างมีนัยสำคัญที่สถิติ ($p < .05$) ค่าขนาดของผลคือ 0.69 นอกจากนี้ หลังจากเข้าร่วมการเล่าเรื่องแบบดิจิทัล นักศึกษามีทัศนคติเชิงบวกต่อการรู้ดิจิทัลหลัง นักศึกษามีทัศนคติเชิงบวกต่อการเล่าเรื่องแบบดิจิทัล หลังการเรียนด้วยการเล่าเรื่องแบบดิจิทัล

สาขาวิชา	การสอนภาษาอังกฤษเป็นภาษาต่างประเทศ	ลายมือชื่อนิสิต .....
ปีการศึกษา	2563	ลายมือชื่อ อ.ที่ปรึกษาหลัก .....

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Vychan Otdom Hon : Digital Storytelling for Cambodian Undergraduate Students' EFL Reading and Digital Literacy. Advisor: Asst. Prof. APASARA CHINWONNO, Ph.D.

The objectives of the study were threefold: (1) to investigate the effect of Digital Storytelling on Cambodian Undergraduate Students' English reading ability, (2) to explore Cambodian Undergraduate Students' perception on their digital literacy after participating in Digital Storytelling, (3) to explore Cambodian Undergraduate Students' perceptions on Digital Storytelling,. The participants of the study were English-majored students (*n* = 18) in the foundation year from the School of Foreign languages (SFL) at the University of Cambodia (UC). Both qualitative and quantitative data were collected. For the first research objective, a Wilcoxon Signed Rank test was implemented to determine the difference between the pre-and post-English tests, followed by the effect-size calculation. For the second research objective, descriptive statistics, content analysis, and Friedman's test were used. For the third research objective, content analysis was utilized

The results of the study showed that the post-test scores of the students from the English reading test were higher than the pretest scores of the students at a significant level ($p < .05$) with a large effect size of 0.69. Furthermore, After participating in Digital Storytelling, the student had positive perceptions toward their digital literacy. In general, they held positive perceptions toward Digital Storytelling.

Field of Study:	Teaching English as a Foreign Language	Student's Signature .....
Academic Year:	2020	Advisor's Signature .....

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Vychan Otdom Hon

TABLE OF CONTENTS

Page

List of Tables

Page

List of Figures

Page

Chapter I

Introduction

Background of the Study

Literacy is traditionally defined as the ability to read and write, and this chiefly echoed the era in which it was the sole means used to access, communicate, and interpret the knowledge in written and/or printed texts (Savage & Barnett, 2015). However, in today's ever-increasingly digital society, this changes because participating in digital spaces is more challenging due to the technology advancement, thereby calling for a myriad of skills to navigate in those digital spaces (Broadband Commission for Sustainable Development, 2017). With this emerges a new form of literacy: Digital literacy. It is defined by Hague and Payton (2010, p. 19) as "skills, knowledge, and understanding that enables critical, creative, discerning and safe practices when engaging with digital technologies in all areas of life". With that having said, an arsenal of digital literacy practices is a prerequisite to living and surviving in this contemporary society.

Recognizing the importance of digital literacy, the prime minister of Cambodia, instructed the Supreme National Economic Council to formulate an all-inclusive Digital Economy Policy Framework, which stresses the utmost importance of the promotion of digital literacy in all sectors (Office of the council of Ministers, 2019, March 26). In education, the Ministry of Education, Youth, and Sport (MoEYS) in Cambodia stated in Education Strategic Plan 2019-2023 that Information Communication Technology (ICT) will be integrated into teaching, learning, and knowledge sharing in all education sectors (MoEYS, 2019). ICT, therefore, will need to be promoted in both teaching and learning of all subject areas, including English.

This emphasis on the use of ICT in English language teaching and learning is very beneficial for the learners because it improves their language studies and provides a fun and motivating learning experience (Yoon, 2014). In practice, EFL teachers can assign students to work individually, in dyads, or in teams to find and present information with some selected online tools (Son, 2018), and Son further added that to present what the students have found, one interesting method that the teachers can use with the students is Digital Storytelling.

Digital Storytelling (DST) is a project-based instruction that uses storytelling, technology, and group work to accommodate the making of short video clips with multi-media (e.g. images, music, sounds, video clips, etc.) to express a compelling story (Castañeda, 2013; Christiansen & Koelzer, 2016; Lal et al., 2015). In second language education, DST provides many benefits including providing novel pedagogical methods and more varieties than the conventional methods, "personalizing learning experience", forming authentic scenarios simply and significantly, and increasing learners' engagement in the learning process (Moradi & Chen, 2019). Moreover, DST allows students to engage in an online and/or offline research of various information from different sources while examining and synthesizing them, hone their communication skills through learning to structure their thought, inquiring, sharing opinions, and narrating, and foster their emotional intelligence, collaboration, and social learning through critiquing their work as well as those of their friends (Robin, 2016).

In addition, DST can benefit language learners immensely. Empirical studies have shown that DST, besides improving English oracy skills (Tahriri et al., 2015)

and writing skills (Sepp & Bandi-Rao, 2015), can also enhance language learners' reading ability (Enokida, 2016; Nassim, 2018; Rahimi & Yadollahi, 2017; Vu et al., 2019), and digital literacy (Chiang, 2020; Vu et al., 2019). The reasons for the improvement in language skills and digital literacy may be due to the multimodal nature of DST (Yoon, 2013), DST's connection to Culturally Responsive Instruction which can assist language learners in improving their language ability in a meaningful and natural context (Stanley, 2018), and DST's relation to "technology-mediated, task-based, multiliteracy project" (Castañeda, 2013). In a digital story project, not only do students make use of their language skills meaningfully, but they also need to use digital tools. Vu et al. (2019) stated that when creating digital stories, students had to use various technological tools, software, and web applications. Therefore, Digital Storytelling (DST) is effective in improving language skills while promoting digital literacy of the learners of English, especially those in Cambodia.

Statement of the Problem

Despite English being considered as a dominant foreign language in Cambodia and the integration of English, in addition to French, as a core subject of study in the national curriculum of formal education by the Ministry of Education, Youth, and Sport (MoEYS, 2015), the majority of Cambodian English learners' proficiency is not promising. This is the case because based on the EF English Proficiency Indices (EF EPL, 2015, 2016, 2017, 2018, 2019), Cambodia has been ranked as one of the countries with very low English proficiency from 2015 to 2019. This is perhaps partly because Cambodia was introduced to the English Language later than other countries. Moore and Bounchan (2010) stated that teaching and

learning English in Cambodia was illegal until the late 1980s. Moreover, it may be due to the traditional teaching methods still prevalent in most of the schools in Cambodia.

Nevertheless, to tackle this problem, numerous efforts have been taken. Firstly, the Ministry of Education, Youth, and Sport (MoEYS) introduced new teaching principles in all subjects including English (MoEYS, 2015). Secondly, there were organizations (e.g., Volunteer Service Oversea), that helped improve English teaching and learning in Cambodia. Lastly, in the past years, there have been empirical studies conducted on English proficiency in terms of its macro skills to contribute to English learning and teaching in Cambodia. Be that as it may, most studies dealt with writing, listening, and speaking (Chan & Srun, 2016; Hong, 2009; Leaph, 2020; Roth & Suppasetseree, 2016; Yin & Chinokul, 2018). There has been, however, little empirical research done in the area of EFL reading literacy in the Cambodian context, despite its importance in English language development.

Reading is essential for the development of the English language because, as claimed by Krashen (2020, May 1), it can provide "compelling inputs" that support and hone other language skills. Stated in another way, reading can better students' reading, writing, listening, and speaking abilities as well as enriching their vocabularies (Anderson, 2008, 2018; Bamford & Day, 2004). Reading is also a sought-after English language skill among Cambodian EFL students, especially the undergraduate students, as shown in the result of Sothan's (2015) study on the English language needs of Undergraduate students in Cambodia. Despite that, the reading ability of Cambodian undergraduate students is an issue. According to the

2019 test summary of TOEFL iBT® (ETS, 2019a), the mean score of Cambodian undergraduate test-taker in reading is only 16 (low intermediate) out of 30; based on the performance descriptors of the TOEFL iBT® test (ETS, 2019b), low-intermediate readers' overall understanding of the English texts is limited. Thus, Cambodian undergraduate students' reading ability is still problematic.

Therefore, to improve Cambodian undergraduate students' reading ability, to contribute to the empirical reading research in the Cambodia context, and to propose a reading instruction that aligns with the Education Strategic Plan 2019-2023 of the Ministry of Education, Youth, and Sport (MoEYS) in Cambodia, Digital Storytelling (DST) was used in this study.

Research Questions

1. What is the effect of Digital Storytelling (DST) on Cambodian undergraduate students' EFL reading Literacy?
2. What is the perception of Cambodian undergraduate students on their digital literacy after participating in Digital Storytelling (DST)?
3. What is the perception of Cambodian undergraduate students on Digital Storytelling (DST)?

Research Objectives

1. To investigate the effect of Digital Storytelling (DST) on Cambodian undergraduate students' EFL reading literacy
2. To explore the perception of Cambodian undergraduate students on their digital literacy after participating in Digital Storytelling (DST)

3. To explore the perception of Cambodian undergraduate students on Digital Storytelling (DST)

Statements of Hypothesis

The previous studies on the effect of Digital Storytelling (DST) on students' EFL reading literacy have shown that the implementation of DST could positively impact the student's EFL reading literacy (Enokida, 2016; Nassim, 2018; Rahimi & Yadollahi, 2017; Vu et al., 2019). Therefore, the following hypothesis was tested:

- The post-test median score of Cambodian undergraduate students' EFL reading literacy is statistically significantly higher than the pre-test median score at 0.05 level.

Definitions of Terms

1. **Digital Storytelling (DST)** refers to a project-based instruction in which students work in groups to research the topic they choose and then make a short video clip to present what they have found in the form of storytelling. In this study, the researcher designed the project-based instruction by adapting Yearta's (2019) DST framework.
2. **EFL reading literacy** refers to the ability to construct the meaning from the English texts through locating, understanding, evaluating, and reflecting. Moreover, EFL reading literacy will be measured through the English Reading Test based on PISA 2018 Reading Framework (OECD, 2019b).
3. **Digital literacy** refers to the ability to use technologies and level of digital literacy skills. It includes five elements: Information Search and Evaluation, Creation, Communication, Collaboration, and Online Safety (Son et al., 2017).

4. **Cambodian undergraduate students** refer to English-majored students from the School of Foreign Languages (SFL) at the University of Cambodia (UC). At SFL, they are trained for career prospects in areas ranging from English teaching to translation services, and other non-governmental and governmental institutions.
5. **Cambodian undergraduate students' perceptions** refer to English-majored SFL students' views and judgments toward Digital Storytelling (DST) and digital literacy after participating in Digital Storytelling (DST). The former will be explored through the interview protocol and digital storytelling rubric, while the latter will be done so via a digital literacy questionnaire translated from Son's (2015) Digital Literacy Questionnaire and Digital Story Rubric.

Scope of the Study

1. **Participants** included 18 English-majored students from the School of Foreign Languages (SFL) at the University of Cambodia (UC). Their age ranges from 19 to 23 years old, and they were from different social-economic backgrounds. At SFL, English-majored students are groomed for career prospects in areas ranging from English teaching to translation services, and other non-governmental and governmental institutions.
2. **Variables** included the independent variable (IV), Digital Storytelling (DST), and the dependent variables (DVs), Cambodian undergraduate students' EFL reading and digital literacy.

Significance of the Study

The significance of this study was three-fold. Firstly, this study greatly contributed to the EFL reading literacy research in Cambodia, which thus far has been scarce. Secondly, it provided teaching and learning benefits. As for EFL Cambodian teachers, this study introduced a novel, pedagogical method used to enhance students' EFL reading and digital literacy, which aligns with the Education Strategic Plan 2019-2023 of the Ministry of Education, Youth, and Sport (MoEYS) in Cambodia. As for EFL Cambodian students, this study ushered in a new, technology-oriented learning experience of EFL reading literacy. In it, not only do they improve their EFL reading literacy meaningfully, but they also improve their digital literacy, which is considered as the 21st-century essential. Thirdly, it provided instrumental value for Cambodian researchers. Provided that the researcher of this study translated Son's (2015) Digital Literacy Questionnaire in Khmer, the aforementioned researchers can utilize the translated questionnaire for further studies related to digital literacy in Cambodian. Plus, other instruments could also be used in further studies.

Overview of the Study

The study investigated the effectiveness of Digital Storytelling (DST) on the Cambodian undergraduate students' EFL reading and digital literacy. The study includes five chapters.

Chapter I introduces the background of the study and the problem the present study aims to deal with. In addition, the research questions, objectives, and hypothesis is described in this chapter. After this, the scope of the study, definitions of terms, and significance of the study will be elaborated.

Chapter II includes a theoretical and empirical review of the present study. The review is grouped under three sections, which include digital literacy, Digital Storytelling (DST), and EFL reading literacy. The chapter ends with a summary of concepts, theories, and studies discussed.

Chapter III focuses on the research methodology of the present study. It encompasses research design, context, population and participants, research instruments, research procedures, and the data-collection and data-analysis methods.

Chapter IV presents the findings of the present study in conjunction with the respective research questions.

Chapter V consists of the summary of the study, discussions of the findings, limitation of the study, pedagogical implication, and recommendation for further studies

Chapter II

Literature Review

This chapter is divided into three sections. The first section is on digital literacy, which includes the definition of digital literacy and its elements and assessment. The second section is about Digital Storytelling (DST). In it, the definition of DST will be introduced first, which is followed by its components and instructional framework. Then it will focus on the connection of DST to Culturally Responsive Instruction and technology-mediated task-based multiliteracy project, DST assessment, and the studies on the effect of DST on reading ability. The third section is about EFL reading literacy. In this part, it will touch on the L1 reading literacy and L2 reading literacy, and lastly reading literacy assessment will be elaborated on.

Digital Literacy

Definition of Digital Literacy

Digital literacy is first coined by Gilster (1997) as the ability to comprehend, critique, and synthesize multimodal information delivered by the computer. Digital Literacy came into existence because of the following phenomena: (1) the widespread ownership of personal computers in the 1980s in which word processing revolutionized writing, (2) the emergence of hypermedia and the internet in the 1990s in which hypermedia bettered the linkage of ideas and text, and (3) the rise of the digital economy in which people from all around the world have access to knowledge (Dobson & Willinsky, 2009). The term “digital literacy” was developed upon the discussion of visual literacy which refers to the skill to comprehend the information using images or non-textual symbols, technological literacy which refers to the skill to use technological tools, computer literacy, which refers to the skill developed in the

1980s to use personal computers to accomplish certain things and information literacy which refers to the ability to find, critique, use, and share information ("Digital literacies ", n.d.).

Throughout the years, digital literacy has been given different definitions (Hague & Payton, 2010; Marsh et al., 2017; Savage & Barnett, 2015; Son, 2015). For example, Savage and Barnett (2015), who looked at digital literacy from a broader perspective, claimed that digital literacy can be understood based on the definition of conventional literacy in the sense that it is still about interacting with and communicating the information but with a technological twist; that is, the modes and platforms people use to interact with and communicate the information are various. In a similar token, Marsh et al. (2017) deemed digital literacy as "multilingual, multimodal, and multimedia communicative acts", instead of skills for certain platforms, devices, or apps. Moreover, Hague and Payton (2010) defined digital literacy as "skills, knowledge, and understanding that enables critical, creative, discerning and safe practices when engaging with digital technologies in all areas of life". In addition, Son (2015) deemed the awareness of online safety and the ability to utilize digital technologies to create, communicate, collaborate, search for, and evaluate audio-visual, or written texts. Lankshear and Knobel (2015) stated that there are three key features of all the mainstream definitions of digital literacy: First, digital literacy is limited to creating or communicating roles concerning information; second, it involves interacting with information, which means critiquing or validating the credibility or reliability of the information; third, most definitions assigned to digital literacy as "a capacity, ability, or skill", which is something one has or lacks.

Elements of Digital Literacy

Synonymous with its definitions, the elements of digital literacy have also been conceptualized differently by different scholars (Bawden, 2008; Eshet-Alkalai, 2004; Payton & Hague, 2010; Son, 2015). Each one will be summarized below in chronological order.

Firstly, Eshet-Alkalai (2004) deemed digital literacy as encompassing five elements: (1) “photo-visual literacy”, which means the ability to fluently read and comprehend messages and instructions presented in both visual and graphic formats, (2) “reproduction literacy”, which means the ability to construct new concepts through manipulating or reproducing multimedia, (3) “branching literacy”, which means the ability to stay on the hyperspace track while navigating through complex digital realms, (4) “information literacy”, which means the ability to access, synthesize, and critique information, and (5) “socio-emotional literacy”, which means the ability to possess abstract thinking and able to collaborate with others virtually to construct, share, and evaluate data or information.

Secondly, Bawden (2008) narrowed down digital literacy to four general elements: (1) “underpinnings”, which are basic computer skill sets; (2) “background knowledge”, which refers to knowing the novel formats of information and their places in the digital world, (3) “central competencies”, which refers to foundational competencies and skills, ranging from information evaluation to knowledge organization, and to comprehending both digital and non-digital format, and (4) “attitudes and perspectives”, which encompasses autonomous learning and netiquette.

Thirdly, Payton and Hague (2010) claimed that digital literacy contains eight elements: (1) “creativity” – this refers to the ability to make use of creative and imaginative thinking with the aid of technology to produce outputs in “different formats and modes”, (2) “critical thinking and evaluation” – this refers to the ability to make analysis, examination, and critique on the “digital media and its content”, (3) “cultural and social understanding” – this refers to the ability to take into consideration the fact that people’s understanding and usage of digital medias and their contents are, to large extent, influenced by the culture and society they are in, (4) “collaboration” – this refers to the ability to take advantage of technology to support and enhance one’s collaboration with other both inside and outside the classroom, (5) “the ability to find and select information” – this refers to the ability to look for what information required for the task at hand and where to find it on the digital platform and to be “aware of intellectual property issues” such as plagiarism and copyright, (6) “effective communication” – this refers to the ability to select the different modes of information and technology that suit to particular audience so as to make one’s messages understood better, (7) “e-safety” – this refers to the ability to stay cautious when navigating in the digital platform or using digital devices. As such is knowing what is deemed as appropriate use and content, and (8) “functional skills” – this refers to skills in knowing how to competently use and adapt to the different platforms.

Lastly, according to Son (2015), digital literacy contains five elements: (1) “information search and evaluation”, which refers to searching for, evaluating, and managing information, (2) “creation”, which means constructing meaning, materials, and resources, and creating activities, (3) “communication”, which deals with the effective communication in the digital networks, (4) “collaboration”, which consists

of collaborating and sharing ideas and resources with others, and (5) “online safety”, which concerns with the development of safe practices and critical engagement.

Assessment of Digital Literacy

Digital literacy plays an essential role in the education sector; therefore, as stated by Covello and Lei (2010), its importance necessitates its assessment. Embedding digital literacy assessment into the framework of education can assist the institutional initiatives of ICT literacy, provide guidance and evaluation for innovations and changes in curriculum, offer direction for individual learning, and clearly define skills and knowledge (Katz, 2005). Digital literacy assessment can be done through a survey or task that measures digital literacy (Jenkins, 2015). Moreover, educators or policymakers can either design their digital literacy assessment or choose from the existing one.

Firstly, educators or policymakers can design their digital literacy assessment instruments. When developing the digital literacy assessment, Sparks et al. (2016) recommend taking into consideration issues including (1) specific definition of digital literacy construct; (2) the contexts of information to be dealt with; (3) the degree to which certain technological tools are included and if they formulate a context for problem resolution or are the aim of the assessment; and (4) scoring consideration. For an illustration, Son (2015), a CALL specialist, constructed a digital literacy questionnaire that can be used to gauge information on the language learners and teachers’ digital literacy. In his questionnaire, there are five sections. The first section deals with the background information, while the second and third sections focus on self-ratings of digital literacy skills and usage of digital technologies. Next, the fourth

section contains a digital literacy test and the fifth section looks at the factors impacting the use of digital technologies. Son et al. (2017) described two studies that implemented that questionnaire on students with non-English speaking backgrounds from the contexts of Japan and Australia. The result from the two studies showed that students were aware of and interested in the use of digital tools and their actual and perceived levels of digital literacy were contrasting. One implication from it is that digital literacy in language education can be developed by providing useful instructions and opportunities to learn about the resources and digital technologies for language learning and how to access them.

Second, educators or policymakers can also make use of the existing digital literacy assessment instruments. There are a plethora of existing digital literacy assessment instruments, and over the years there have been studies conducted the reviews on instruments. The most notable among such studies are the ones by Spark et al. (2016) and Carretero et al. (2017). While Spark et al. (2016) conducted the review on the instruments and placed them into three groups based on item design, which includes MCQ items, constructed-response items, performance-based tasks, and assessment focus which consists of information literacy, technology literacy, digital information literacy, Carretero et al. (2017) conducted a review on the assessment instruments of digital literacy and placed the instruments into three main groups based on the approach to data collection:

1. Performance assessment, which is when people, who are in stimulations or using common software tools to solve authentic, real-life issues, are assessed by software or human observers.

2. Knowledge-based assessment, which is when people do the test carefully designed to assess not only declarative but also procedural knowledge of digital literacy.
3. Self-assessment, which refers to when people are required to evaluate their skills and knowledge through questionnaires that include structured scales and/or free-form reflection.

When choosing the existing instrument, Covello and Lei (2010) said that educators or policymakers should consider the output needs, social needs, and other factors which include implementation, feasibility, approach, scope, cost, and reporting structure.

Digital Storytelling (DST)

Definition of DST

Storytelling was a powerful and important means to teach and learn in the past (Moradi & Chen, 2019), and it still is nowadays but with a digital add-on. Now there is a new form of storytelling: Digital Storytelling (DST). Originally founded in the late 1990s by Joe Lambert and Dana Atchely, Digital Storytelling (DST) is a short video clip with a combination of photographs, voice-over narration, and many other types of audio (Lambert, 2009). It is also a project-based instruction that uses storytelling technology and group work to accommodate the making of short video clips with multi-media (e.g. images, music, sounds, video clips) to express a compelling story (Castañeda, 2013; Christiansen & Koelzer, 2016; Lal et al., 2015). Moreover, DST was categorized into three types: personal narrative, the personal story of an incident important to a person, historical documentaries, the stories that explore the past events, and the stories intended to elaborate on the particular concept

or practice (Robin, 2006). Moreover, Digital Storytelling also possesses some notable components

Elements of DST

According to Joe Lambert, there are seven elements of Digital Storytelling (DST): “Point of View”, “Dramatic Question”, “Emotional Content”, “Economy”, “Pacing”, “The Gift of Your Voice”, and “soundtrack”, each of which is summarized by Moradi and Chen (2019) as follows:

1. “Point of View”: since one affordance of storytelling is to allow the storytellers to use their personal experience, learners should build their digital stories from their understanding and personal experience. As such is the usage of the first-person perspective instead of the third-person one to construct the digital stories. Stated differently, this elaborates the storytellers’ perspectives and clarifies the aim and key point of the story.
2. “Dramatic Question”: an effective digital story possesses a compelling or dramatic question that will be answered at the end of the story and grabs the listeners’ attention throughout the story.
3. “Emotional Content”: this is another aspect of an effective digital story that can make the listeners emotional when listening to the story. Once screened, effective digital stories can elicit from the listeners' tears, laughter, and expression of joy.
4. “Economy”: this refers to the usage of a sufficient amount of content with appropriate detail to not overwhelm listeners with superfluous information.

Keys to providing the digital story content are precision, brevity, and simplicity, all of which fall under the economy of the digital story.

5. “Pacing”: related to economy, pacing deals with the speed by which the story goes or continues. Its focal concern is the rhythm of the story, which should be in alignment with the story’s purpose and objectives.
6. “The Gift of Your Voice”: it is advisable that students put the effort in personalizing their stories through voice recording and narration of the script written by themselves to assist the listeners to understand the content of the story.
7. “Soundtrack”: the storyline and the depth of the storytelling can be improved and substantiated by integrating music or other various sound supports.

DST instructional framework

Formerly used for artistic and therapeutic purposes (Lambert, 2009), DST is now used in research and education (StoryCenter, 2017). In education, specifically English language education, DST can also be implemented, and it offers many benefits. Moradi and Chen (2019) said that DST when implemented in language education has many advantages, including providing novel pedagogical methods and more variety than the conventional methods, “personalizing learning experience”, forming authentic scenarios simply and significantly, increasing learners’ engagement in the learning process. Over the years, there have been many scholars proposing instructional frameworks for DST. The most recent one among them is from Yearta (2019). Yearta (2019) proposed a framework of DST, which includes:

1. Planning/selecting a topic: Learners are given various topic options to choose from; however, they have to be under certain parameters.
2. Conducting research: Learners start their research in the library or the online database. In this stage, learners should be trained on information synthesis and triangulation. The former means combining information from different sources, while the latter is comparing information from different sources.
3. Drafting: This will take place once learners know their topics and have done a great deal of research on them. In this stage, once having a draft from their research, learners groups their first drafts in chunks, each of which is later matched with an image from the internet. Once they have chunked scripts with their respective images, they put them all together using digital tools, such as Book Creator App, Puppet Pals, Splice, iMovie, and Screencast-O-Matic. Learners upload images in one of the selected tools and include their narration for each image using their script.
4. Revising: The learners revise their work through discussion with peers or teachers.
5. Publishing for the authentic audience: Once their works are completed, the works will be published on one of the digital platforms

DST as a Culturally Responsive Instruction

Assisting language learners in improving their language skills in a meaningful and natural context, DST is considered as a culturally responsive instruction (Stanley, 2018). Culturally responsive instruction is the pedagogical

method that stresses the importance of the integration of students' culture in their learning (Ladson-Billings, 1994). In DST, students tell stories electronically, using the combination of text, audio, video, photos, and music (Moradi & Chan, 2019). Technologies coupled with the video components are effective means by which the language and cultural backgrounds of the students can be promoted, thereby strengthening the students' identities (Reyes & Vallone, 2008). Videos that are constructed by students reflect their cultures and characteristics, which in turn substantiates a sense and understanding of the community (Nicholas et al., 2011). Subjects that can bridge the students' background to the classroom culture can include an interview, oral histories, and personal stories (Eckman, 1995). In their district-wide study, Vu et al. (2019) conducted a textual analysis on two digital stories about personal stories by students who used their L1 (Spanish) with English and found that students once challenged to construct the identity texts experienced "unique learning opportunities" through bridging communities, generation, culture, and languages. Moreover, Vu et al. found that not only did this bridging of communities, generation, culture, and language exist in the students' finished digital stories, but it also existed throughout the process of creating them as the students in their process of producing digital stories participated in the bridging activities including conducting research, interviewing members of their families, interacting in their local communities, and exchanging ideas with their classmates, and ultimately, exhibiting their digital stories either on the digital platforms or in the film festival sponsored by their schools.

DST as Technology-mediated, Task-based, Multiliteracy Project

DST is conceptualized as a technology-mediated, task-based, multiliteracies project (Castañeda, 2013). The rationale behind this conceptualization is as follows. First, the requirement for the DST, as claimed by Castañeda (2013), is a set of micro-tasks, or milestones, which gradually guide students to the accomplishment of the assignment. This aligns with Nunan's (2004) definition of a project. Nunan defined a project as a set of "maxi-tasks" which refers to the group of ordered and unified tasks that collectively result in the completion of the final project. Moreover, the DST project does not encompass a range of simple tasks. Instead, it includes meaningful, technology-mediated tasks wherein learners utilize the technology and target language to express to the audience a story in a video product (Castañeda, 2013; Ono, 2014). Based on this premise, DST can be deemed as a project that consists of technology-mediated tasks that build-up to the accomplishment of the project. Second, the DST project is considered a "multiliteracies" approach (Angay-Crowder et al., 2013; Christiansen & Koelzer, 2016). This approach originally aimed to deal with the assortment of communicational media and channels and the growing importance of diversity of language and culture (NLG, 1996). In the perspective of multiliteracies, Castañeda (2013) claimed that not only do learners need to adapt to the society that is progressively globalized by the use of language, but they also need to confidently represent their ideas, using the emerging digital technologies, and Castañeda further added that these two purposes in multiliteracies are married through the DST project. Therefore, based on these two reasons, Digital Storytelling (DST) can be considered as, in Castañeda's (2013) term, a technology-mediated, task-based, multiliteracies project.

As a technology-mediated, task-based, multiliteracies project, DST can benefit learners immensely (Angay-Crowder et al., 2013; Beckett & Slater, 2018). First, Beckett and Slater (2018) claimed that a project used for language learning is supported by numerous studies to build learners' skills for making the decision, promote their independence, hone their teamwork skills, nurture their creative thinking skills through testing their creativity, enhance their problem-resolution skills, and provide students with meaningful contexts to learn a language, content, and research skills. Moreover, Angay-Crowder et al. (2013) also provided a further benefit of such a DST project. Angay-Crowder et al. claimed that the DST project can provide multilingual adolescent students with the chance to construct the multimodal story as a representation and reflection of their lives and sociocultural identities.

Moreover, since DST is project-based, for its success, the following should be considered. According to Beckett and Slater (2018), they are explicitness, structure, and fit, each of which is explained below:

1. Explicitness: the learners need to be reminded as to how the development of their language progresses together with the development of their skills, content knowledge, and socialization. To this end, the teachers can make use of Gulbahar Beckett and Tammy Slater's tool entitled "The Project Framework" in which the learners' awareness of improvement in language, content knowledge, and skills through the use of "project diary" wherein the learners note down the accomplishment of their language, content, and skill learning.

2. Structure: the well-structured nature of the project is a prerequisite to the success of the project; therefore, the project, especially at the initial part, should have a good structure and regular monitoring.
3. Fit: despite the linguistic, skill-, and content-related benefits of the project, it should reflect the situation of the learners with whom the project is used. That is, the project demand, along with the instructional language, should not exceed the learners' current capability

DST Assessment

Since the conclusion of the digital storytelling activity is students presenting/sharing their digital stories (Tobin, 2012), to evaluate it, a scoring rubric is used. According to Carnegie Mellon (n.d.), a scoring rubric helps the graders make their grading standard consistent, makes scoring less time consuming, reduces bias when there are two or more graders, and assists the graders in identifying the areas in need of improvement. A scoring rubric can also be categorized into two types: holistic and analytic; of all the two, the analytic scoring rubric has higher reliability and constructs validity even though it is more time-consuming and expensive than the holistic scales (Hamp-Lyons, 1991).

From the literature, three notable sets of digital story rubrics emerge. The first one is from Barrett (2006), the second one is from Tobin (2012), and the third one is from Stanley and Dillingham (2009 as cited in Stanley, 2018).

In Barret's digital story rubric used in general education, she adapted it from the Scott County Schools' (Kentucky) Digital Storytelling Rubric and based it from the digital story elements, including:

1. Point of View: This focuses on to what extent the digital story has a purpose or focus.
2. Dramatic Question: This concerns whether the question answered in the digital story is dramatic.
3. Emotional Content: This deals with to what extent the audience is profoundly and ardently involved.
4. The Gift of Your Voice: This looks at the uniformity in the storytelling, which includes the tone of voice narration is consistent throughout the story.
5. The Power of the Soundtrack (emotion): This focuses on whether the music used can stimulate deep emotion from the audience.
6. The Power of the Soundtrack (originality): This deals with the originality of the music used in the digital story.
7. Economy: This concerns the structure and brevity of the story.
8. Pacing: This looks at the rhythm of voice narration and the use of sound effects to stir emotions.

Additionally, Tobin (2012), who modified the rubric from the work by the Kamehameha Schools, made her digital story rubric suitable to be used in English language class. The criteria used in Tobin's digital story rubric include:

1. Creativity: This concerns the originality of digital story composition and delivery.
2. Planning/storyboarding: This looks at whether the digital story is detailed and demonstrates evidence of thorough planning.

3. Photography/videography: This deals with the relevancy and impact of the added images and videos to the digital story.
4. Editing: This focuses on the appropriateness of the transition, effects, and edits in the digital story.
5. Writing: This criterion concerns the overall quality of the digital story based on whether it can successfully convey a message.
6. Content/connection to text: This focuses on the relevance and clarity of the message conveyed in the digital story.

Moreover, the rubric proposed by Stanley and Dillingham (2009 as cited in Stanley, 2018) includes the eight criteria, which are:

1. Story: This concerns whether the story is engaging, with beginning, issue, resolution, and end that are interesting.
2. Detail: This looks at the amount of detail used to tell the story to make it coherent.
3. Point of View: This focuses on whether or not the story has a clear point of view or purpose.
4. Narration: This deals with the clarity of the voice narration and its relation to the storyline.
5. Pacing: This looks at whether the narrative pacing is effective to make the audience engaged.
6. Grammar and Language Use: This concerns the correctness and appropriateness of the grammar and language used in the story.
7. Image: This focuses on whether the background images are of high quality and suitably harmonized with the different story scenes.

8. Music: This deals with the relevancy of the music used with the storyline and tone.
4. Professionalism: This focuses on whether the author has a title and credit page and the latter consists of correct citations and/or consents for materials that are copyrighted.

All of these rubrics were used and adapted in the study to design the digital story rubric that fits with the context of the study.

Related DST Studies on EFL Reading Literacy

Digital Storytelling (DST) is empirically supported to benefit EFL reading literacy of EFL/ESL learners (Enokia, 2016; Nassim, 2018; Rahimi & Yadollahi, 2017; Vu et al., 2019). Following is the summary of each study on the effect of Digital Storytelling (DST) on the learners' reading ability in chronological order.

In their five-month study, Rahimi and Yadollahi (2017) compared the effectiveness of digital storytelling on students' reading ability, in addition to writing ability. Their participants were 42 female students, who were then assigned into control and experimental groups. The participants met with the instructor twice a week, and each session lasted for 90 minutes. While the control group was introduced to an offline content-making application, the experimental group was introduced to an online one (Story Jumper). To collect data, they used the Reading-Writing section of the Key English Test (KET) as a pre-and post-test. As for their result, they found that after the intervention, the reading and writing performance in the KET of the experimental group was significantly better than the control group ($F = 11.680$, $p = .00$; partial eta squared = .222).

Enokida (2016) implemented Digital Storytelling (DST) in conjunction with extensive reading on 27 Japanese EFL students in an EFL reading course entitled "Advanced Reading" at a national university in Japan for one semester (15 weeks) of the academic years 2014 - 2015. The aim was to help students focus on the story structure and improve their reading and oral fluency. In that study, the students had to participate in extensive reading activities in extracurricular time. In week 5, the students gathered in groups to talk about the books they read and chose one book collectively thought of as interesting, which was followed by the analysis of characters and story structure of the chosen book. Then they constructed two stories, each of which was told by a different character in the aforementioned book. After rigorous revision, they then use a digital storytelling app, Videolicious, to create digital stories for the stories they wrote. Then they shared their digital stories to "Bb9", which was a learning management system used in the university. The researcher used the survey to gauge the effectiveness of the result, and it showed that the intervention was effective in improving, in addition to other three macro language skills, their reading skills, especially analytical reading of the narrative texts.

Nassim (2018) conducted a 5-week study on the effect of Digital Storytelling (DST) on the students' English proficiency. The researcher used an evaluation rubric and survey to gather the data. The participants of the study were twenty-four students in the course entitled English Foundation Level II. The participants were put into 4 groups, each of which was tasked to read, summarize, and make a digital story of one short story. The findings from the survey showed that DST improved their reading since they had to read the stories multiple times and summarize them.

As a part of their large-scale study on DST, Vu et al. (2019) conducted a 2-month case study to determine the DST impact on language and literacy improvement of the students in two classes, experimental and control classes. both classes were assigned to read the book entitled 1984 by George Orwell and had to take quizzes weekly and one final assessment. As for the final assessment, the experimental class had to form a digital story to respond to the prompt "How close are we as a nation to becoming a society monitored, and therefore controlled by the government? Compare and contrast the fictional scenario of Orwell's 1984 to citizen surveillance practice in the United States", while the control class had to write an essay. To compare those two classes, the researchers used interviews, observation, and a researcher-made survey. The result showed that students who had to make a digital story showed a more in-depth understanding of the story since they could discuss the book deeply with the interviewer; moreover, students in the DST class also had better retention of the story as well.

EFL Reading Literacy

L1 Reading Literacy

According to PISA 2000 Reading Framework (OECD, 2000), reading literacy refers to the capability of understanding, using, and reflecting on printed and/or non-printed texts under the aim to reach one's objectives, advance one's potential and knowledge, and partake in society, and it contains three dimensions: Processes, which means being able to accomplish various reading tasks, which can include formulating the gist of the text, scanning for the certain information, interpreting or reflecting on the form or content of the text, Knowledge, and

understanding, which refers to the ability to read texts with different types (e.g., exposition, narration, description, etc.) and structure (advertisements, tables, graphs, charts, and forms), and Context of application, which means being able to read texts that are constructed for various scenarios, ranging from personal interest to work requirements.

In 2009, the PISA 2000 reading literacy definition was extended by adding "engagement in reading" into its definition of reading literacy, thus the formulation of PISA 2009 reading literacy, which is defined as the capability of understanding, using, reflecting on, and engaging with the printed and/or non-printed texts under the aim to reach one's objectives, advance one's potential and knowledge, and to partake in society (OECD, 2009). Engagement in this sense refers to the reading motivation and consists of a collection of behavioral and affective characteristics, such as a sense of control over the texts one reads, enjoyment and interest in reading, engagement in the social aspect of reading, etc. (OECD, 2009).

Thus far PISA reading literacy has kept changing because, in this digital era, readers will need to be competent at some new skills; that is, they have to be able to use digital technologies, search for and access their reading texts utilizing a search engine, hyperlinks, or other scrolling functions, evaluate and critique the information, and read different texts to substantiate information, identify possible conflicts and differences, and solve them (OECD, 2016, 2019a). Moreover, Leu et al. (2015) stated the definition of reading literacy should be broadened to cover both basic processes of reading skills and more advanced processes of digital reading skills while acknowledging that the literacy concept will keep on evolving because of the evolving

nature of social context and new technologies. Therefore, the definition of reading literacy has to mirror the comprehensive set of skills related to literacy tasks that are required in the 21st Century (Spiro et al., 2015). In turn, this gives birth to PISA 2018 reading literacy which is the ability to understand, use, evaluate, reflect on and engage with multiple texts to reach one's objectives, advance one's potential and knowledge, and partake in society (OECD, 2019a). According to PISA 2018 Reading Framework (OECD, 2019b), there are eight cognitive processes of successful reading which fall under three main categories. Each category is described as follows:

1. Locate information: this includes two sub-cognitive processes. The first is accessing and retrieving information in a text. This refers to scanning a text to obtain the wanted information. The second is searching for and selecting relevant text. This means looking for the pertinent text among several texts based on the item or task demand (OECD, 2019b).
2. Understand: this encompasses three sub-cognitive processes. The first one is representing literal information which is understanding denotative meanings of the short passages or sentences. The second one is integrating and generating inferences, which means synthesizing the information from several sentences or a whole passage. The last one is integrating and generating inferences across multiple sources, which refers to synthesizing pieces of information from two or more texts (OECD, 2019b).
3. Evaluate and reflect: this consists of three sub-cognitive processes. First is evaluating quality and credibility, which involves assessing the information in a text to determine if it is reliable, current, accurate, or valid. The second is reflecting on the form and content, which necessitates

the evaluation of the writing form to determine how the authors are articulating their point of view and/or purpose. The last one is detecting and handling conflict, which involves deciding whether texts support or oppose each other (OECD, 2019b).

EFL Reading

Reading, as stated by Anderson (2008), is the process undertaken by readers to link the textual information and their background knowledge to construct meaning. Similarly, Grabe (2014) said that reading refers to the ability to extricate or construct the meaning from the text. Doing so calls for the skills to determine the text's main ideas, use a text reading model to synthesize them, and develop a suitable reader interpretation model (Grabe, 2009). Anderson further said that the goal of reading is reading comprehension. Reading comprehension refers to the process whereby information of the written work is recognized and interpreted deeply by the readers (Kong, 2019; Zhang, 2019), and the ability to comprehend and interpret the text information in an appropriate manner (Grabe & Stoller, 2011). Furthermore, Oakhill (2019) added that reading comprehension is a prerequisite not only for understanding the text, but also for learning, and other social activities.

In addition, according to Day and Park (2005), reading comprehension encompasses six types, and they are: Literal comprehension, which means the comprehension of the verbatim, textual meaning including vocabulary, dates, facts, times, and locations; Reorganization, which is based on the literal comprehension, this happens when information from different sections of the text is linked to building further comprehension; Inference, which demands the composition of literal

comprehension and one's intuition and knowledge to construct meaning not directly stated in the text; Prediction, which requires the use of literal comprehension and one's intuition and knowledge to make predictions on the reading texts; Evaluation, which involves the students in comprehensively judging certain parts of the text; and Personal response, which requires the learners to respond to the text and subject with their feeling toward them.

Moreover, Anderson (2008) stated that there is a reason why people read. People, L2 readers included, generally read for six purposes (Grabe, 2009), and they are: "Read for information search", whereby readers want to find certain information and involves the use scanning and skimming; "Read for quick comprehension", whereby readers make use of skimming to know what the passage is about and if they want to read it, to make sense of the direction the difficult text leads them and what is required of them to comprehend it, to decide on which passages to focus on, and to arrive at a quick consensus on the usefulness of the text; "Read for learning", whereby readers aim to comprehend the information presented in text and decide its immediate and future importance; "Read for information integration", whereby readers read for the purpose of synthesizing information from different texts; "Read for information evaluation, critique, and usage", whereby readers aim to conduct evaluation and critique on the information from various texts to decide on degree to which certain parts of the texts are most or least convincing, essential, and provocative and application of the information; and "Read for general understanding", whereby readers read for relaxation. Simple as it may be, this provides a foundation for "Read for learning" and "Read for information evaluation, critique, and usage".

Provided all of these aspects of reading, the following principles for the success of reading instruction from Grabe (2014) should be put into consideration, and they are as follows: (1) Instructions of key skills joined with practicing extensively and being exposed to print, (2) Interesting, diverse, attractive, plentiful, and accessible resources for reading, (3) Including student choice in choosing main reading resource to a certain extent, (4) Reading skills introduced and instructed by scrutinizing principal passaged utilized in the reading course, (5) Lessons designed around pre-, during-, and post-reading, the activities of which should be varied from one to another reading, (6) Opportunities to experience success in comprehension during reading, (7) Expectations for daily, in-class reading and regular extended reading opportunities

In additionally, successful reading also requires readers to process the words rapidly and automatically, can create a general meaning representing the main ideas, efficiently coordinate many reading processes under the limited time, construe and critique text meaning concerning background knowledge, reading goals, and purposes (Grabe & Stoller, 2011; Grabe, 2014). Therefore, two prerequisites for successful reading, according to Grabe (2009, 2014) are vocabulary knowledge and comprehension-supporting reading strategies.

Vocabulary Knowledge

To become good readers of different texts, EFL learners are required to know at the minimum 95 percent of the vocabulary they encounter in those texts (Grabe, 2014). Supporting this, Oakhill (2019) claimed that reading comprehension is largely dependent on the depth of vocabulary, or the knowledge of words learned and their association with other words and concepts because once concepts are occurring in the text, the readers will find it easier to understand the text if they have a deeper understanding of those concepts. In the same vein, Grabe (2009) stated that there was a connection between how much vocabulary one knows and how much one can understand what one reads. Empirical studies on this topic also support this relationship (Ibrahim et al., 2016; Ocampo & McNeill, 2019). In one study, Ibrahim et al. (2016) studied the relationship between reading comprehension and vocabulary size among pre-university students in an intensive English language program at a public university in Malaysia. From their correlational analysis, the relationship between reading comprehension and vocabulary size was statistically significant at $r<0.01$ level. In another study conducted on the grade-12th Thai EFL learners (N=140), Ocampo and McNeil (2019) found that there was a positive correlation between reading comprehension and vocabulary size, which was measured at the levels of 2000K, 3000K, 5000K, and Academic Wordlist. Consequently, this goes to show the importance of vocabulary knowledge in reading comprehension. However, to obtain knowledge of vocabulary is not simple because knowing a word does not mean knowing its meaning per se. Instead, knowing a word means being able to access at least nine aspects of that word, and those nine components are “orthography”, “morphology”, “parts of speech”, “pronunciation”, “meanings”,

"collocations", "meaning associations", "specific uses", and "register" (Nation, 2013). Therefore, learning a word for the first time does not guarantee that one will learn everything about the word, but one has to be exposed oneself to the word in different contexts over some time (Grabe, 2009). Doing so will lead one to possess the depth of vocabulary knowledge (Oakhill, 2019). In addition to vocabulary knowledge, comprehension-supporting reading strategies are also crucial in helping readers read successfully.

Comprehension-supporting Reading Strategies

Comprehension-supporting reading strategies refer to the endeavors consciously taken by the readers to advance their skills of reading, and they help students understand the reading better (Anderson, 2008). Therefore, EFL teachers should include reading strategies in their instruction. The effective reading strategy instruction, as stated by Grabe (2009, 2014) should include constant demonstrating, supporting, extensive training, and ultimately autonomous usage of the strategies by the learners. Moreover, Grabe (2009) also stated there are eight empirical-supported reading strategies including summarizing, forming the question, answering questions and elaborative interrogation, activating prior knowledge, monitoring comprehension, using text-structure awareness, using graphic organizer, and inference. Most of these strategies have been empirically supported to influence reading comprehension, as evidenced by the recent studies (Anyiendah et al., 2019; Azizah & Fahriany, 2017; Shin et al., 2018). In one study focusing on the question-forming technique, Anyiendah and colleagues (2019) conducted an experimental study on its effectiveness on reading comprehension. They found that student-generated questions

significantly improved students' reading comprehension. In another study on prior knowledge, Shin et al. (2019) found that prior knowledge, along with having high working memory, could assist students to reach a better understanding of the text. In the other study on text-structure awareness, Azizah and Fahriany (2017) found that there was a correlation between text-structure awareness and reading comprehension, the correlation value of which is 0.876. To sum up, both vocabulary knowledge and comprehension-supporting reading strategies are prerequisites to successful reading. The following part will focus on reading assessment.

Reading Assessment

Assessment of reading should cover some components of language skills (e.g., vocabulary knowledge), resources of knowledge (e.g., the appropriate use of background knowledge), and "general cognitive ability" (e.g., the effective usage of working memory abilities) (Grabe & Jiang, 2013), and measure not only text comprehension, but also assesses the strategies employed, or failed to employ, to obtain the understanding of the text (Brown & Abeywickrama, 2010).

Furthermore, reading assessment has many purposes, which are classified by Grabe (2009) as follows: Assessment for reading proficiency, which is employed to assess the overall reading abilities of the students, Classroom-learning assessment – this assessment, which is done to measure the gain in skills and knowledge a while, assessment for learning – which is aimed to provide students with instant task feedback and then guide students to learn more effectively, Assessment of curricular effectiveness which is intended to evaluate the effectiveness of the reading curriculum, and Assessment for research purposes, which is not only important for the

research findings but also for implications of those findings; depending on purposes, some reading researchers make use of standardized tests, while some others design their tests.

In addition, since the nature of reading is unobservable, assessing reading is making inferences of students' reading performance (Afflerbach, 2016; Brown & Abeywickrama, 2010; Kong, 2019). Because of this, the following points synthesized from the literature should be put into consideration.

Firstly, assessing reading is likened to assessing various cognitive processes that contribute to the meaning-making of the reading materials (Brown & Lee, 2015). According to PISA 2018 Reading Framework (OECD, 2019b), there are eight cognitive processes of successful reading which fall under three main categories. Each category is illustrated as follows: "Locate information" – (1) accessing and retrieving information in a text, which includes phrases, a few words, or numerical values; (2) searching for and selecting relevant text, which includes a task requiring the test takers to look for the pertinent text among several texts based on the item or task demand; "Understand" – (3) representing literal information, which includes a task asking the test-tasker to match a paraphrased information in the question with the one in a passage, (4) integrating and generating inferences, which includes a task requiring students to form a main idea, or a title for a passage, and (5) integrating and generating inferences across multiple sources, which includes a task requiring the test takers to synthesize pieces of information from two or more texts; "Evaluate and reflect" – (6) evaluating quality and credibility, which includes a task asking the test taker to assess the information in a text to determine if it is reliable, current, accurate,

valid, etc.; (7) reflecting on the form and content, which encompasses a task needs the test taker to evaluate the writing form to determine how the authors are articulating their point of view and/or purpose, and (8) detecting and handling conflict, which includes a task requiring the test taker to decide if the two authors agree/disagree on the issue (OECD, 2019b).

Secondly and lastly, the commonly used test formats for reading assessment, as claimed by Kong (2019) are multiple-choice questions (MCQs), written or oral recalls, cloze, sentence completion, semi-objective alternative (SAQs), true or false statements, and matching. She, however, further pointed out that the most widely used among them are MCQ and SAQ formats. The former requires the test-taker to read a "stem" and choose the correct answer given in the "alternatives" (Brown & Abeywickrama, 2010), while the latter asks the test-takers to write down answers, the length of which is limited (Kong, 2019). Moreover, it is believed that the reading process is so complex that its assessment should also cover its complexity (Afflerbach, 2016). Therefore, multi- or mixed-method should be used to represent the broad reading comprehension construct, the example of which can include a combination of various formats aiming at distinctive constructs of reading comprehension (Kong, 2019).

Thirdly, Day and Park (2005) suggested that reading assessment teachers should maintain students' interaction with the text through making texts easily accessible to them while they are doing the reading test and avoiding the use of "tricky questions" which refer to ambiguous, misleading questions that might dishearten students.

Chapter Summary

Chapter II included the review of the three concepts relevant to the present study: (1) digital literacy, (2) Digital Storytelling (DST), and (3) EFL reading literacy. Firstly, originally coined by Paul Glister, digital literacy that comes into existence because of some noticeable phenomena has been defined differently by different scholars thus far, and so have its elements. The assessment of digital literacy in education is normally done through the self-rating survey or task that measures digital literacy. Secondly, Digital Storytelling (DST), founded by Joe Lambert and Dana Atchely, refers to the project-based instruction that uses storytelling, technology, and group work to accommodate the making of short video clips with multi-media to express a story. DST contains 7 components: point of view, dramatic question, emotional content, economy, pacing, the gift of your voice, and soundtrack. Furthermore, DST is believed to be culturally responsive instruction and technology-mediated task-based multiliteracy project. Thirdly, EFL reading literacy covers English reading in L1 and EFL settings and the assessment of reading. In the L1 context, reading literacy refers to the ability to understand, use, evaluate, reflect on and engage with multiple English texts to reach one's objectives, advance one's potential and knowledge, and partake in society. Whereas in the EFL context, it refers to the ability to comprehend and interpret English texts in appropriate manners. Prerequisites to EFL reading are vocabulary knowledge and comprehension-supporting reading strategies. Additionally, the effective assessment of reading should measure the eight cognitive processes of reading, include multiple methods to cover the broad areas of reading constructs, make the texts accessible to the test-takers, and not include tricky ambiguity-ridden questions.

Chapter III

Research Methodology

Research Design

This study took on a one-group pretest, posttest research design. Usually adopted to study the impact of the independent variable (IV) on the dependent variable (DV), this design has two definitional characteristics: the usage of one participant group and the linear nature that necessitates the assessment of DV before and after the implementation of the intervention (Allen, 2017). In this study, the dependent variables (DVs) were the EFL reading and digital literacy of Cambodian undergraduate students, and the independent variable (IV), or intervention, was Digital Storytelling (DST). Moreover, the researcher used a mixed-methods approach to collect the data because, as recommended by Dornyei (2007), doing so will help better the understanding of the studied phenomenon. In the current study, it refers to the effect of Digital Storytelling (DST) on Cambodian undergraduate students' EFL reading literacy and digital literacy.

Context

Founded in 2003, the University of Cambodia (UC) is one of the most well-known universities in Cambodia. UC provides a challenging but supporting platform where students come to broaden their horizons, hone their critical and analytical thinking, and better their creativity. Moreover, UC offers a plethora of degrees encompassing Associate's, Bachelor's, Master's, and Doctoral programs. At present, UC has six colleges and four schools: College of Arts and Humanities, College of Education, College of Law, College of Media and Communications, College of Social

Sciences, College of Science and Technology, School of Creative Arts, Techo Sen School of Government and International Relations (TSS), the Tony Fernandes School of Business, and School of Foreign Languages (SFL).

Being one of the schools in UC, SFL offers five language programs including Chinese, English, French, Japanese, and Korean. In the School of Foreign Languages, students will be given opportunities to improve their chosen language and get themselves exposed to the culture of that language.

Population and Participants

Population

The population of the study was the English-majored students from the School of Foreign languages (SFL) at the University of Cambodia (UC). According to CEFR, the English-majored SFL students are at B1 (intermediate). At SFL, the English-majored student from different provinces in Cambodia is trained for career prospects in areas ranging from English teaching to translation services, and other non-governmental and governmental institutions.

Participants

To obtain the participants of the study, the researcher used the convenience sampling method, which is defined by Frey (2018) as a nonprobability sampling method wherein the participants are selected based on their availability. Dornyei (2007) added that convenience sampling is also partly purposeful; that is, participants have to possess particular characteristics unique to the study purpose. Therefore,

chosen based on their willingness to participate in the study, the participants of the study were 18 SFL students.

Table 1

The Profile of the Participants

Gender	Male	2 (11%)
	Female	16 (89%)
Average of age	19 years old	
Native language	Khmer (100%)	
Average years of computer usage	4 years	
Possession of electronic dictionaries, smartphones, tablet computers, and/or laptops	Yes	18 (100%)
	No	0 (0%)
The people who first taught them how to use computer	Teacher/Trainer (50%),	
Top five sources for finding out new digital technologies	Social Media (100%), Teacher (78%), Website (68%), Friends (61%), and Books (45%)	

Research Instruments

The research instruments of the present study included English Reading Test, Digital Literacy Questionnaire, Digital Story Rubric, and Interview Protocol. The elaboration of each instrument and its validation process is given as follows:

English Reading Test

Based on PISA 2018 Reading Framework (OECD, 2019b), the English Reading Test was designed to determine the effectiveness of the intervention.

According to PISA 2018 Reading Framework (OECD, 2019b), reading ability contains eight cognitive processes, which are categorized under (1) locate information, (2) understand, and (3) evaluate and reflect. In the test (see Appendix A), there are four passages based on the topics of the units. Each passage has 8 items, and 60 minutes is given to students to do the test. The test was implemented before and after the intervention.

The validation of the English reading ability test included two stages. First, the validity was determined through construct and content validity. Secondly, after determining its validity, a pilot test was conducted to determine the reliability and analyze the test items. Those two stages are discussed as follows:

Validity Measurement. The validity of the English Reading Test was measured through construct and content validity, which is evidence that supports whether the instruments require the participants to perform the behavior that is being measured and taps into the construct as defined (Brown & Abeywickrama, 2010). One appropriate approach to measure construct and content validity is through the judgment given by the content experts (Salkind, 2010). The evaluation is normally done using the index of item-objective congruence (IOC), the process of which involves the content experts rating the items based on whether or not the items measure the objectives of the instruments by providing each item a rating of -1 (for obviously not measuring), 0 (unclear as to whether it measures the content areas), or 1 (obviously measure) (Rovinelli & Hambleton, 1976).

Therefore, three experts with at least 5 years of English teaching experience were invited to assess the construct and content validity of the English Reading Test,

and a rating scale evaluation with three points (-1 = not measuring, 0 = unclear, and 1 = measure) was given to the aforementioned experts to evaluate the construct and content validity of the English Reading Test. From the results given by the experts, mean scores were calculated. The items in the IOC form that did have a mean score from 0.5 to 1 were revised based on the experts' suggestions and comments.

Overall, the majority of test items aligned with the constructs and were appropriate for the B1 students. However, some items did not make the cut. According to the IOC result (see Appendix C), items 1, 6, 22, and 30 received a mean score lower than 0.5; therefore, they had to be revised based on the suggestions from all experts.

Pilot Testing. The English reading ability pilot test was conducted to measure the reliability and to analyze the test items of the test. The test was piloted before the completion of one unit. 10 English-majored students from the School of Foreign languages at the University of Cambodia were asked to join the pilot test. Those students were not from the sample of the main study but had identical characteristics.

The reliability of the reading test was evaluated through internal consistency reliability. This suggests that items in the test should have a high correlation with one another to be accurately representative of content sampling, and if a high correlation between items exists, in theory, it can be said that the measurement of the construct possesses a certain degree of reliability (Robin, 2001). To estimate it, Robin (2001) said that Kuder-Richardson Formula 20 (KR-20), which is mainly used to measure the internal consistency reliability for the dichotomous choices (e.g., yes/no, true/false, or correct/incorrect, can be used. The interpretation for KR-20, as suggested by Salvucci

et al. (1997, p. 115), is as follows: r < 0.5 (low reliability), r = 0.5 – 0.8 (moderate reliability), and r > 0.8 (high reliability). Based on the data analysis of the pilot study, the KR-20 of the test is 0.84, which shows the test has high internal reliability.

The item analysis was then done to determine the effectiveness of the items in the instrument. The used indices were Difficulty (p) and Discrimination (r) Indices. The former shows how easy or difficult a certain item is, and the latter determines whether a certain item can differentiate the low from the high performers (Brown, & Abeywickrama, 2010). The researcher based the interpretation of the indices on the one from Whitney and Sabers (1970), as shown in Table 2.

Table 2

Whitney and Saber's (1970) Interpretation of Difficulty and Discrimination Indices

Difficulty Index (p)		Discrimination index (r)	
Value	Interpretation	Value	Interpretation
p < 0.20	Difficult	r = 0	No discrimination
p = 0.20 to 0.80	Good in terms of difficulty	r ≥ 0.19	Low discrimination
p = 0.81 to 0.94	Easy	r = 0.20 to 0.29	Fair discrimination
p ≥ 0.95	Very easy	r = 0.30 to 0.39	High discrimination
		r ≥ 0.4	Very high discrimination

According to the data analysis of the test implemented in the pilot study, the overall Difficulty and Discrimination Indices are 0.3 (Good in terms of difficulty) and 0.4 (Very high discrimination), respectively. This goes to show that, overall, the test items are effective regarding difficulty and discriminating low performers from high performers. However, once analyzed individually, some items are too difficult and/or are not able to effectively discriminate the test-takers, thereby requiring revisions.

Thus, these items and/or their distractors were simplified and/or changed to make them appropriate in terms of the level of difficulty and discrimination (see Appendix D).

Digital Literacy Questionnaire

The Digital Literacy Questionnaire that the researcher adapted from Son's (2015) questionnaire was used to gauge students' perception toward their digital literacy. The questionnaire (see Appendix H) was translated into Khmer, the Cambodian language, to make it suitable for the students. The questionnaire was given after the intervention and 30 minutes was given to students to answer the questionnaire.

In the questionnaire, there are 23 questions, grouped under five sections. Section I has 10 questions that focus on the background information including gender, age, language use, academic level, background information regarding the use of technology. Sections II and III contain 9 self-rating questions on digital literacy. Section IV has 1 question with 10 sub-questions, all of which test the general ability of digital literacy, whereas Section V has 3 questions on respondents' opinions toward digital literacy and factors affecting their usage of digital tools for language learning.

The validation of the digital literacy questionnaire included two stages. First, since the questionnaire had been translated into Khmer, the accuracy of the translated questionnaire was determined through the back-translation method. Secondly, after determining its validity, a pilot test was conducted to determine the effectiveness of the questionnaire. Those two stages are discussed as follows

Back-translation Method. The accuracy of the translated digital literacy questionnaire was measured through the back-translation method. It refers to the process in which the translated text is translated back to the original language by a translator who is not aware of the original text, and if there are any differences spotted between the original and the back-translation versions, it indicates that translation errors exist in the target language version (Tyupa, 2011). There are three steps in the back-translation process: (1) Step 1: Back translation, in which the translated text is back-translated into its original language by a translator with no knowledge of the original text; (2) Step 2: Comparison, in which the original is compared with the back-translated ones to identify any major differences in meaning; and (3) Step 3: Reconciliation, in which the major differences identified from Step 2 will be reconciled to see if the problem lies in the back-translated or the translated versions ("The Back Translation method: what is it and why use it? ," 2020, March 4). Specifically, in Step 3, the original translator will go back to his or her work to look at the parts containing the differences to determine if the translation contains meaning identical to the original text, clarity and unambiguity, and readability; if there is no error in the translation, the original translator will provide confirmation and justification. However, if there are errors, the process will have to be repeated for the parts containing differences ("The Back Translation method: what is it and why use it? ," 2020, March 4).

Therefore, the questionnaire was first translated into Khmer by the researcher. Next, the translated version of the questionnaire was then back-translated by a translator who did not see the original questionnaire. Next, three experts, English native speakers, were invited to compare the back-translated and original versions to

check for their similarity in terms of interpretation, using the IOC evaluation forms with three points (-1 = agree, 0 = not sure, and 1 = disagree). From the results given by the experts, mean scores were calculated. The items in the IOC form that did not have the mean score from 0.5 to 1 would be reconciled by the researcher to see if the difference lied in the translation or the back translation. Based on the result of IOC (see Appendix J), Questions 5, 17, 18, 19, 20, 21, and 22 contain some issues in terms of interpretation of similarity between the original and the back-translated versions. Thus, each item was reconciled, reflecting the comments of the experts.

Pilot Testing. After the completion of one unit, the Digital Literacy Questionnaire was piloted in February 2021 by giving to 10 students who were not from the sample of the main study but had similar characteristics. Then, Cronbach's Alpha (α) was calculated to measure the internal reliability of the questionnaire. According to Murphy and Davidshofer (1988, pp. 89 as cited in Peterson, 1994), the interpretation for the alpha is as follows: unacceptable level (α <0.6), low level (α = 0.7), moderate to the high level (α = 0.8 – 0.9), high level (α = 0.9). Based on the calculation, the Cronbach's Alpha of the questionnaire used in this study is 0.86. Therefore, it can be interpreted that the questionnaire had good internal reliability.

Digital Story Rubric

The Digital Story Rubric (see Appendix K) was designed to evaluate the improvement of students' digital literacy and the digital stories created in all projects. The design of the rubric was done through (1) the adaptation from and (2) synthesis of Son's element of digital literacy and Barret's (2006), Tobin's (2012), and Stanley and Dillingham's (2009 as cited in Stanley, 2018) rubrics. With a total score of 27 marks,

the Digital Story Rubric contains 9 criteria, which are adapted from those in Barret's, Tobin's, and Stanley and Dillingham's rubrics. The chosen 9 criteria are placed under Son's five elements of digital literacy. Each one will be described as follows:

1. Information evaluation & search – this contains two criteria: Content/connection to the Text and Detail. The former looks at whether the content is relevant and clear while the latter focuses on the sufficiency of the detail being given in the digital story.
2. Creation – this consists of three criteria: Photography/videography, Narration, and Editing. The first one deals with the relevancy and impact of the images/videos used in the story. The second one looks at the clarity of the narration and its flow with the content and image used. The third one concerns the appropriateness and timing of the transitions, effects, and edits in the story.
3. Communication – this encompasses two criteria. The first one is Soundtrack (relevancy and emotion), which focuses on the relevancy and emotional impact of the music used in the story. The second one is Pacing (rhythm and voice punctuation) which deals with whether the pacing fits with the storyline and helps the audience engaged with the story.
4. Collaboration – this includes one criterion, which is Planning/storyboard. It concerns whether the digital story is detailed and shows consistent evidence of collaboration and planning throughout.
5. Online safety – this has one criterion, which is Professionalism. It deals with whether the digital story Includes a title and credit page that contain appropriate citation/permission for any copy-written materials.

The validation of the rubric included two stages: the validity measurement, in which construct and content validity was estimated to determine the validity, and pilot testing in which the rubric was piloted to measure its effectiveness and reliability.

Validity Measurement. The validity of the Digital Story Rubric was measured through construct and content validity, which is evidence that supports whether the instruments require the participants to perform the behavior that is being measured and taps into the construct as defined (Brown & Abeywickrama, 2010). One appropriate approach to measure construct and content validity is through the judgment given by the content experts (Salkind, 2010). The evaluation is normally done using the index of item-objective congruence (IOC), the process of which involves the content experts rating the items based on whether or not the items measure the objectives by providing each item a rating of -1 (for obviously not measuring), 0 (unclear as to whether it measures the content areas), or 1 (obviously measure) (Rovinelli & Hambleton, 1977).

Therefore, three experts with at least five years of teaching experience were invited to assess the construct and content validity of the Digital Story Rubric, and a rating scale evaluation with three points (-1 = obviously not measuring, 0 = unclear, and 1 = obviously measure) was given to the aforementioned experts to evaluate the construct and content validity of the Digital Story Rubric. From the results given by the experts, mean scores were calculated. The items in the IOC form that did not have a mean score from 0.5 to 1 were revised based on the experts' suggestions and comments. The result from the IOC form shows that the Digital Story Rubric was appropriate in terms of understandability and clarity, measurability, relevancy, and

appropriateness. Be that as it may, there are some comments and suggestions from Expert B and Expert C (see Appendix M).

Pilot Testing. At the end of one unit intervention, the modified rubric was piloted in February 2021 to determine its effectiveness and reliability. Two external raters were invited to evaluate students' digital stories. Before evaluating the digital stories, the criteria had been explained to those raters.

The reliability of the rubric was then evaluated through inter-rater reliability. This refers to the test scores consistency given by two or more independent judges (Brown, & Abeywickrama, 2010). To estimate the inter-rater reliability of the sets of scores given by the two lecturers, the researcher conducted the correlation analysis in which the Pearson's correlation coefficient of those two sets of scores was computed. Dornyei (2007) said that this statistical procedure allows the researchers to assess the strength and direction of association of two variables, and Dornyei further stated that it can range from – 1 to +1. Dancey and Reidy (2017) said that "positive (+)" means of high or low scores on one variable is correlated with high or low scores of the other, "negative (-)" means the other way round, and zero (0) is considered as no correlation existing between the two variables.

As for the interpretation of Pearson's correlation coefficient, the researcher used the one from Dancey and Reidy (2017, p. 182), as shown in Table 3.

Table 3

Dancey and Reidy's (2017, p. 182) Interpretation of Pearson's Correlation Coefficients

Correlation Coefficients		Interpretation
0	0	No correlation
-0.1 to -0.3	+0.1 to +0.3	Weak
-0.4 to -0.6	+0.4 to +0.6	Moderate
-0.7 to -0.9	+0.7 to +0.9	Strong
-1	+1	Perfect

Based on the score from the piloting, Pearson's correlation coefficient is at 0.88, which is considered a strong correlation. Therefore, it can be said that the rubric has strong inter-rater reliability.

Interview Protocol

The interview protocol (see Appendix E) was used to assist the researcher to gauge the participants' perceptions toward Digital Storytelling (DST). A semi-structured interview was used since this type of interview guides the interviewer on what to ask and allows him/her to be flexible when the valuable information appears (Dornyei, 2007). After the post-test, 5 students were randomly selected to participate in the interview. The interview was conducted in both Khmer and English to gauge needed information from the participants as much as possible.

The validation of the interview protocol included two stages. First, the validity was determined through construct and content validity. Secondly, after

determining its validity, it was piloted to measure the effectiveness of interview questions.

Validity Measurement. The validity of the Interview Protocol was measured through construct and content validity, which is evidence that supports whether the instruments require the participants to perform the behavior that is being measured and taps into the construct as defined (Brown & Abeywickrama, 2010). One appropriate approach to measure construct and content validity is through the judgment given by the content experts (Salkind, 2010). The evaluation is normally done using the index of item-objective congruence (IOC), the process of which involves the content experts rating the items based on whether or not the items measure the objectives of the instruments by providing each item a rating of -1 (for obviously not measuring), 0 (unclear as to whether it measures the content areas), or 1 (obviously measure) (Rovinelli & Hambleton, 1977).

Therefore, three experts with at least 5 years of English teaching experience were invited to assess the construct and content validity of Interview Protocol, and a rating scale evaluation with three points (-1 = obviously not measuring, 0 = unclear, and 1 = obviously measure) was given to the aforementioned experts to evaluate the construct and content validity of the Interview Protocol. From the results given by the experts, mean scores were calculated. The items in the IOC form that did not have a mean score from 0.5 to 1 were revised based on the experts' suggestions and comments. Based on the result of IOC (see Appendix G), Question 12 did not receive a mean higher than 0.5; therefore, it was revised

Pilot Testing. The interview protocol was piloted in February 2021 after the completion of one unit, and 5 English-majored students from the piloted group joined the interview. It turned out that the interview took more time than expected. This was since some interviewees did not understand some key terms (e.g., background-building activity, teacher conference) in the questions. Hence, in the main study, the researcher explained the key terms in advance before beginning the interview. Moreover, the research would like to understand the challenges or difficulties the students had from participating in the digital storytelling project. Therefore, the researcher decided to add another part of the question to Question 12. The new Question 12 was as follows:

The Revised Version of Question 12. How does participating in the DST projects help you improve your English reading ability? Any difficulties or challenges in your projects so far?

(Khmer Translation)

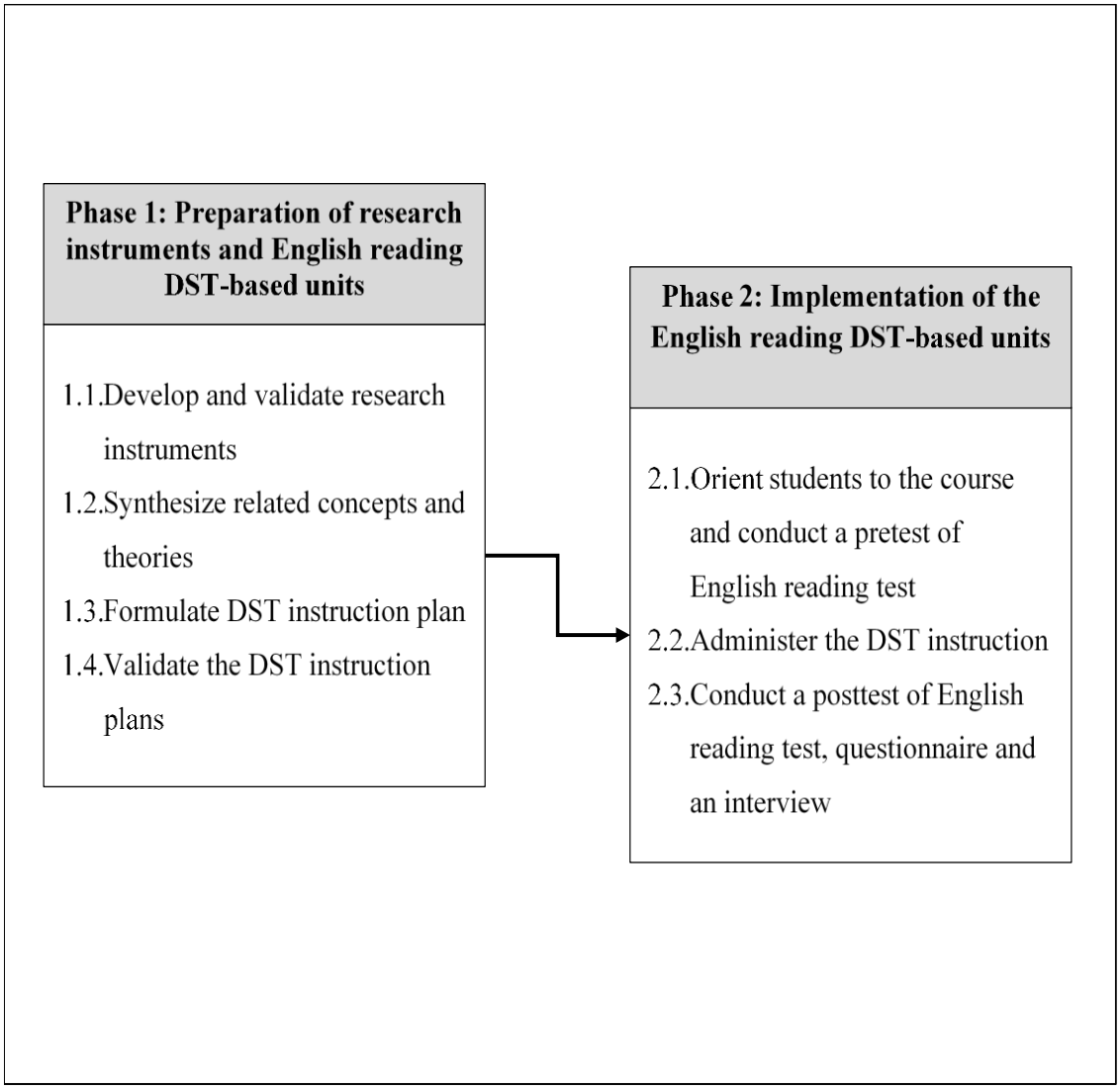
តើការចូលរួមក្នុង DST projects ជួយអ្នកឱ្យបង្កើនសមត្ថភាពអានភាសាអង់គ្លេសយ៉ាងដូចម្តេចដែរ? មានការលំបាក ឬបញ្ហាប្រឈមដែរឬអត់ក្នុងការធ្វើ project កន្លងមក?

Research Procedure

The research procedure of this study as shown in Figure 1 was separated into two phases: (1) Preparation of English reading the instructional intervention based on the DST framework and (2) Implementation of the English reading instructional intervention based on DST framework. Each one will be described below:

Figure 1

Research Procedure



Phase 1: Preparation of Research Instruments and English Reading DST-based Instructional Intervention

The preparation of English reading instructional intervention based on the Digital Storytelling (DST) framework entailed 3 stages:

Stage 1.1. Synthesize-related Concepts and Theories. The researcher then explored the concepts and theories related to Digital Storytelling (DST), Digital Literacy, and EFL Reading Literacy to construct the DST instructional framework for the instructional plan used in this study. The summary of related concepts and theories, as illustrated in Figure 2, is described as follows.

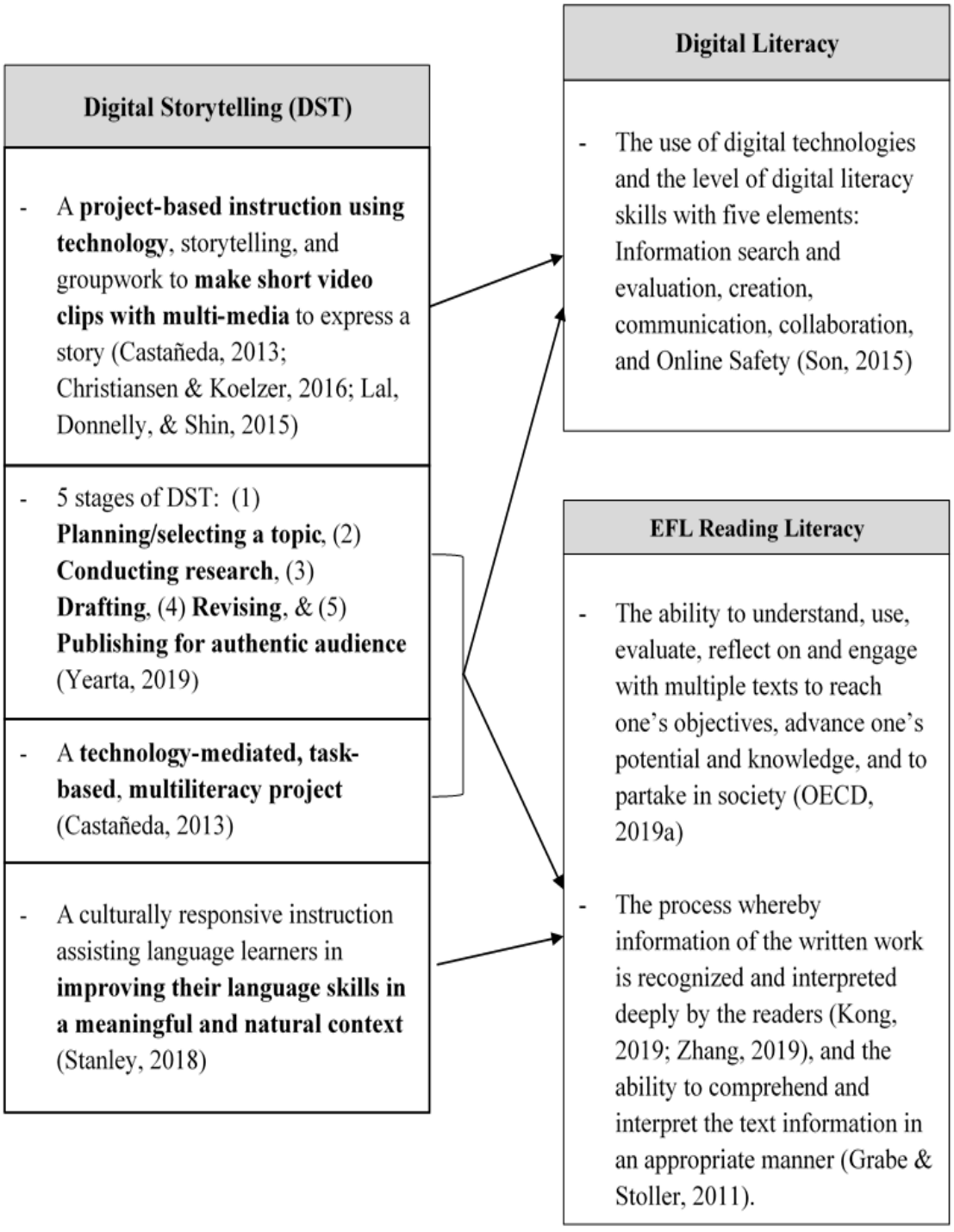
Digital Storytelling (DST) refers to a project-based instruction that uses storytelling technology, and group work to accommodate the making of short video clips with multi-media (e.g. images, music, sounds, video clips, etc.) to express a compelling story (Castañeda, 2013; Christiansen & Koelzer, 2016; Lal, Donnelly, & Shin, 2015). Moreover, DST is claimed by Stanley (2018) to be a culturally responsive instruction, which assists language learners in improving their language skills in a meaningful and natural context. Also, DST is conceptualized by Castañeda (2013) as a technology-mediated, task-based, multiliteracy project. According to Yearta (2019), there are five stages in Digital Storytelling including (1) Planning/selecting a topic, (2) Conducting research, (3) Drafting, (4) Revising, and (5) Publishing for an authentic audience. Furthermore, for its successful implementation, Beckett and Slater (2018) said that the following aspects should be in place. They are explicitness, structure, and fit.

Moreover, being digitally literate refers to awareness of online safety and the ability to utilize digital technologies to create, communicate, collaborate, search for, and evaluate audio-visual, or written texts (Son, 2015). Son et al. (2017) added that digital literacy in language education can be developed by providing useful instructions and opportunities to learn about the resources and digital technologies for language learning and how to access them. Additionally, reading literacy, according

to PISA 2018 reading framework (OECD, 2019b) contains the right cognitive processes, which are grouped under three main categories: (1) locate information, (2) understand, and (3) Evaluate and Reflect. Plus, in this digital era, readers will need to be competent at some new skills; that is, they have to be able to (1) use digital technologies, (2) search for and access their reading texts utilizing a search engine, hyperlinks, or other scrolling functions, (3) evaluate and critique the information, and (4) read different texts to substantiate information, identify possible conflicts and differences, and solve them (OECD, 2016, 2019a). Moreover, two prerequisites for successful reading, according to Grabe (2009, 2014), are vocabulary knowledge and comprehension-supporting reading strategies. These concepts have been discussed in detail in the literature review. Grabe (2014) stated that the following principles of reading instruction should be put into consideration, and they are as follows: Instructions of key skills joined with practicing extensively and being exposed to print, Interesting, diverse, attractive, plentiful, and accessible resources for reading, Including student choice in choosing main reading resource to a certain extent, Reading skills introduced and instructed by scrutinizing principal passaged utilized in the reading course, Lessons designed around pre-, during-, and post-reading, the activities of which should be varied from one to another reading, Opportunities to experience success in comprehension during reading, and Expectations for daily, in-class reading and regular extended reading opportunity.

Figure 2

Conceptual Framework



Stage 1.2. Develop and Validate Research Instruments. In this stage, the researcher after conducting a thorough literature review began the development of the research instruments The research instruments which include the English Reading Test, Digital Literacy Questionnaire, Digital Story Rubric, and Interview protocol were first developed. Following this was the validation of the aforementioned research instruments. The validation process for each instrument was elaborated in the previous section, and it included validity measurement and pilot testing. The former was done to determine the construct and content validity of the instruments, whereas the latter was done to measure their effectiveness. Then the research instruments were piloted with the 10 participants who shared the same characteristic but were not from the study sample.

Stage 1.3. Formulate DST Instruction Plans. Once thoroughly conducting a literature review, the researcher then developed the DST instructional framework for constructing DST unit plans used in the present study. To do so, the researcher adopted the Digital Storytelling framework proposed by Yearta (2019) which includes 5 stages: (1) Planning/selecting a topic, (2) Conducting research, (3) Drafting, (4) Revising, and (5) Publishing for an authentic audience.

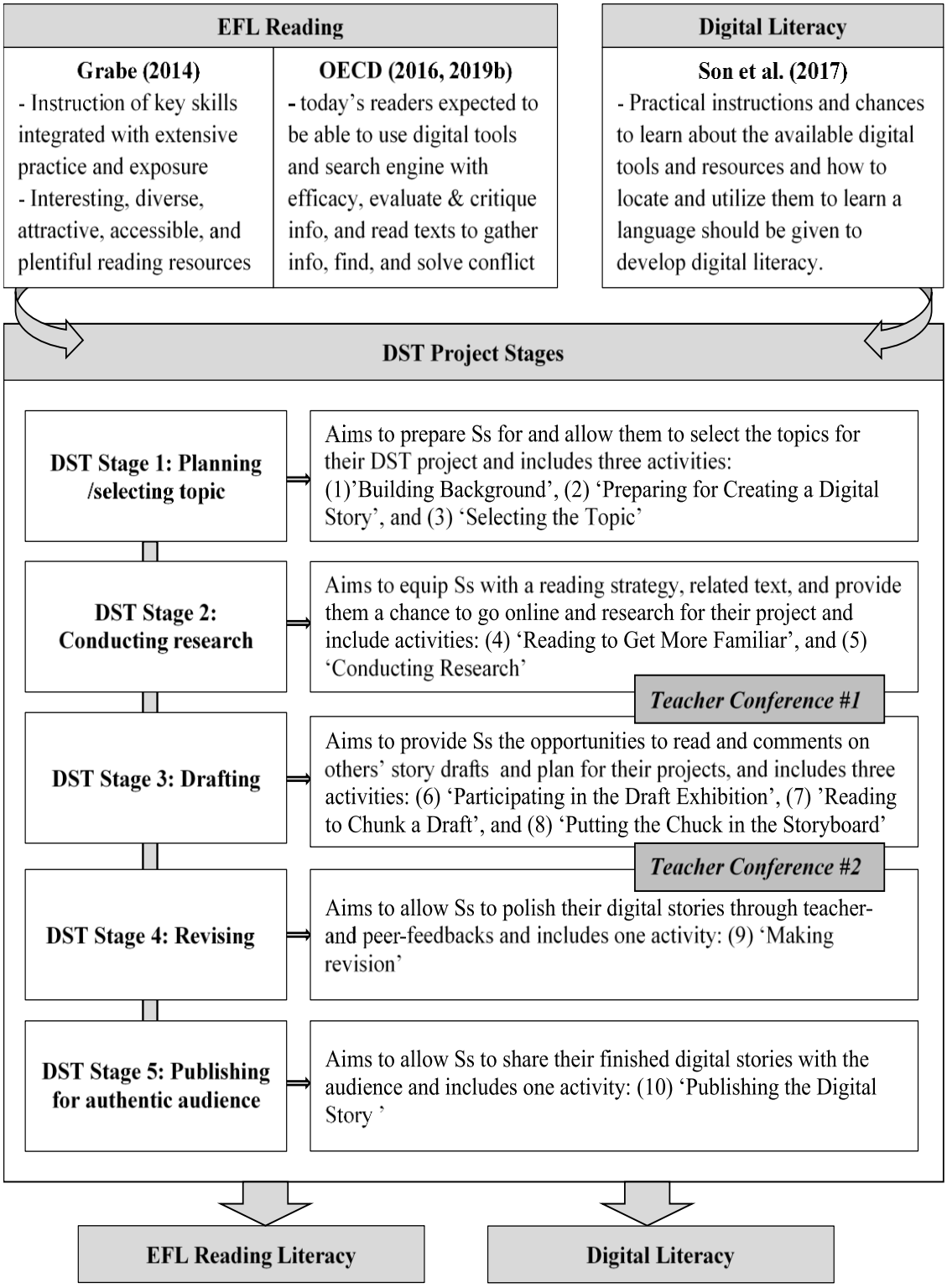
The DST instructional framework was used to design the unit plans for four units, which lasted for eight 90-minute sessions plus extracurricular time. The topic of each unit was taken from QSkills for Success Level 5: Reading and Writing, which was the book used as a coursebook in the School of Foreign languages (SFL) at the University of Cambodia (UC). In total, there were four topics: Linguistics, Sociology, Media Studies, and International Relations, each of which lasted for two 90-minute sessions plus extracurricular time. Since each topic was broad, the researcher

narrowed each one down to as follows: Linguistics (Endangered Language), Sociology (Poverty), Media Studies (Digital Literacy), and International Relation (ASEAN).

The proposed DST instructional framework, as shown in Figure 3, contains five stages: (1) Planning/selecting a topic, (2) Conducting research, (3) Drafting, (4) Revising, and (5) Publishing for an authentic audience. Each stage contains at least one activity. The activities from all stages were implemented throughout the four units. Moreover, In one unit, there were two teacher-conferences scheduled to assist students in their mini-projects. After this is the description of each stage and its activities.

Figure 3

Digital Storytelling Instructional Framework



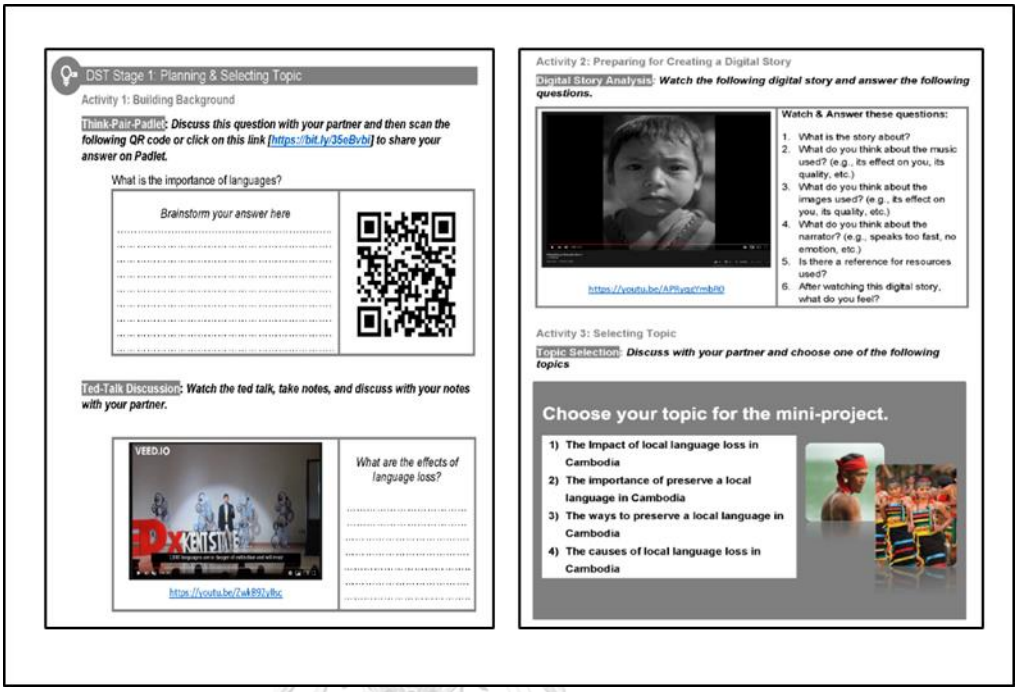
DST Stage 1: Planning/Selecting a Topic. The purpose of this stage is to prepare students for and allow them to select the topics for their digital storytelling projects, and it contains three activities: “Building Background”, “Preparing for Creating a Digital Story”, and “Selecting a topic”.

As for “Building Background” which contains two or more sub-activities, it strives to build background knowledge of the students for their projects. As a result, audio-visual and written texts, and engaging and/or discussion-based activities will be used. As for “Preparing for Creating a Digital Story”, it aims to provide information on what the project entails and its sample. As for “Selecting the Topic”, it provides an opportunity for the students to choose the topics.

As an illustration, in Unit 1, in “Building Background” (see Figure 4), students will participate in Think-Pair-Padlet and Ted-Talk Discussion. In the former, students will think, discuss in pairs the question “What is the importance of language”, and then share their answer on Padlet. In the latter, students are put into groups to listen to a TED talk and take notes on the effect of language loss. This, in turn, is followed by whole-class sharing. After the students have participated in the “Background Building Activity”, they will move to “Preparing for Creating a Digital Story” and “Topic Selection”. In these two activities, they will first and foremost analyze a sample of the teacher-made digital story using some guided questions and secondarily choose the topic for their mini projects of the digital story.

Figure 4

Activities 1, 2, and 3



DST Stage 2: Conduct Research. This stage aims to further equip students for their project with a reading strategy and related text and provide them with a chance to go online and research on their project. This stage promotes intensive and extensive reading comprehension through pair work, group work, and reading exercises. Moreover, this stage contains two activities: ‘Reading to Get More Familiar’ and ‘Conducting A Research’:

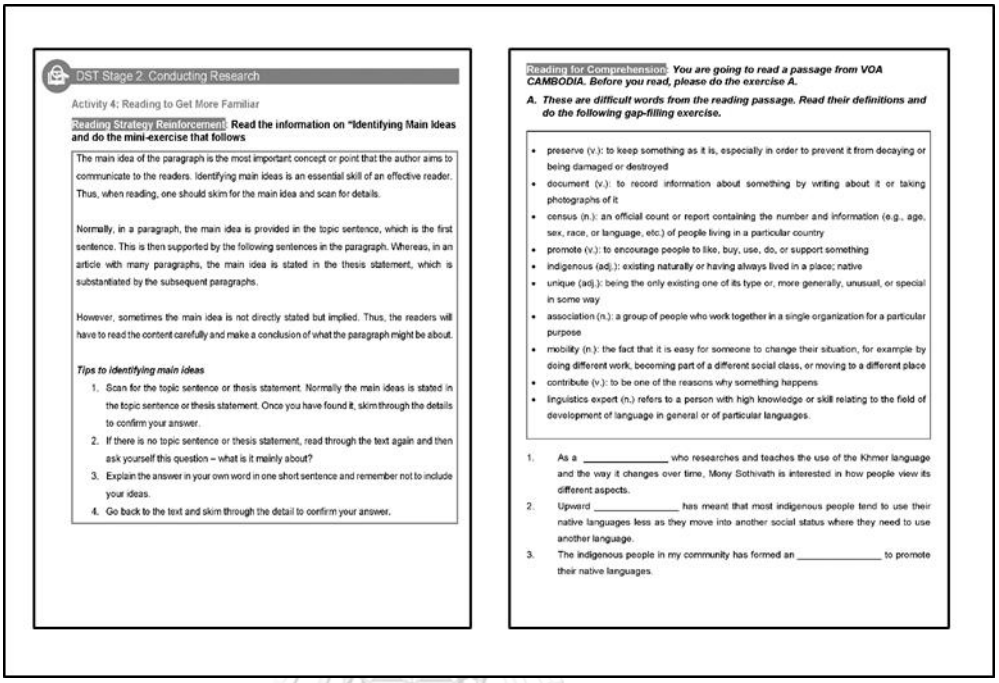
In “Reading to Get More Familiar”, contains two sub-activities: “Reading Strategy Reinforcement” and “Reading for Comprehension”. These two will further prepare students for their projects by equipping them with a reading strategy they will use in their research and a project-related reading passage in which they can practice applying the learned reading strategy and gain more useful information about their

project. In “Conducting A Research”, which is done in extracurricular time, it introduces the research task to students to gather information about each of their topics. Before the class ends, the teacher will introduce the research task to the students and provide useful sources to them based on their topics. Moreover, the first teacher-conference session will be scheduled for them to follow up with their work and provide help with online searching. Before joining the teacher conferences, they must combine the information from the pair members and submit it to the teacher as a draft of a two to three-page summary.

For example, in Unit 1, in “Reading Strategy Reinforcement” and “Reading for Comprehension” (see Figure 5), the teacher will explicitly teach reading strategy “identify main ideas” to students who then will practice using it in a mini-reading exercise. After this, students will read an authentic passage from VOA on Researcher Warn of a Loss of Language. Then they will do some reading exercises.

Figure 5

Sub-activities 4.1 and 4.2



DST Stage 2: Conducting Research

Activity 4: Reading to Get More Familiar

Reading Strategy Reinforcement: Read the information on "Identifying Main Ideas and do the mini-exercise that follows

The main idea of the paragraph is the most important concept or point that the author aims to communicate to the readers. Identifying main ideas is an essential skill of an effective reader. Thus, when reading, one should skim for the main idea and scan for details.

Normally, in a paragraph, the main idea is provided in the topic sentence, which is the first sentence. This is then supported by the following sentences in the paragraph. Whereas, in an article with many paragraphs, the main idea is stated in the thesis statement, which is substantiated by the subsequent paragraphs.

However, sometimes the main idea is not directly stated but implied. Thus, the readers will have to read the content carefully and make a conclusion of what the paragraph might be about.

Tips to identifying main ideas

1. Scan for the topic sentence or thesis statement. Normally the main ideas is stated in the topic sentence or thesis statement. Once you have found it, skim through the details to confirm your answer.
2. If there is no topic sentence or thesis statement, read through the text again and then ask yourself this question – what is it mainly about?
3. Explain the answer in your own word in one short sentence and remember not to include your ideas.
4. Go back to the text and skim through the detail to confirm your answer.

Reading for Comprehension: *You are going to read a passage from VOA CAMBODIA. Before you read, please do the exercise A.*

A. These are difficult words from the reading passage. Read their definitions and do the following gap-filling exercise.

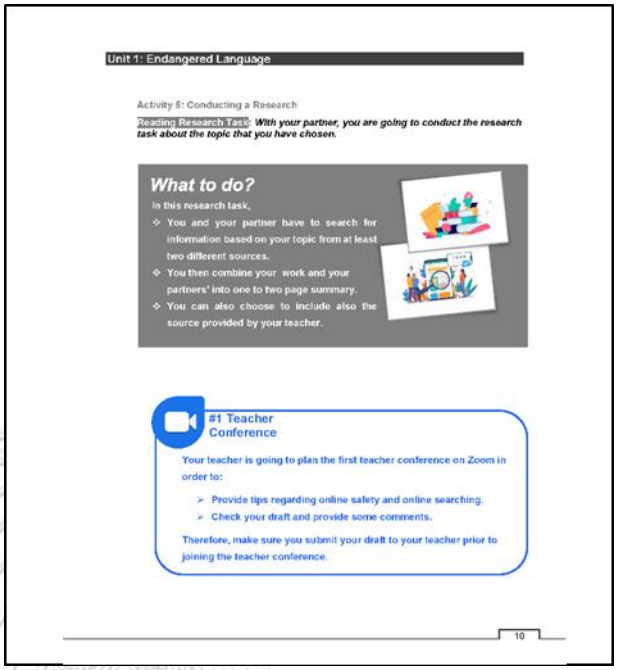
- preserve (v.): to keep something as it is, especially in order to prevent it from decaying or being damaged or destroyed
- document (v.): to record information about something by writing about it or taking photographs of it
- census (n.): an official count or report containing the number and information (e.g., age, sex, race, or language, etc.) of people living in a particular country
- promote (v.): to encourage people to like, buy, use, do, or support something
- indigenous (adj.): existing naturally or having always lived in a place; native
- unique (adj.): being the only existing one of its type or, more generally, unusual, or special in some way
- association (n.): a group of people who work together in a single organization for a particular purpose
- mobility (n.): the fact that it is easy for someone to change their situation, for example by doing different work, becoming part of a different social class, or moving to a different place
- contribute (v.): to be one of the reasons why something happens
- linguistics expert (n.) refers to a person with high knowledge or skill relating to the field of development of language in general or of particular languages.

1. As a _____ who researches and teaches the use of the Khmer language and the way it changes over time, Mony Sothivath is interested in how people view its different aspects.
2. Upward _____ has meant that most indigenous people tend to use their native languages less as they move into another social status where they need to use another language.
3. The indigenous people in my community has formed an _____ to promote their native languages.

After gaining some ideas from reading the passage, the students then will move to "Conducting a Research" (see Figure 6) in which they will be assigned a reading research task to gather information about their topic. The teacher will also provide useful resources to each pair based on their topics. After this, the first teacher conference will be scheduled outside the class time on Zoom to provide tips to students regarding online safety and searching. Before joining the teacher conference, the students must combine the information they have found and submit it to the teacher as a draft of a one or two-page summary.

Figure 6

Activity 5 and the #1 Teacher Conference



DST Stage 3: Drafting. The objective of this stage is to provide students with the opportunities to (1) read the others' story drafts and give comments accordingly and (2) plan for their projects. In this stage, there are three activities: 'Participating in the Draft Exhibition', 'Reading to Chunk a Draft', and 'Putting the Chuck in the Storyboard'.

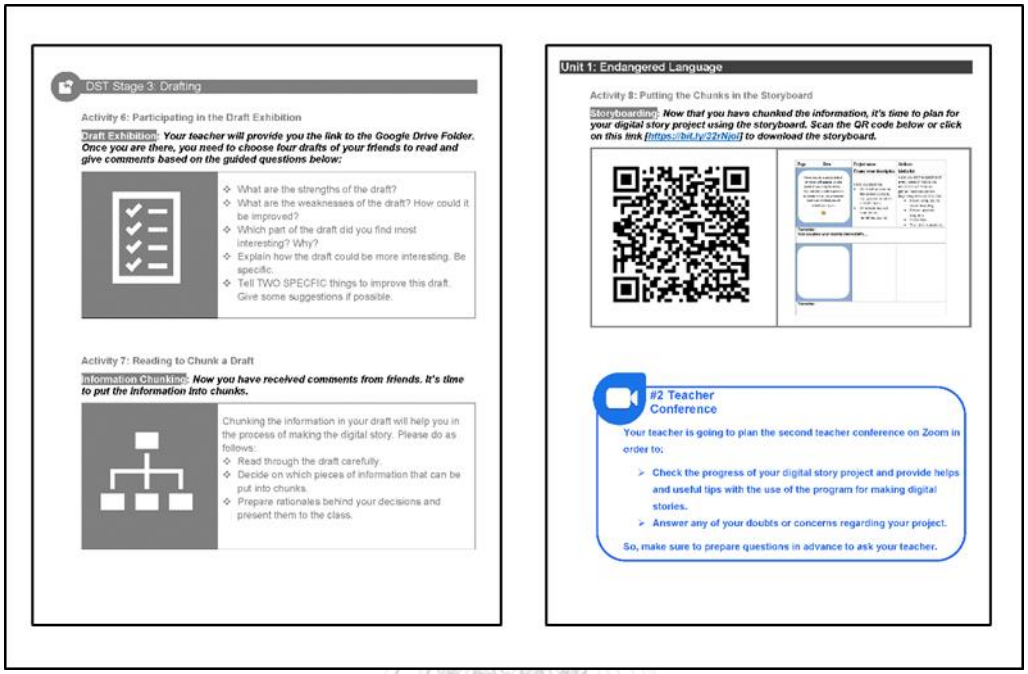
In 'Participating in the Draft Exhibition', the students read their friends' drafts and give comments on content to their friends. In "Reading to Chunk a Draft", the students will be taught how to put the information in their drafts into chunks since they will need them as scripts for their projects. In "Putting the Chuck in the Storyboard", the students will be provided with an opportunity to make a skeleton plan for their projects through the use of the storyboard templates. The storyboard template allows the students to plan out their projects by planning for what kind of

music, photos, or animation for each of their information chunks. Furthermore, the second teacher conference session will be arranged outside the class time to aid all students with their projects and check their progress.

For instance, in Unit 1, in “Participating in the Draft Exhibition”, “Reading to Chunk a Draft”, and “Putting the Chunk in the Storyboard” (see Figure 7), students will do the following. First, they will be asked to go to the Google Drive Folder that contains their and their friends’ drafts. They will read four of their friends’ drafts and give comments based on the guided questions given. After giving and receiving comments, they then will be asked to chunk the information in their drafts using the storyboard. This will help them when they create their digital stories. Once chunking the information, they will present to the class how they chunk and what is the rationale behind it. Then they can start creating their digital stories. After this stage, there will be a second teacher conference arranged on Zoom to check the progress of each pairs’ digital story project and provide bits of help and some useful tips to the students regarding the program used to make the digital story.

Figure 7

Activities 6, 7, 8, and the #2 Teacher Conference

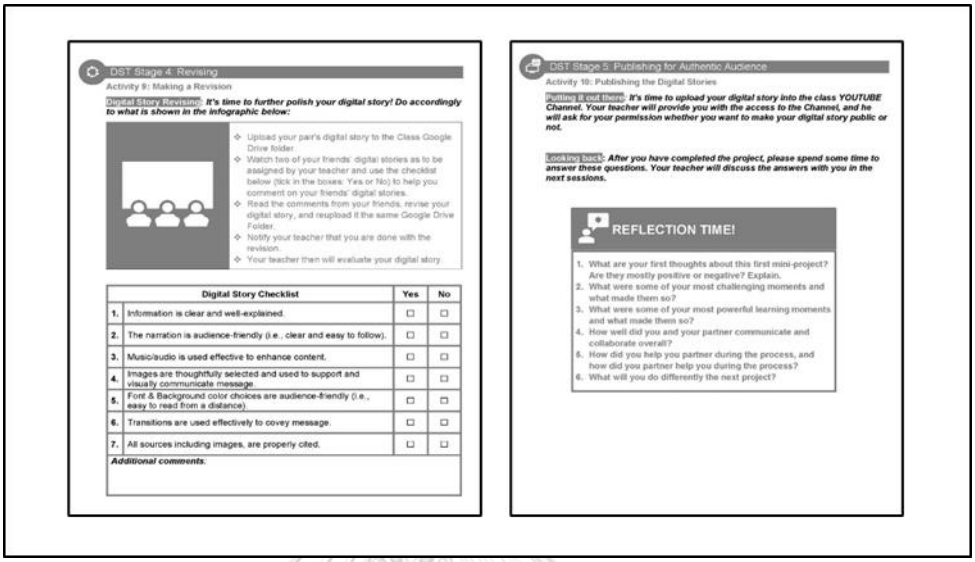


DST Stage 4: Revising. The purpose of this stage is to allow the students to polish their digital stories through teacher- and peer feedback. This stage will be carried out in the extracurricular time and contains one activity, “Revising”. In it, the students will watch their friends’ digital stories and provide general comments to their friends on the design and the quality of the audios, images, or videos used.

In Unit 1, in this activity (see Figure 8) students will first upload their digital stories to the Google Drive Folder. They then will be assigned to watch and comments on their friends’ digital stories, using the checklist to be provided. Having receiving comments, they then will revise their digital stories, reupload their revised digital stories, and notify the teacher about the revision so that the teacher can assess the students’ digital stories.

Figure 8

Activities 9 & 10



DST Stage 4: Revising

Activity 9: Making a Revision

Digital Story Revision: ***It's time to further polish your digital story! Do accordingly to what is shown in the infographic below:***

- Upload your pair's digital story to the Class Google Drive folder.
- Watch two of your friends' digital stories as to be assigned by your teacher and use the checklist below (tick in the boxes: Yes or No) to help you comment on your friends' digital stories.
- Read the comments from your friends, revise your digital story, and reupload it the same Google Drive Folder.
- Notify your teacher that you are done with the revision.
- Your teacher then will evaluate your digital story.

Digital Story Checklist		Yes	No
1.	Information is clear and well-explained.	☐	☐
2.	The narration is audience-friendly (i.e., clear and easy to follow).	☐	☐
3.	Music/audio is used effective to enhance content.	☐	☐
4.	Images are thoughtfully selected and used to support and visually communicate message.	☐	☐
5.	Font & Background color choices are audience-friendly (i.e., easy to read from a distance).	☐	☐
6.	Transitions are used effectively to covey message.	☐	☐
7.	All sources including images, are properly cited.	☐	☐
Additional comments:			

DST Stage 5: Publishing for Authentic Audience

Activity 10: Publishing the Digital Stories

Putting it out there: ***It's time to upload your digital story into the class YOUTUBE Channel. Your teacher will provide you with the access to the Channel, and he will ask for your permission whether you want to make your digital story public or not.***

Looking back: ***After you have completed the project, please spend some time to answer these questions. Your teacher will discuss the answers with you in the next sessions.***

REFLECTION TIME!

1. What are your first thoughts about this first mini-project? Are they mostly positive or negative? Explain.
2. What were some of your most challenging moments and what made them so?
3. What were some of your most powerful learning moments and what made them so?
4. How well did you and your partner communicate and collaborate overall?
5. How did you help you partner during the process, and how did you partner help you during the process?
6. What will you do differently the next project?

DST Stage 5: Publishing for Authentic Audiences. This stage aims to share the students' finished digital stories with the authentic audience. Synonymous to the previous stage, this stage will be done in the extracurricular time and entails one activity, "Publishing the Digital Stories". In it, the students will upload their finished digital stories to the agreed-upon digital platform, after which they will participate in a short reflection session.

In this activity in Unit 1 (see Figure 8), students will take turns uploading their digital stories into the class YouTube Channel. The teacher, with students' permission, will share the link with the public. After that, the students will then take some time to reflect on their performance in the project using the guided question provided.

Stage 1.4. Validate the DST Instructional Plans. To validate the finished DST instructional plan, construct and content validity of the unit plans were measured. One appropriate approach to measure construct and content validity is

through the judgment given by the content experts (Salkind, 2010). The evaluation is normally done using the index of item-objective congruence (IOC), the process of which involves the content experts rating the items based on whether or not the items measure the objectives by providing each item a rating of -1 (for obviously not measuring), 0 (unclear as to whether it measures the content areas), or 1 (obviously measure) (Rovinelli & Hambleton, 1977).

Therefore, three experts with at least 5 years of English teaching experience were invited to assess the construct and content validity of DST instructional plans, and a rating scale evaluation with three points (-1 = obviously not measuring, 0 = unclear, and 1 = obviously measure) was given to the aforementioned experts to evaluate the construct and content validity of the DST instructional plans. From the results given by the experts, mean scores were calculated. The items in the IOC form that did not have a mean score from 0.5 to 1 were revised based on the experts' suggestions and comments. Once the unit plans had been validated, they were then piloted to determine their practicality and effectiveness. Approximately 10 English-majored students from the School of Foreign Languages at the University of Cambodia were asked to join the pilot test of the unit plan. Those students were not from the sample of the main study but had identical characteristics including age, major, and English proficiency. Changes were made accordingly to the lessons learned from the pilot test. Based on the IOC result (see Appendix Q), the statement regarding the suitability of materials for students' level and the unit did not receive a mean score higher than 0.5. Thus, changes were made to the materials, namely the TED Talks, based on the experts' comments. The finalized version of the unit plan and material in Appendices N and O.

After having been validated, one unit of the unit plan was tried out with the 10 students who are not from the sample of the main study but share similar characteristics in February 2021. The implementation of the unit was carried out with a few unexpected problems, and they are as follows: (1) some students used the phone to access the class, which made it difficult for them to participate in some of the activities; (2) some students did not see the connection between reading strategy and their researching tasks; and (3) during the "draft exhibition" stage, some students were reluctant to provide comments to their friends' drafts. Therefore, from dealing with these problems, in the main study the researcher did the following: (1) Activities were redesigned to make them both computer- and mobile-friendly, (2) during the first session of reading strategy instruction, the researcher explicitly explained how the reading strategy they learned reading would be helpful to them in their research endeavor, and (3) the researcher trained students on how to comment on the drafted scripts before asking them to analyze their friends' drafts.

Phase 2: Implementation of the English Reading DST-based Instructional Intervention

The application of the revised English reading the instructional intervention based on the Digital Storytelling (DST) framework included 3 stages:

Stage 2.1. Orient Students to the Course and Conduct a Pretest of English Reading Tests. Before joining the instructional intervention, the participants of the study were orientated to Digital Storytelling (DST) and trained to use Adobe Spark, a free digital-story making program. Then, they were requested to sign the consent form and given the pre-test to do. The pre-test was the English Reading Test. The result

was used as a comparison with that of the post-test to determine the effectiveness of the instructional plan based on the DST framework.

Stage 2.2. Administer the DST Instruction. The students participated in the English reading units based on Digital Storytelling (DST) framework for eight 90-minute sessions plus extracurricular time. Each unit, which lasted for two 90-minute sessions plus extracurricular time, was adapted from Yearta's (2019) Digital Storytelling framework, and at the end of each unit, students working as teams would have accomplished a mini-project, which was making a digital story based on the theme of each unit. The outline of the units is shown in Figure 9.

Figure 9

Outline of the Units

Units/topics/ weeks	Learning Outcomes	Digital Storytelling		Digital Literacy	Reading Strategies
		Stages	Activities		
(Week 1) Orientation of the course implementing Digital Storytelling (DST) and Adobe Spark, and implementation of English Reading Pre-Test					
Unit 1: Endangered Language **(Weeks 2 -3)**	Students will be able to: - determine the main ideas from detail in the reading passage - work in pairs to	DST Stage 1: Planning/ selecting a topic	Act.1: Building Background Sub-act.1.1. Think-Pair-Padlet Sub-act.1.2. Ted-Talk Discussion	Collaboration	Identifying main ideas
			Act.2: Preparing for Creating a Digital Story		

	create a digital story based on the topics related to endangered language		Act.3: Selecting a Topic		
		DST Stage 2: Conducting a research	Act.4: Reading to Get More Familiar Sub-act. 4.1. Reading Strategy Reinforcement Sub-act. 4.2. Reading for Comprehension	Information search and evaluation, Communication, & Online Safety	
			Act. 5: Conducting a Research		
		Teacher Conference			
		DST Stage 3: Drafting	Act. 6: Participating in the Draft Exhibition	Collaboration, Communication, & Creation	
			Act. 7: Reading to Chunk a Draft		
			Act. 8: Putting the Chunk in the Storyboard		
		Teacher Conference			
		DST Stage 4: Revision	Act. 9: Making a Revision	Collaboration & Creation	
		DST Stage 5: Publishing for an authentic audience	Act. 10: Publishing the Digital Stories	Collaboration	
Unit 2: Poverty **(Weeks 4 -5)**	Students will be able to: - generate inferences from the	DST Stage 1: Planning/ selecting a topic	Act.1: Building Background Sub-act.1.1. Vote-and-Rationale	Collaboration	Generating inferences

	reading passage - work in pairs to create a digital story based on the topics related to poverty . .		Sub-act.1.2. People's solutions to Poverty		
			Act.2: Preparing for Creating a Digital Story		
			Act.3: Selecting a Topic		
		DST Stage 2: Conducting a research	Act.4: Reading to Get More Familiar Sub-act. 4.1. Reading Strategy Reinforcement (generating inferences) Sub-act. 4.2. Reading for Comprehension	Information search and evaluation, Communication, & Online Safety	
			Act. 5: Conducting a Research		
		Teacher Conference			
		DST Stage 3: Drafting	Act. 6: Participating in the Draft Exhibition	Collaboration, Communication, & Creation	
			Act. 7: Reading to Chunk a Draft		
			Act. 8: Putting the Chunk in the Storyboard		
		Teacher Conference			
		DST Stage 4: Revision	Act. 9: Making a Revision	Collaboration & Creation	
		DST Stage 5:	Act. 10: Publishing the	Collaboration	

		Publishing for an authentic audience	Digital Stories		
Unit 3: Digital Literacy **(Weeks 6 -7)**	Students will be able to: - generate inferences from multiple sources the reading passages - work in pairs to create a digital story based on the topics related to digital literacy	DST Stage 1: Planning/ selecting a topic	Act.1: Building Background Sub-act.1.1. Jamboard Dat Idea Sub-act.1.2. Idea Consolidation	Collaboration	Generating inferences from multiple sources
			Act.2: Preparing for Creating a Digital Story		
			Act.3: Selecting a Topic		
		DST Stage 2: Conducting a research	Act.4: Reading to Get More Familiar Sub-act. 4.1. Reading Strategy Reinforcement (generate inferences from multiple sources) Sub-act. 4.2. Reading for Comprehension	Information search and evaluation, Communication, & Online Safety	
			Act. 5: Conducting a Research		
		Teacher Conference			
		DST Stage 3: Drafting	Act. 6: Participating in the Draft Exhibition	Collaboration, Communication, & Creation	

			Act. 7: Reading to Chunk a Draft		
			Act. 8: Putting the Chunk in the Storyboard		
		Teacher Conference			
		DST Stage 4: Revision	Act. 9: Making a Revision	Collaboration & Creation	
		DST Stage 5: Publishing for an authentic audience	Act. 10: Publishing the Digital Stories	Collaboration	
Unit 4: ASEAN **(Weeks 8 -9)**	Students will be able to: - identify authors' stances in the reading passages - work in pairs to create a digital story based on the topics related to ASEAN	DST Stage 1: Planning/ selecting a topic	Act.1: Building Background Sub-act.1.1. ASEAN Quizizz Sub-act.1.2. Debate about ASEAN	Collaboration	Identifying authors' stances
			Act.2: Preparing for Creating a Digital Story		
			Act.3: Selecting a Topic		
		DST Stage 2: Conducting a research	Act.4: Reading to Get More Familiar Sub-act. 4.1. Reading Strategy Reinforcement (Sub-act. 4.2. Reading for Comprehension	Information search and evaluation Communication & Online Safety	

<table>
<tr><td rowspan="8"></td><td rowspan="8"></td><td></td><td>Act. 5: Conducting a Research</td><td rowspan="2"></td><td rowspan="8"></td></tr>
<tr><td colspan="2">Teacher Conference</td></tr>
<tr><td rowspan="3">DST Stage 3: Drafting</td><td>Act. 6: Participating in the Draft Exhibition</td><td rowspan="4">Collaboration, Communication, & Creation</td></tr>
<tr><td>Act. 7: Reading to Chunk a Draft</td></tr>
<tr><td>Act. 8: Putting the Chunk in the Storyboard</td></tr>
<tr><td colspan="2">Teacher Conference</td></tr>
<tr><td>DST Stage 4: Revision</td><td>Act. 9: Making a Revision</td><td>Collaboration & Creation</td></tr>
<tr><td>DST Stage 5: Publishing for an authentic audience</td><td>Act. 10: Publishing the Digital Stories</td><td>Collaboration</td></tr>
<tr><td colspan="6">(Week 10) Implementation of English Reading Post-Test and General Digital Literacy Questionnaire</td></tr>
<tr><td colspan="6">(Weeks 11) Digital Storytelling (DST) Interview</td></tr>
</table>

Stage 2.3. Conduct a Posttest of English Reading Test, Questionnaire, and an Interview. After the completion of all the instructional interventions, the post-test was given to the participants. The pre-and post-tests of EFL reading ability were the same. The comparison of the results from the pre-and post-tests was used to determine the effectiveness of instructional plans based on the DST framework. After the test, the digital literacy questionnaire was given to the participants to explore their perception toward their digital literacy, and some of the participants were randomly

selected to join the semi-structured interview, the information from both of which was used to substantiate the result of the pre-and post-test comparison.

Data Collection

The data collection procedure will take place in three phases: before, during, and after the implementation of English reading DST-based instructional intervention. The whole experiment lasted for 11 weeks. Before the instructional intervention, in Week 1, students were given the English Reading Test to test their EFL reading literacy, and they were then oriented to the instructional intervention and the program they were going to use throughout the units.

After that, they joined in the instructional intervention for 8 weeks from Week 2 to Week 9. In Week 10, they took the English Reading Test to investigate the improvement in their English reading ability, moreover, they also responded to the Digital Literacy Questionnaire to explore their perceptions on their digital literacy after participating in Digital Storytelling. Last, in Week 11, some of the students were selected randomly to join the semi-interview to explore their perceptions of Digital Storytelling.

Data Analysis

This section is divided into three sub-sections, each of which was for a data analysis method used for each research question. The summary of data analyses conducted for each research question is shown in Table 4 below, and the detailed explanation is given on the following page.

Table 4

The Data Analysis Method used by the Researcher for Each Research Question

Research questions	Purposes	Instruments	Data sources	Data analyses method
1. What is the effect of Digital Storytelling (DST) on EFL reading literacy of Cambodian undergraduate students?	(1) To investigate the effect of DST on Cambodian undergraduate students' EFL reading	(1) Pre-test and post-test of the English reading test	(1) Pre- and post-test scores	(1) Descriptive statistics, the Wilcoxon Signed-Rank test, and an effect size
2. What is the perception of Cambodian undergraduate students' on their digital literacy after participating in Digital Storytelling (DST)	(3) to explore Cambodian undergraduate students' perceptions on their digital literacy after participating in Digital Storytelling (DST)	(3a) a digital literacy questionnaire (3b) Digital Story Rubric	(3a) Scale of the questionnaire and analysis of the text in the open-ended questions (3b) score from the rubric	(3a) Descriptive statistics, content analysis coding, and categorization (3b) Descriptive statistics, the Friedman test
3. What are the perceptions of Cambodian undergraduate students on Digital Storytelling (DST)?	(2) To explore Cambodian undergraduate students' perceptions of and Digital Storytelling (DST)	(2b) Interview protocol	(2b) Analysis of the data from the interview	(2b) Content analysis coding, and categorization

Data Analysis for the First Research Question

The first research question aims to study the effect of Digital Storytelling (DST) on Cambodian undergraduate students' reading ability. To obtain the data, the researcher used the English reading ability tests as pre-and post-tests. To analyze the data, the researcher did as follow:

Firstly, the researcher calculated the median of students' scores in the pre-and post-tests of reading. Then, the researcher compared them to see if they were different, to determine whether they were different at the statistically significant level of 0.05, the Wilcoxon Signed-Rank test, a non-parametric test, was used in place of a parametric test because of the following reasons. According to Corder and Foreman (2009), the parametric test can only be used with the study that meets the following conditions: (1) the participants that are randomly selected from the population, (2) the groups of participants that are independent of each other, apart from the case of paired values, (3) the data that is normally distributed and interval scale, (4) the participants that possess roughly equivalent variances, and (5) the sufficiently large groups. The current study failed to meet some of the criteria because neither were the 20 participants randomly selected from the population nor was their number sufficiently large enough to produce the data with normal distribution. Therefore, to analyze the data, the researcher used the Wilcoxon Sign Rank test, which, as stated by Dornyei (2007), is the non-parametric substitute to the paired-sample t-test that is normally used to decide whether the difference of the two samples are at the statistical significance at the level of 0.05.

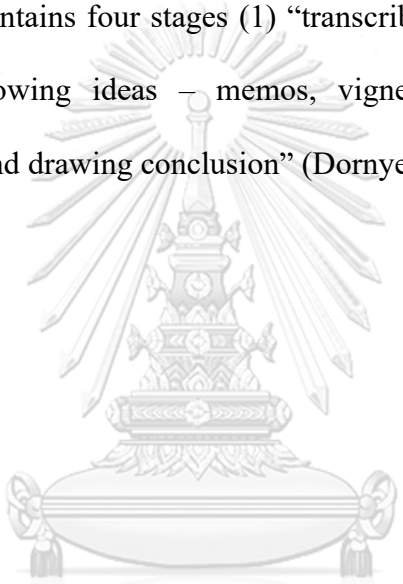
Secondly, after the statistically significant difference had been determined, the effect size for the result of the test was computed because, as stated by Dornyei (2007, p. 212), “it can depict “the magnitude of an observed phenomenon”. The interpretation of the effect size based on Cohen (1988) is as follows: 0.10 = small effect, 0.30 = moderate effect, and 0.50 = large effect.

Data Analysis for the Second Research Question

The second research question aims to investigate the university students’ perceptions of their digital literacy after participating in DST. In this study, the perception of their digital literacy is reported under two sections: (1) use of digital technologies and (2) levels of digital literacy skills. The digital literacy questionnaire adapted from Son’s (2015) questionnaire and digital story rubric were given to students to explore their perceptions toward their digital literacy. Descriptive statistics were used to analyze the quantitative data from the questionnaire, while its qualitative data were analyzed through content analysis. For five-point Likert scale questions, mean intervals with equal differences were calculated for the interpretation (Pimentel, 2010). Additionally, to analyze the data from the digital story rubric, descriptive statistics were used to compare the difference of the score from the first to last projects and to determine if the difference was statistically significant at the level of 0.05, the Friedman’s test was used. The rationale for choosing the Friedman test is because the current study failed to meet some of the aforementioned Corder and Foremen’s (2009) criteria for study suitable for the use of parametric tests.

Data Analysis for the Third Research Question

The third research question aims to investigate the university students' perceptions of Digital Storytelling (DST). To obtain the data, the interview protocol was used. Moreover, analyzing the data from the interview protocol was done through content analysis, which is a research method used to collect qualitative data that are not predetermined but resultant inductively from the analysis of the qualitative data, and content analysis contains four stages (1) "transcribing the data", (2) "pre-coding and coding", (3) "growing ideas – memos, vignettes, profiles, etc.", and (4) "interpreting the data and drawing conclusion" (Dornyei, 2007)



Chapter IV

Results

This chapter presents the qualitative and quantitative results of the study that employed the one-group-pretest, posttest design to look at the effect of Digital Storytelling on Cambodian undergraduate students' EFL reading Literacy and Digital Literacy. This chapter is divided into four sections. Sections 1, 2, and 3 report the results in response to Research Questions 1, 2, and 3, respectively. Section 4 presents a summary of this chapter.

Result of the First Research Question

- Research Question 1 – What is the effect of Digital Storytelling on Cambodian undergraduate students' EFL reading literacy?
- Hypothesis 1 – The post-test median score of Cambodian undergraduate students' EFL reading literacy is statistically significantly higher than the pre-test median score at 0.05 level.

The research question sought to investigate the effect of Digital Storytelling on Cambodian undergraduate students' EFL reading literacy. To attend to this question, a researcher-designed English Reading Test with 32 points was used as pre- and post-tests to evaluate EFL reading literacy of the students. Then the researcher used descriptive statistics to see whether there was any difference. Then the researcher used the Wilcoxon Signed Rank Test to determine if the difference found is statistically significant. It then would be followed by the calculation for the effect size.

Overall EFL Reading Literacy

Table 5.1 shows that the differences between mean rank and sum of ranks were in favor of positive ranks (i.e., the posttest result of the English reading test). The difference between the pre- and post-English reading tests was also statistically significant (z = -2.96, p = .003) with a large effect size of .70 (Cohen, 1988). Hence, this concludes that their overall EFL reading literacy improved after the intervention.

Table 5

The Result of the Wilcoxon Signed Ranks Test of the Pre- and Post-tests

English Reading Test	Groups	*N*	Mean Rank	Sum of Rank	*z*	*p*	Effect size (*r*)
Posttest-Pretest	Negative Ranks	4	3.50	14.00	-2.96	.003	.70
	Positive Ranks	13	10.69	139.00			
	Ties	1					

Note. N refers to the number of students, p < 0.05

In conclusion, it can be said that Digital Storytelling positively impacted students' EFL reading literacy because the median score of their post-test (*Mdn* = 22.25) is higher than that of their pre-test (*Mdn* = 18) at a statistically significant level (z = -2.64, p = .003, r = 0.69). Moreover, to further analyze the effect of Digital Storytelling on their EFL reading literacy, the English reading test was split into three aspects. Then, the pre-and-post-test data of each aspect was then examined and compared.

EFL Reading Literacy in Three Aspects

Table 5.2 indicates the differences between mean rank and sum of ranks were in favor of positive ranks in all test aspects (i.e., the posttest result of the English reading test). There were also statistically significant differences in the pre- and post-tests of the reading test aspects: (1) locating information (z = -2.32, p = .02), (2) understanding (z = -2.39, p = 0.2), and (3) evaluating and reflecting (z = -2.06, p = .04). The effect size was .55, .56, and .49, respectively. The first two were large while the last one was medium (Cohen, 1988). Thus, this implies that the student's ability to locate information, understand, and evaluate and reflect in English measurably improved after the intervention.

Table 6

The Result of the Wilcoxon Signed Ranks Test of the Pre- and Post-tests (Their Separate Aspects)

English Reading Test Aspects	Groups	*N*	Mean Rank	Sum of Rank	*z*	*p*	Effect size (*r*)
Posttest-Pretest (Locate Information)	Negative Rank	3	5.33	16.00	-2.32	.02	.55
	Positive Rank	11	8.09	89.00			
	Ties	4					
Posttest-Pretest (Understand)	Negative Rank	3	3.83	11.50	-2.39	.02	.56
	Positive Rank	10	7.95	79.50			
	Ties	5					
Posttest-Pretest (Evaluate and Reflect)	Negative Rank	5	6.00	33.00	-2.06	.04	.49
	Positive Rank	12	10.00	120.00			
	Ties	1					

Note. *N* refers to the number of students, p < 0.05

Result of the Second Research Question

- Research Question 2 – What is the perception of Cambodian undergraduate students' on their digital literacy after participating in Digital Storytelling?

The research question strove to look at the perception of Cambodian undergraduate students' on their digital literacy after participating in Digital Storytelling. Their perception refers to two aspects: (1) the use of technologies and (2) the level of digital literacy skills. To answer this question, a questionnaire on digital literacy and a digital story rubric was used. The data from the rubric was used to substantiate the data from the questionnaire.

The Digital Literacy Questionnaire was adapted from Son's (2015) questionnaire and was back-translated into Khmer to make it appropriate for the students. The questionnaire was administered at the end of the study (Week 10). On the other hand, the Digital Story Rubric was designed by adapting from and synthesizing Son's elements of digital literacy and Barret's (2006), Tobin's (2012), and Stanley and Dillingham's (2009 as cited in Stanley, 2018) digital story rubrics. The rubric was used at the end of each project to evaluate students' digital stories in light of digital literacy. Students' scores for all projects were analyzed using Friedman's test to look at the improvement of digital literacy.

Use of Digital Technologies

Ability to Use Digital Technologies. Table 6.1 shows that the mean scores of the students' ability to use technologies for information search and evaluation (*M* = 1.78, *SD* = 2.05) and online safety (*M* = 3.05, *SD* = .99) were the lowest and highest, respectively. Overall, their ability to use technologies for information search and evaluation, creation, communication, collaboration, and online safety was above average (*M* = 12.27, *SD* = 4.06); in other words, at the adequate digital literacy levels.

Table 7

The Descriptive Statistics of the Result from the General Digital Literacy Test (Section IV)

General Digital Literacy Test	*N*	*Min*	*Max*	*M*	*SD*
Information Search & Evaluation	18	0	4	1.78	2.05
Creation	18	0	4	3	1.41
Communication	18	0	4	2.44	1.46
Collaboration	18	0	4	2	2.06
Online Safety	18	0	4	3.05	.99
Overall (Full Score = 20 Marks)	18	4	19	12.27	4.06

As illustrated in Table 6.2, the majority of the participants (89%) used the computer for learning purposes, used social networking services, could change the computer brightness and contrast, could write files into a CD, DVD, or USB drive, and could download and use the apps on digital devices. However, the majority of them did not have a personal homepage or personal profile on the website (83%),

could not create or update the website (67%), and could scan disks for viruses (56%.) Overall, out of 20 “Can and Do” questions that look at whether they could use and knowledge of using certain digital tools, the majority of the participants said “yes” to 17 of them.

Table 8

Responses to “Do” and “Can” Questions

	“Do” and “Can ”Questions	Yes	No
1	Do you understand the basic functions of computer hardware?	67%	33%
2	Do you have a personal homepage or personal profile on the web?	17%	83%
3	Do you use keyboard shortcuts?	83%	17%
4	Do you use the computer for learning purposes?	89%	11%
5	Do you find it easy to learn something by reading it on the computer screen?	67%	33%
6	Do you find it easy to learn something by watching it on the computer screen?	78%	22%
7	Do you use social networking services?	89%	11%
8	Do you have any online friends you have never met in person?	72%	28%
9	Do you feel competent in using digital learning resources?	67%	33%
10	Do you have mobile apps you use for language learning	72%	28%

Table 8 (Con.)

Responses to "Do" and "Can" Questions

	"Do" and "Can "Questions	Yes	No
11	Can you change the computer screen brightness and contrast?	89%	11%
12	Can you minimize, maximize, and move windows on the computer screen?	78%	22%
13	Can you use a 'search' command to locate a file?	78%	22%
14	Can you scan disks for viruses?	44%	56%
15	Can you write files onto a CD, DVD, or USB drive?	89%	11%
16	Can you create and update web pages?	33%	67%
17	Can you take and edit digital photos?	72%	28%
18	Can you record and edit digital sounds?	61%	39%
19	Can you record and edit digital videos?	78%	22%
20	Can you download and use apps on digital devices?	89%	11%

Table 6.3. indicates that the students were good at using social networking services (M = 4.00, SD = 0.77) and using web search engines (M = 3.72, SD = 0.75). However, they were poor at learning management system (M = 2.06, SD = 1.30) and Photo sharing site (M = 2.56, SD = 1.04).

Table 9

Use of Digital Technologies Applications

	M	*SD*	Meaning
Word processing applications	3.22	0.43	Acceptable
Presentation application	3.39	0.78	Acceptable
Communication applications	2.83	0.79	Acceptable
Learning management systems	2.06	1.30	Poor
Social networking services	4.00	0.77	Good
Blogs	2.44	0.70	Poor
Wikis	2.39	1.20	Poor
File sharing sites	2.61	1.14	Acceptable
Photo sharing sites	2.56	1.04	Poor
Video sharing sites	3.44	0.51	Good
Web search engines	3.72	0.75	Good
Dictionary apps	3.89	0.76	Good

Note. Very poor (*M* = 1.00 – 1.79), poor (*M* = 1.80 – 2.59), acceptable (*M* = 2.60 – 3.39), good (*M* = 3.40 – 4.19), very good (*M* = 4.20 – 5.00)

Table 6.4 reveals that the students used an electronic dictionary (*M* = 4.22, *SD* = 0.88) and word processor (*M* = 4.11, *SD* = 0.68) very frequently. They also frequently text chatting (*M* = 4.00, *SD* = 0.91). However, they occasionally used blogs (*M* = 2.67, *SD* = 0.97) and language learning software (*M* = 2.83, *SD* = 1.20).

Table 10

Frequency of Using Various Digital Technologies to Work with

	M	*SD*	Meaning
Word processor	4.11	0.68	Very Frequently
Email	3.94	0.87	Frequently
World Wide Web	3.72	0.89	Frequently
Language learning software	2.83	1.20	Occasionally
Language learning website	3.78	0.88	Frequently
Language learning mobile app	3.89	0.76	Frequently
Blog	2.67	0.97	Occasionally
Wiki	2.89	1.28	Occasionally
Text Chatting	4.00	0.91	Frequently
Voice chatting	3.94	0.80	Frequently
Video Conferencing	2.94	0.94	Occasionally
Electronic dictionary	4.22	0.88	Very frequently

Note. Very rarely (*M* = 1.00 – 1.79), rarely (*M* = 1.80 – 2.59), occasionally (*M* = 2.60 – 3.39), frequently (*M* = 3.40 – 4.19), very frequently (*M* = 4.20 – 5.00)

Attitudes toward the Usage of Digital Technologies. As shown in Table 6.5, the students think that training in technology-enhanced language learning should be included in language education programs (*M*= 4.33, *SD* = 0.69), enjoy using digital devices (*M* = 4.28, *SD* = 0.46), and are willing to learn more about digital technologies (*M* = 4.28, *SD* = 0.57). Furthermore, they are not sure if they are aware of various types of digital devices (*M* = 4.00, *SD* = 0.69).

Table 11

Students' Attitudes on the Usage of Digital Technologies

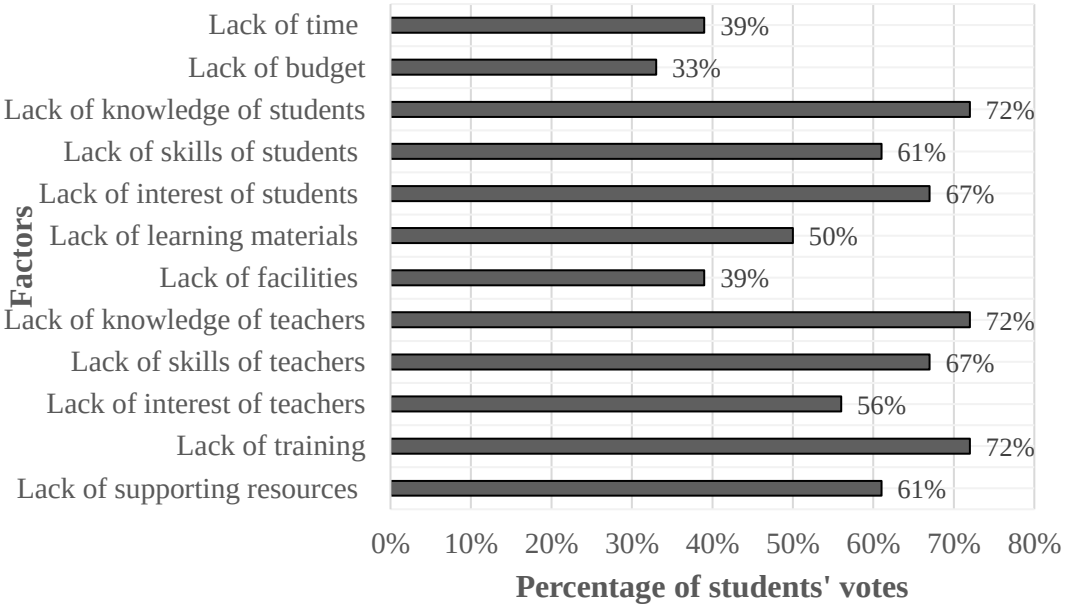
	Statements	Mean ($\bar{x}$)	SD	Meaning
1	I enjoy using digital devices.	4.28	0.46	Strongly agree
2	I feel comfortable using digital devices.	4.00	0.69	Agree
3	I am aware of various types of digital devices.	3.61	0.61	Agree
4	I understand what digital literacy is.	3.78	0.65	Agree
5	I am willing to learn more about digital technologies.	4.28	0.57	Strongly agree
6	I feel threatened when others talk about digital technologies.	2.72	0.89	Disagree
7	I feel that I am behind my fellow students in using digital technologies.	2.94	1.11	Uncertain
8	I think that it is important for me to improve my digital fluency.	4.39	0.78	Strongly agree
9	I think that my learning can be enhanced by using digital tools and resources.	4.22	0.55	Strongly Agree
10	I think that training in technology-enhanced language learning should be included in the language education program	4.33	0.69	Strongly Agree

Note. Strongly disagree (M = 1.00 – 1.79), disagree (M = 1.80 – 2.59), uncertain (M = 2.60 – 3.39), agree (M = 3.40 – 4.19), strongly agree (M = 4.20 – 5.00)

Furthermore, according to Figure 10, the factors that commonly affect their usage of digital technologies to learning a language consist of lack of knowledge of the students (72.%), lack of knowledge of the teacher (72.%), lack of training (72%), lack of interest of the student (67%), and lack of skills of teachers (67%).

Figure 10

Factors Affecting Their Usage of Digital Technologies



From the qualitative data of the open-ended question emerged one theme (Where R stands for Responses):

The Importance of Digital Literacy. The students positively viewed digital literacy. They considered it important for learning and urged the Ministry of Education, Youth, and Sport to integrate it into the curriculum:

R1: *Not only does digital literacy help you in your study and research, but it also strengthens your understanding of digital technologies….*

R2: *Digital Literacy is important for the next generation…..*

R3: *It is something the Ministry should focus on more.*

Level of Digital Literacy Skills

Self-assessment of Digital Literacy Skills. Based on Table 6.6, indicates levels of their ability to use the internet were at the highest (*M* = 3.28, *SD* = 0.71) while using digital technologies was the lowest (*M* = 2.83, *SD* = 0.71). Students reported their overall digital literacy skills at the acceptable level (*M* = 3.10, *SD* = 0.33). To better understand the improvement of their digital literacy skills to that point, their scores from the rubric in the digital story mini-projects across the units were analyzed, using Friedman's test.

Table 12

Level of Digital Literacy Skills

	M	*SD*	Digital literacy level
Typing skills	3.11	0.32	Acceptable
Web-search skills	3.06	0.42	Acceptable
Ability to use the computer	3.22	0.65	Acceptable
Ability to use the internet	3.28	0.67	Acceptable
Ability to use the digital technologies	2.83	0.71	Acceptable
Overall	3.10	0.33	Acceptable

Note. Very poor (*M* = 1.00 – 1.79), poor (*M* = 1.80 – 2.59), acceptable (*M* = 2.60 – 3.39), good (*M* = 3.40 – 4.19), very good (*M* = 4.20 – 5.00)

Students' Digital Literacy Skills across Units. According to Table 6.6 (where DS stands for Digital Storytelling Mini-project and U for Unit), the medians show a gradual improvement in the students' digital literacy skills reflecting in their scores from the digital story mini-projects across the units. The improvement was

statistically significant, $x^2(3, n = 18) = 53.04$, $p < .01$, with the effect size of .98, which was considered large (Cohen, 1988). Because of the statistically significant result, a post-hoc test using a Wilcoxon signed ranked test with a Bonferroni-adjusted alpha level of 0.013 (0.05/4) was computed for further analysis.

Table 13

Students' Scores across Units using Friedman's Test

DS (U1)		DS (U2)		DS (U3)		DS (U4)		*N*	Chi-square	*df*	*p*	Effect size
Mean rank	*Mdn*	Mean rank	*Mdn*	Mean rank	*Mdn*	Mean rank	*Mdn*					
1.11	21	1.89	24.00	3	26.00	4.00	27	18	53.04	3	.00	.98

As is displayed in Table 6.8, the post-hoc test indicates that there was a significant increase in the respective scores of the digital story mini-projects, as between Units 1 and 2 ($T = 105$, $z = -3.42$, $p = .001$), Units 1 and 3 ($T = 171$, $z = -3.83$, $p < .001$), Units 1 and 4 ($T = 105$, $z = -3.95$, $p < .001$), Units 2 and 3 ($T = 171$, $z = -3.81$, $p < .01$), Units 2 and 4 ($T = 171$, $z = -3.79$, $p < .001$), and Units 3 and 4 ($T = 171$, $z = -3.91$, $p < .01$), all of which had large effect sizes (Cohen, 1988

In conclusion, the students held a positive view toward their digital literacy after participating in Digital Storytelling. The students used digital literacy at an adequate level after participating in the Digital Storytelling intervention. Their ability to use digital technologies for information search and evaluation, creation, communication, and online safety was above-average while their digital literacy skills

were at an acceptable level. There was also a gradually significant increase in their digital literacy skills across four units.

Table 14

The Post-hoc Test using a Wilcoxon Signed Ranked Test

Digital story mini-projects and their units	*N*	*T*	*z*	*p*	Effect size
DS (U2) – DS (U1)	18	105	-3.42	.001	.80
DS (U3) – DS (U1)	18	171	-3.83	.000	.90
DS (U4) – DS (U1)	18	171	-3.95	.000	.93
DS (U3) – DS (U2)	18	171	-3.81	.000	.89
DS (U4) – DS (U2)	18	171	-3.79	.000	.89
DS (U4) – DS (U3)	18	171	-3.91	.000	.92

Result of the Third Research Question

- Research Question 3 – What is the perception of Cambodian undergraduate students' on Digital Storytelling?

The research question aimed to explore the perception of Cambodian undergraduate students on Digital Storytelling. This research question was addressed by the interview protocol which contains interview instructions and 12 interview questions based on the framework used in the study. 10 students were randomly selected to join the interview at the end of the study (Week 11).

In the interview, students were reminded that their identities would be kept anonymous and they were encouraged to express their opinions or views based on the

questions asked. They responded in both Khmer and English. Students' responses were recorded and later analyzed through theme analysis based on the Digital Storytelling Instructional Framework.

Digital Storytelling Stages

Stage 1: Planning/ Selecting Topics. This stage aims to prepare students for their projects through fun activities. Also, there are three activities in this stage. They first participated in background building activities. From their responses, they were very beneficial to them since the activities allowed them to get ready and have more ideas for the project, and it promoted a sense of camaraderie, energized students, and allowed them to have a heightened focus:

Student #1: *ចឹងចំពោះសកម្មភាពរបស់ teacher មុនដំបូងចឹង វាអាចជួយឲ្យសមាជិកក្រុមខ្ញុំអីចឹងបានយល់អំពី topic ហ្នឹងកាន់តែច្បាស់ ហើយនិងមានគំនិតក្នុងការសរសេរ script…មានន័យថាយល់ពី topic ហើយមានគំនិតជាងមុន ……*

Student #2: *….អាចនិយាយបានថា អាចជា teacher បើកផ្លូវឲ្យពួកយើងថា project ហ្នឹង យើងនឹងធ្វើទាក់ទងនឹងអីគេ។ ហើយនៅពេលដែលយើង discuss គ្នាមុននឹងចាំផ្តើមមេរៀនហ្នឹង វាអាចជា idea ផ្សេងៗដែលយើងអាចចាប់បានពីមិត្តរួមថ្នាក់ទាំងអស់……*

Student #10: *Teacher មានសកម្មភាពតូចមុនដំបូង មុនពេលចាប់ផ្តើមហ្នឹង ធ្វើឲ្យយើងមានភាពស្ងាហាប់ មានភាពដែលអាចផ្តោតអារម្មណ៍ខ្ពស់។*

(Translation)

Student #1: *For the activity, you used at the start of the lesson, it helped me and my team to have a better understanding of the topic and more ideas to*

write a script…. It means that we know more about the topic and have more ideas…

Student #2: *It can be said that the teacher showed us what the project would be about, and when we discussed beforehand like that before we started the lesson, it could provide us with different ideas from our classmates….*

Student #10: *When you [the teacher] the small activity at the start of the lesson like that, it energized us and made us have a high focus*

(Students #1, #2 & #10, Interview, 13 June 2021)

After they had participated in background-building activities, they went on to analyze a digital story sample before selecting the topics to create their digital stories. Such activities help them:

Student #2: *ពេលចាប់ផ្តើម Project នេះដំបូង ខ្ញុំមិនទាន់ដឹងថាអ្វីជា digital story នោះទេ? ដូច្នេះវីដេអូគំរូទាំងនោះនិងការពន្យល់បន្ថែមពីលោកគ្រូ វាបានជួយអោយខ្ញុំបានដឹងកាន់តែច្បាស់ថា តើទម្រង់នៃ digital story បែបណា? ត្រូវការអ្វីខ្លះដើម្បីដំណើរការវាអោយបានល្អ?.....*

Student #5: ..... *តែដល់ពេលខ្ញុំបានមើល sample ចឹងទៅ ខ្ញុំឃើញរបៀបរបបនៃការធ្វើ ក៏ដូចជា process វាមួយៗ។ របៀបថាប្រសិនជាយើងបានមើល sample មុនចឹងចម្ងល់កន្លែងណាអី យើងអាចសួរ teacher បានចឹងហាស៎។….*

(Translation)

Student #2: *When starting the project for the first time, I don't know what a digital story is? So the digital-story samples plus the explanation from the teacher helped me know more clearly: what is the form of a digital story? What is needed to do it smoothly?*

Student #5:*.....but when we watched the sample, we could see the how(s) or the process of it. When we could watch the sample beforehand like that, we could ask the teacher if we had any doubts…*

(Student #2 & #5, Interview, 13 June 2021)

Stage 2: Conducting Research. In this stage, the students were introduced to a useful reading strategy and related passage to the theme of their digital-story topics. They particularly like the strategy they learned because it helped them with their reading endeavor in and outside the class:

Student #3: ហើយសម្រាប់ reading strategy ក៏វាមានសារៈសំខាន់ដែរ ព្រោះថានៅពេលដែលយើងដឹងអំពីយុទ្ធសាស្ត្រក្នុងការអានបានល្អច្បាស់ វាធ្វើឲ្យយើងចំនេញពេលវេលា ហើយមួយទៀតវាធ្វើឲ្យយើងឆាប់យល់អំពីអត្ថបទហ្នឹង….

Student #5: ខ្ញុំគិតថាវាមានសារៈសំខាន់ខ្លាំង ព្រោះដោយសារតែប្រសិនជាការអានរបស់យើង ប្រសិនជាយើងមានដូចជាយុទ្ធសាស្ត្រក្នុងការអាន វាធ្វើឲ្យយើងអានលឿន ហើយយើងចាប់យកចំនុចដែលយើងអាចឆ្លើយសំនួរបានលឿន។

(Translation)

Student #3: And for reading strategies, they are important too because when we know about the reading strategies, it can save our time and help us understand the passage more quickly.

Student #5: I think they are essential because when we have reading strategies, we can read efficiently and pinpoint the answer to the reading question.

(Students 3 & 5, Interview, 13 June 2021)

After learning about the reading strategy, they then worked collaboratively to search for information online to gather information to write a script for their digital stories.

After this stage, they joined a teacher conference outside the class where they would receive comments from the teacher and some tips on how to evaluate information online. As for the research task, the students expressed favorable views toward it:

> Student #4:....*ហើយលើសពីហ្នឹងទៀត នៅពេលដែលយើងបានអានអត្ថបទតាម online ចឹងវាពង្រីកចំណោះដឹងខ្ញុំដូចគ្នា…..*
>
> Student #10: .....*វាមានអត្ថប្រយោជន៍ចំពោះយើង ពិព្រោះអីការ research ធ្វើឲ្យយើងពង្រីកចំណោះដឹង។ ពេលដែលខ្ញុំ research ហ្នឹង ខ្ញុំទទួលបានចំណោះដឹងច្រើនណាស់……*
>
> (Translation)
>
> Student #4:….*and aside from that, when we read articles online like that, it also broadened my knowledge too.*
>
> Student #10:....*It is very beneficial for us because researching increases our knowledge. While I was doing the research, I gained a lot of knowledge*
>
> (Students #4 & #10, Interview, 13 June 2021)

Additionally, the reading strategy they learned in class also helped them a lot with their research because it allowed them to read with more efficiency:

> Student #2: .....*នៅពេលដែលខ្ញុំចាប់ផ្តើមអាន ខ្ញុំព្យាយាមប្រើគំនិតទាំងអស់ហ្នឹងចូលឲ្យអានចឹង នៅពេលដែលខ្ញុំប្រើគំនិចទាំងអស់ហ្នឹង ជួយខ្ញុំឲ្យអានឆាប់ទទួលបានទិន្នន័យនៅពេលដែលខ្ញុំអានលើអត្ថបទអីមួយ។*
>
> Student #4: *ខ្ញុំគិតថាវាជួយបានច្រើននៅពេលដែលយើងដឹង strategy នៃការអានហើយយើងទៅអានអត្ថបទនៅលើ online ។…….នៅពេលដែលពួកខ្ញុំចូលទៅក្នុង online ដើម្បីអាន information ហ្នឹង នៅពេលដែលខ្ញុំអាន អាចឆាប់បាន main idea ដូចជាការស្កេនកន្លែងណាដែលសំខាន់ចឹងទៅ។*

Student #7: *So some information in online are so long, so when we know the strategy of the reading, we can provide the main idea and just select the necessary that we need.*

(Translation)

Student #2:*.....When I started reading, I tried to use all of those techniques in my reading. Using them helped me to gather information faster when I read the articles.*

Student #4: *I think it is very helpful to know reading strategies when reading online articles…… When we went online to read information, we could quickly scan for main ideas.*

(Students #2, #4 & #7, Interview, 13 June 2021)

Stage 3: Drafting. In this stage, the students have drafted their scripts participated in three activities, the aims of which were to help them refine their scripts and plan for their digital stories. For the first activity where their scripts were read and commented on by their friends, the students believed that it helped them see their gaps for improvement and provided them with new ideas to write the script:

Student #3: *សម្រាប់ខ្ញុំ ខ្ញុំគិតថាវាពិតជាមានអត្ថប្រយោជន៍ ព្រោះអី idea ខ្ញុំតែម្នាក់ឯង ឬក៏សមាជិកខ្ញុំអត់គ្រប់គ្រាន់ទេ។ ពេលខ្លះវាមានកង្វះខាត ចឹងខ្ញុំត្រូវការ idea ពីអ្នកដទៃដែរដើម្បីជួយបំពេញកង្វះខាតហ្នឹង។*

Student #4: *…..នៅពេលដែលយើងទទួលបាន feedback ពីអ្នកដទៃទៅលើអត្ថបទរបស់យើងហ្នឹង…យើងអាច….ពេលដែលយើងធ្វើគឺយើងមានកំរិតមួយដែលយើងបញ្ចេញសមត្ថភាពរបស់យើង។[មិត្តយើង] អាចមានសមត្ថភាពខ្ពស់ជាងយើង ឬក៏មានអីចំនុចពិសេសរបស់គាត់ grammar ឬក៏អីចឹង*

ទៅ។ ចឹងគាត់អាចមើលរបស់យើង ហើយប្រាប់យើងថា grammar របស់យើងនេះអត់ត្រូវ tense ឬក៏អីចឹងទៅ។

Student #7: *just the idea of our team is not enough at all, so when we receive the recommendation from the other, we can know about our mistake and such as we can provide the necessary something or we can correct all the mistake or something like that.*

(Translation)

Student #3: *For me, I think it is useful because my idea or those of my teammates alone are not enough. Sometimes there are gaps, so we need ideas from others to fill in those gaps.*

Student #4: *.....when we receive feedbacks from others on our script, we can….when we did it, there was a limit to how much we could show our ability. [Our friends] might be more capable than us or are more knowledgeable in certain areas, such as grammar. So he/she could check our work and tell us that the grammar that we use was not correct in terms of tense usage.*

(Students #3, #4, & #7, Interview, 13 June 2021)

After this activity, they then move on to chunking and storyboarding activities, both of which were deemed as indispensable for creating their digital stories because they help them build a skeleton plan for their digital stories:

Student #2: *ពេលដែលយើងដាក់ចឹងទៅ យើងដឹងថារូបហ្នឹងយើងបាន source ពីណាមក។ ហើយទីពីយើងដឹងថា ការដាក់រូបទៅលើវិដេអូយើងទៅតាមលំដាប់លំដោយ។ ជាធម្មតារូបយើងដាក់រៀបនៅក្នុង box ហ្នឹងយើងមានលេខមួយ លេខពីរ ហើយចឹងវាអាច order ដែលយើងត្រូវរៀបក្នុងវិដេអូ។*

Student #6: *នៅពេលដែលពួកខ្ញុំដាក់វាជាកង់ៗចឹងទៅ វាធ្វើឲ្យពួកខ្ញុំងាយស្រួលរៀប script ។ នៅពេលកាត់ចឹងទៅ ធ្វើឲ្យពួកខ្ញុំងាយស្រួលក្នុងការឲ្យមតិយោបល់គ្នាទៅវិញទៅមក ហើយធ្វើ script ហ្នឹងឲ្យល្អ ។*

Student #8:…..*វាងាយស្រួលនឹងការមើល ហើយងាយស្រួលក្នុងការយល់ដឹងថា កន្លែងណាជា introduction កន្លែងណាជា Body នៅពេលយើងធ្វើ digital story ។…*

(Translation)

Student #2: *When we put it like that, we know the source of the photo, and secondly, we know that the arrangement of the photos will be in order. Normally, in the photo we put in each box, we have numbers (number 1, number 2..). So, it can be the order we arrange in the video.*

Student #6: *When we put it into chunks like that, it is easy for us to prepare the script. Also, it is conducive to exchanging ideas on the script to make it better.*

Student #8:…*It is easy to check and understand where the introduction and body are when making a digital story.*

(Students #2. #6, & #8, Interview, 13 June 2021)

After having skeleton plans for their digital stories, they started making their first drafted digital stories. Before moving to Stage 4, they joined another teacher conference where they would receive help from the teacher on the use of Adobe Spark and be asked to report their progress

Stage 4: Revising. This stage aims to provide students with more opportunities to receive feedbacks from both peers and teachers to further polish their digital stories. In addition to viewing the comments from their peers as dispensable, they also considered the feedback from the teachers on their digital stories crucial too:

Student #4: …..*ដោយសារតែនៅក្នុង project ទី១ project ទី២ចឹង ពួកខ្ញុំអាចនឹងមានកំហុសជាមួយនឹងសម្លេង និងការ narrate ប៉ុន្តែនៅពេលដែលក្រោយៗមកពួកខ្ញុំបានរៀននៅចំនុច ហ្នឹង ហើយពួកខ្ញុំបានព្យាយាមធ្វើតាម lesson ដែល teacher បានបង្រៀនចឹង feedback ខ្ញុំទទួលបានពី teacher ហ្នឹងវាវាងល្អជាងមុន….*

Student #8: : *វាមានអត្ថប្រយោជន៍ ព្រោះថាវាធ្វើឲ្យយើងដឹងថាពីសមត្ថភាពរបស់យើង។ ថាយើងធ្វើហ្នឹងបានអីខ្លះ ហើយខ្វះត្រង់ចំនុចណា។*

(Translation)

Student #4: *….because in the first and second projects, we had issues with the choice of soundtrack and the narration, but in the following projects, we learned about them and we tried to follow the lesson that the teacher taught. Thus, the feedbacks received later was better.*

Student #8: *It is very beneficial because it mirrored our ability: what we have done and lacked?*

(Students #4 & #8, Interview, 13 June 2021)

Stage 5: Publishing for Authentic Audiences. After making necessary changes, they then would be asked in this stage to upload their digital story to the Class' YouTube channel. After that, they participated in a short reflection session to look back on their performance. Then, with their permission, their digital stories would be shared with the real audience. The participants particularly liked the fact that their digital stories were shared:

Student #2: *I am proud of myself. នៅពេលដែល share ខ្ញុំមានអារម្មណ៍ថា happy ឲ្យ teacher share ទៅ ហើយខ្ញុំគិតថា work ខ្ញុំហ្នឹងអាចឲ្យគេឃើញច្រើន។*

Student #4: .....*ធ្វើឲ្យពួកខ្ញុំមានអារម្មណ៍ថាគួរតែធ្វើឲ្យល្អជាងហ្នឹងតិចទៅ ព្រោះ teacher ត្រូវ post អីចឹងដែរ។ ខ្ញុំគិតថាល្អ ព្រោះថាល្អសម្រាប់ពួកខ្ញុំជាអ្នកធ្វើ ដោយសារពួកខ្ញុំជាអ្នកធ្វើចឹង ខំប្រឹងធ្វើឲ្យល្អជាងមុនចឹង។.....*

Student #9: *[ខ្ញុំ] សប្បាយចិត្ត ពីព្រោះអីជាសមត្ថផលដែលយើងខំធ្វើជាលក្ខណៈជា teamwork ចឹង ហើយបងយកវាទៅ post ជាសាធារណៈចឹង វាធ្វើឲ្យពួកខ្ញុំ feel good ទៅលើអ្វីដែលពួកយើងបានធ្វើ។*

Student #10: *ខ្ញុំគិតថាមានមោទនៈភាព ដោយសារតែយើងអាចចែករំលែកចំណេះដឹង ក៏ដូចជាពត៌មានផ្សេងៗ ដែលទាក់ទងជាមួយ Topic ហ្នឹងទៅពិភពលោកខាងក្រៅ។ ចឹង[ខ្ញុំ] មានមោទនៈភាពចំពោះខ្លួនឯង និងក្រុមរបស់ខ្លួនឯង។*

(Translation)

Student #2: *I felt proud of myself when my work was shared. I felt happy that the teacher shared my work with other people.*

Student #4:*....it made us feel like we should do it better because the teacher would then share it. I think it is good for us because we were the creators, so we tried to do it better….*

Student #9: *[I] felt happy because it was our achievement as a team. So when you posted it like that, it made us feel good for what we had done.*

Student #10: *I think I felt a sense of pride because I could share the knowledge as well as information related to the topic with the outside world. [I] was proud of myself and my team.*

(Students #2, #4, #9, & #10, Interview, 13 June 2021)

Positive and Negative Aspects

Positive Aspects. From the students' responses, there were some positive aspects of Digital Storytelling. All of the students agreed that after participating in

the digital storytelling projects, their reading ability improved. They claimed that they encountered new vocabulary and learned useful reading strategies:

> Student #2: *ខ្ញុំគិតថាសមត្ថភាពនៃការអាន improve បានល្អជាងមុនច្រើន ដោយសារតែដូចជា អត្ថបទមួយចឹង រាល់ដងនៅពេលដែលខ្ញុំអត់ apply អា strategy ដែល teacher share មកហ្នឹង ។ ឧទហរណ៍៖ អត្ថបទមួយខ្ញុំត្រូវចំនាយពេលកន្លះម៉ោង តែនៅពេលដែលខ្ញុំ apply strategy ចូលទាំងអស់ទៅ ខ្ញុំ save time ជាងមុន ។*
>
> Student #5: *ទាល់ពេលយើងបានចូលរៀនចឹងទៅ ខ្ញុំបានរៀនពី strategy របស់វា ពេលយើងមកអានសៀវភៅ ឬក៏អត្ថបទអីផ្សេងៗហ្នឹង ពេលអានហើយយើងចាប់គិតរក main idea ហើយយើងអាច infer វាមកចឹងហាស់ ។*
>
> Student #6:…..*ហើយនៅពេលដែលអានបានច្រើនទៅ ក៏ចេះបានច្រើន យល់ពាក្យអីៗបានច្រើន ព្រោះថាពេលដែលអានទៅ ខ្ញុំមិនចេះទាំងអស់ទេ ចឹងខ្ញុំយកវាបកប្រែ ឬក៏ស្វែងយល់ពី meaning របស់វាទៀត ។*
>
> (Translation)
>
> Student #2: *I think my reading ability is better than before because when I applied the reading strategies that you shared I spent less time on it.*
>
> Student #5: *After joining your class, I learned about reading strategies. When I read books or articles, I started to think about the main ideas and what I could infer from them.*
>
> Student #6:…. *And when we read a lot, we learned a lot of new things and understood a lot of new vocabulary because while reading I could not understand all the words, so I either translated them or tried to understand their meanings.*
>
> (Students #2, #3, & #5, Interview, 13 June 2021)

Moreover the process of making digital stories also further boosted their reading ability. For illustration, the students explained how it further benefited their reading ability:

Student #4: ….*នៅពេលដែលយើងអានអត្ថបទតាម online យើងយក reading strategy មក apply មួយដងហើយ។ ក្រោយពេលមកយើងសរសេរ នៅពេលដែលយើងសរសេរ script ហើយ យើងចាប់ផ្តើមអាន script របស់យើងរក main idea របស់យើងរកចំនុចណាដែលយើងបានលើកឡើង ហើយចំនុចណាដែលយើងមិនបានលើកឡើង។*

Student #5:…*យើងបានអានច្រើន ទៅរក online website ក៏ច្រើនយកមក summary បានហើយ យើងត្រូវ rehearsal អា script ហ្នឹងដដែលៗទៀត។ ចឹងទៅមានអារម្មណ៍ថាយើងអានហើយ អានទៀត ចឹងការអានរបស់យើងវា fluent ជាងមុន។*

(Translation)

Student #4:…. *When we read online, we already applied the strategies we learned. Then when we finished writing a script, we read the script to find the main ideas which we had and hadn't raised….*

Student #5:….. *We had read a lot from a lot of online websites to write a summary. Then we even rehearsed the script again and again. So, I felt like we read and reread so our reading became more fluent.*

(Students #2, #3, & #4, Interview, 13 June 2021)

Furthermore, the students also said that the reading they did during their research could provide them with a lot of new knowledge:

Student #4:….*ហើយលើសពីហ្នឹងទៀត នៅពេលដែលយើងបានអានអត្ថបទតាម online ចឹងវាពង្រីកចំណេះដឹងខ្ញុំដូចគ្នា…..*

Student #10: .....*វាមានអត្ថប្រយោជន៍ចំពោះយើង ពិព្រោះអីការ research ធ្វើឲ្យយើងពង្រីកចំណេះដឹង។ ពេលដែលខ្ញុំ research ហ្នឹង ខ្ញុំទទួលបានចំណេះដឹងច្រើនណាស់……*

(Translation)

Student #4:….*and aside from that, when we read articles online like that, it also broadened my knowledge too.*

Student #10:*….It is very beneficial for us because researching increases our knowledge. While I was doing the research, I gained a lot of knowledge*

(Students #4 & #10, Interview, 13 June 2021)

To sum up, after participating in the digital storytelling, the students saw an improvement in their reading ability because they learned a lot of new vocabulary, knew more reading strategies, had numerous chances to apply the reading strategies, and read extensively on the topics of units. Plus, as a result of doing the research, they could also broaden their general knowledge.

Negative Aspects. From the students' responses, they faced some notable difficulties or challenges. For example, they explained their difficulties as follows:

Student #3: *ការធ្វើ digital story កន្លងមកហ្នឹង វាពិបាកត្រង់ថាសមាជិកក្រុមរបស់ខ្ញុំអត់បាន discuss គ្នាឲ្យបានពេញលេញទេ។….. ប៉ុន្តែបើសិនជាអង្គុយក្នុងក្រុមបានពិភាក្សាគ្នា ខ្ញុំគិតថាវាមានភាពងាយស្រួលច្រើន។ ប៉ុន្តែដោយសារតែ Covid-19 ចឹង វាធ្វើឲ្យពួកខ្ញុំពិបាកជួបគ្នា។*

Student #4:*…. ចំពោះការប្រើប្រាស់ Adobe Spark កន្លែង add អ្នកជួយវារាង complicate ដោយសារមានតែម្នាក់ដែរអាចធ្វើការងារនៅក្នុង project ហ្នឹងបាន ចឹង បើយើងចង់ចូលទាំងអស់គ្នាចឹង វាធ្វើឲ្យការងារយើងរឹតតែរញ៉េរញ៉ៃទៀត។*

Student #10: *…… មួយវិញទៀតធំហ្នឹងគឺ internet តែម្តង…..*

(Translation)

Student #3: *For making the digital stories so far, it's hard for me and my team to have a proper discussion…. If we could have discussed it face-to-face, it would have been easier. But because of Covid-19, we could not meet each other.*

Student #4:*….for using Adobe Spark, I found it complicated to add a collaborator because only one person could work on the project on the site at*

a time. If we went in together to work on the project. It would only complicate everything.

Student #10: ….*Another notable difficulty is the speed of the internet…*

(Students #4 and #10, Interview, 13 June 2021)

From their responses, the students faced more difficulties. First, due to Covid-19, they could only meet virtually. This, according to them, did not result in a fruitful discussion. Secondly, working collaboratively on Adobe Spark proved to be challenging as only one person can work on it at a time. Lastly, the speed of their internet was also another major challenge for them too.

Chapter Summary

This chapter reports on the findings to the research questions, which are as follows:

Research Question 1 looked at the effect of Digital Storytelling on students' EFL reading literacy. The result from the pre-test (*Mdn* = 18) and post-tests (*Mdn* = 22.5) shows a significant difference (z = -2.64, p = .003, r = 0.69). In turn, it proved the positive effect of Digital Storytelling on their EFL reading literacy.

Research Question 2 sough to explore the perception of Cambodian undergraduate students' on their digital literacy after participating in Digital Storytelling. After participating in the Digital Storytelling intervention, the students reported that their ability to use technologies for information search and evaluation, creation, communication, and online safety was above average while their digital literacy skills were at an acceptable level. There was also a gradual improvement in their digital literacy skills across units at the significant level of .05. An additional

finding revealed that the students held a positive attitude toward the usage of digital technologies and implied that a teacher performed a significant role in shaping their usage of digital technologies. To them, digital literacy was crucial and should be integrated with the curriculum

Research Question 3 aimed to explore the perception of Cambodian undergraduate students on Digital Storytelling. Their responses were analyzed based on the framework used in this study. Overall, students held a positive perception toward Digital Storytelling. The process they had to go through helped them accomplish the mini-project in each unit. They also agreed that Digital Storytelling could improve their EFL reading literacy. However, there were some difficulties they encountered.

Chapter V

Summary, Discussion, Implications, Recommendations, Conclusion and Limitations

This chapter is organized into five parts. The first part contains a summary of the whole study followed by the findings. The second part provides a discussion of the research findings in tandem with the previous studies. The third part elaborates on the pedagogical implication deriving from the findings. The fourth part looks at the recommendations for future studies. The fifth part presents the Conclusion and limitations of the current study.

Summary of the Study

This study aims to investigate the effect of Digital Storytelling on Cambodian undergraduate students' EFL reading and digital literacy. This study, in addition, explores the opinions of the students toward Digital Storytelling. Consequently, this study seeks to answer the research questions as follows: (1) What is the effect of Digital Storytelling on Cambodian undergraduate students EFL reading literacy? (2) What is the perception of Cambodian undergraduate students on Digital Storytelling? (3) What is the perception of Cambodian undergraduate students on their digital literacy after participating in Digital Storytelling (DST)?

The study design was a one-group pretest, posttest design. It made a comparison between the median scores of the student's pre-tests and that of the post-tests. The study participants were 18 undergraduate students from the School of Foreign Languages (SFL) in Academic Year 2021. Moreover, the instructional

intervention was intended as a supplementary course in which the students joined voluntarily to strengthen their EFL reading and digital literacy.

The study involved two main phases – (1) Phase 1: Preparation of research instruments and English reading DST-based units, and (2) Phase 2: Implementation of the English reading DST-based units.

Phase 1 contains four more stages. In the first stage, a thorough literature review was conducted to gather and synthesize related concepts and theories for the development of research instruments and instructional intervention. In the second stage, four research instruments, which included English Reading Test, Digital Literacy Questionnaire, Digital Story Rubric, and Interview Protocol, were developed, validated by the experts, and pilot-tested in February 2021. In the third stage, the instructional framework used in the instructional intervention was formulated through the adaptation of the Digital Storytelling framework proposed by Yearta (2019), which contains five stages. The instructional framework includes five stages: (1) Planning/selecting a topic, (2) Conducting research, (3) Drafting, (4) Revising, and (5) Publishing for authentic audiences, all of which collectively consisted of 10 activities and two teacher-conferences. The framework was used to develop instructional manuals for four units, which lasted for eight 90-minute sessions plus extracurricular time. The unit topics, which included Endangered Language, Poverty, Digital Literacy, and ASEAN were taken and adapted from QSkills for Success Level 5: Reading and Writing, the course book used at SFL. In the fourth stage, the instructional manuals followed by their materials were validated by the experts and

then piloted-tested with 10 students with similar characteristics to that of the sample in February 2021.

Phase 2 encompasses three stages. Stage 1 aimed to provide a pre-study orientation to the students regarding Digital Storytelling and Adobe Spark, a free video-making program. Moreover, in this stage, students were requested to sign the consent forms and asked to do the English Reading Test as a pre-test. Stage 2 strove to implement the instructional intervention in which there were four units. Each unit followed the instructional framework of the study and lasted for 2 ninety-minute sessions with extracurricular time, which was concluded with students working as teams to create a digital story based on the unit theme. Each student-made digital story was assessed using the Digital Story Rubric. Stage 3 endeavored to conduct the English Reading Test, administered Digital Literacy Questionnaire, and Interview protocol. In this stage, students after undergoing the instructional intervention did the English Reading Test as a post-test and Digital Literacy Questionnaire. As a conclusion of the study, ten of the participants were randomly selected to join the interview.

The findings of this study can be put into three main aspects: (1) Undergraduate students' EFL reading literacy, (2) their perceptions on their digital literacy after participating in Digital Storytelling, (3) their perceptions on Digital Storytelling, and

In the first aspect of the findings, based on a Wilcoxon Signed Ranks Test, the comparison of the students' median scores of the pre- and post-tests of English reading reveals the effectiveness of Digital Storytelling on undergraduate students'

EFL reading literacy because students' performance in the post-test (*Mdn* = 22.25) was higher than their performance in the pre-test (*Mdn* = 18) at the significant level of 0.05 (z = -2.64, p = .003). The effect size was .69, which was considered large (Cohen, 1988). This goes to show that Digital Storytelling is effective in improving EFL reading literacy of undergraduate students.

In the second aspect, after participating in Digital Storytelling, students possess positive perceptions toward their digital literacy. The students used digital literacy at an adequate level after participating in the Digital Storytelling intervention. Their ability to use digital technologies for information search and evaluation, creation, communication, and online safety was above average while their digital literacy skills were at an acceptable level. There was also a gradually significant increase in their digital literacy skills across the four units.

In the third aspect, it was found that students' perceptions of Digital Storytelling were favorable. They deemed the steps they had to go through to be indispensable in helping them accomplish their mini-project in each unit. Their responses indicated that the stages scaffolded them in their attempts to create digital stories. They considered the support from the teacher and their peers to be indispensable and having their masterpieces shared rewarded them emotionally.

Discussion

The discussion of the present study's findings can be grouped into three facets: (1) Implementation of Digital Storytelling on EFL Reading literacy, (2) Perceptions on Digital Literacy, and (3) Perceptions on Digital Storytelling.

Implementation of Digital Storytelling on EFL Reading Literacy

Research Question 1 investigated the effect of Digital Storytelling on their EFL reading literacy. by comparing the median scores of the pre and post English Reading Tests, it revealed that Digital Storytelling had a positive effect on students' EFL reading literacy due to the higher median score of the post-test and the statistically significant difference between pre- and post-tests at the significant level of 0.05. Hence, the result substantiates the study hypothesis which hypothesizes that the post-test median score of Cambodian undergraduate students' EFL reading literacy is statistically significantly higher than the pre-test median score at the 0.05 level. This significant result of the effectiveness of Digital Storytelling on students' reading ability echoes those of previous studies (Liu et al., 2018; Rahimi & Yadollahi, 2017; Yang & Wu, 2012). The enhancement in the students' EFL reading literacy can be attributed to (1) the aims of the Digital Storytelling intervention framework and (2) the affordances of Digital Storytelling on reading.

The instructional framework aims to embed explicit instruction of various reading strategies. In each unit, the students explicitly learned and then implemented, a reading strategy in a short and relevant reading passage. Given the complementary role played by reading strategies, teaching students explicitly how to implement the reading strategies should accommodate their reading comprehension. This echoes the ideas propounded by Stroller et al. (2013) and Grabe (2016), all of whom emphasized the need to provide explicit instruction of reading comprehension to better students' reading ability. This prominence of strategy instruction is further supported by the research findings of Okkinga et al. (2018), who found that their intervention impacted

their students' reading ability only when there was a reading-strategy instruction of high quality. Moreover, the framework intends to combine the intensive form of reading with its extensive counterpart. In every unit, the students were reading the texts analytically, focusing on the use of the reading strategy, and they used the strategy learned in class to help them read extensively online to search for information to write scripts for their digital stories. This affords learners abundant chances to learn, practice using, and deploy reading strategies first-hand (Al Qahtani, 2020). It also allows them to improve their reading through extended reading opportunities. The provision of the extended reading opportunities corresponds to Grabe's (2014, 2016) reading curriculum principle, while the intensive-cum-extensive reading corroborates Anderson's (2008) reading instruction principle, which suggested integrating intensive with extensive reading in the reading class. This intensive and extensive combination is further supported by Maipoka and Soontornwipast (2021), who found a significant improvement in their students' reading ability, after taking a course that integrated intensive and extensive reading. Hence, the analytical reading in class and the extended reading outside the class both played a role in improving the students' EFL reading ability.

Digital Storytelling also possesses affordances for the improvement of EFL reading literacy. It presents students with meaningful instances to use writing to improve reading. Throughout the units, students actively enhanced their reading ability through writing digital-story scripts, which included what they read online. Given the mutual link between reading and writing, it is argued in this study that the subsequent writing task is done after online reading improved the students' EFL reading literacy. This aligns with Gao's (2013) suggestion and Graham and Herbet's

(2011) conclusion, which underscores the need to utilize writing tasks to develop reading comprehension. This is additionally backed by Lee and Schallet's (2016) study. They found that writing could expedite reading ability development. Moreover, it is hypothesized in this study that Digital Storytelling improves students' motivation to read. The students were more invested in their reading to gather information for their digital stories because the digital-story topics were relevant to them, and they were aware that their digital stories would then be shared with their classmates, and later, with the public (with their permission). This, in turn, boosted their motivation to read for information to enrich their digital stories. This highlights the propositions by Grabe (2014) and Brandt et al. (2021) on the important role performed by motivation in developing reading ability. The study on interest and motivation in reading by Lustyanite and Aprilia (2020) ultimately cements the point. Their study revealed that, besides a high interest in the reading topic, high motivation is likely linked to better reading comprehension. Therefore, the affordances of Digital Storytelling, which include both providing the students with chances to use writing to improve reading and enhancing their motivation to read, also end up contributing to the overall EFL reading development of the students.

Nevertheless, it should be noted that there was not an improvement in every students' overall EFL reading literacy after Digital Storytelling. Some students had lower scores in the post-tests if compared to those of their pre-tests. Also, there was one student who had the same score in their pre- and post-tests. This negative result can be explained by the following. Based on their responses from the interview, it revealed that slow and unstable internet connection was a challenge to them. Thus, this external factor might impede their ability to perform better in the test since the

test was conducted online. Moreover, they were asked to join the study voluntarily, this might also affect their level of commitment and effort put into doing the test.

Perceptions on Digital Literacy

Research Question 3 explored the Cambodian undergraduate students' perception of their digital literacy after participating in Digital Storytelling. In this study, students reported that their ability to use digital technologies and level of digital literacy skills were overall acceptable. There was a significant improvement in their digital literacy skills across the units. It can be implied that Digital Storytelling tended to connect to their digital literacy. This was consistent with Al Khateeb (2019), Churchill and Barratt-Pugh (2020), and Chan et al. (2017) on the potential of Digital Storytelling to improve students' digital literacy. Students' digital literacy improvement might be explained through the design of the Digital Storytelling for reading instruction. The design aimed to engage the students in a series of problem-based tasks that required them to use digital literacy for reading to create a digital story project. In each unit, students searched and evaluated online information to include in their digital story project. With their projects, they collaborated with peers, prepared storyboards, and applied Adobe Spark to create their digital stories for creation, communication, and collaboration. While creating their digital stories, they were informed about copyright violations and advised to avoid them for online safety.

When they finished creating their digital stories, they uploaded them to the class' Youtube Channel. Tour (2020) recommended how situated learning or learning through doing might accommodate students' digital literacy development. It can be concluded that students upgraded their digital literacy for information search and evaluation, creation, communication, collaboration, and online safety (Son, 2015, 2020).

Nevertheless, it should be noted that the students, after Digital Storytelling, rated their ability to use certain digital technologies unfavorably. They are also reported to have very rarely used certain digital technologies. This may be due to their insufficient exposure to various digital technologies. Throughout this study, they did not experience using many digital tools, but only a few suggested by the teacher. Thus, this might influence their perceptions as to their ability to use those digital technologies.

Perceptions on Digital Storytelling

Research Question 2 explored the perception of Cambodian undergraduate students' on Digital Storytelling. From the analysis of their transcribed, verbal responses from the interview, it can be said the students view digital storytelling favorably. The positive view toward Digital Storytelling by the students was also found by the previous studies conducted by Chiang (2020) and Nassim (2018). Moreover, the analysis of students' transcripts shed more light on the following insights:

The participants believed that chunking and storyboarding supported them in creating digital stories since they provided a clear plan for their digital stories. This reflects the assertion made by Robin (2020) on the importance of storyboarding in a digital story. In addition, throughout the stages of Digital Storytelling, the students received scaffolding from both their teacher (e.g., digital story sample, background-building activity, reading strategy instruction, etc.) and peers (e.g., feedbacks). They reported that it helped them with their mini-project immensely. This is in alignment with the claim by (Godwin-Jones, 2015) on the importance of providing scaffolding to students since creating digital stories is complicated.

Furthermore, the students described having a sense of joy, pride, and motivation, knowing that their digital stories were shared with authentic audiences. They were happy, proud of their achievement, and willing to put extra effort to make their digital stories better. In Murniati and Sanjaya's (2017) study, they also found that their participants were more invested in their works because they had to share the works online. In Chiang's (2020) study, it was also found that students were more motivated to do the work once they know that their work would be shared with other people. Thus, it can be said showcasing students' work plays an important role in improving their self-esteem and motivation in learning. Moreover, during their online searching for information, they could apply the reading strategies that they learn in class and their background knowledge was also broaden. This further proves the point of providing extended reading opportunities for EFL students in their reading class.

Moreover, the participants believed that after joining DST, their EFL reading literacy improved because they could learn useful reading strategies and have many

meaningful opportunities to read both in and outside the class. This finding further supports the result of the first research question. It is true, however, that it is just a mere perception; still, this resonates with what Krashen (1982) put forth in his input hypothesis, saying that positive perceptions can lead to positive behaviors of learning, which eventually produces positive results.

Creating digital stories online during the pandemic, according to the participants, poses notable obstacles. The students expressed an unfavorable view toward online discussion since it was not productive to them, and thus they showed a desire to go back to a face-to-face class. Another difficulty reported by the participants is their slow internet connection. Online learning necessitates a stable internet connection; however, in most Asian countries, slow internet was a challenge for students. A previous study on online learning in the Asian context conducted by Pasaribu and Dewi (2021) also found a similar finding. The students desired to go back to normal class and faced difficulties with a slow internet connection.

Pedagogical Implications

The implications can be applied for three aspects: (1) the Digital Storytelling intervention, (2) EFL reading literacy, (3) digital literacy, and (4) methodology.

The implementation of this intervention leads to students' EFL reading literacy, increase their use of digital technologies, and levels of digital literacy skills. With the applications of this digital storytelling for reading instruction, it focuses on the integration of technology. Levy (2019) recommended teachers bring into the classroom new technologies that can make the connection between the classroom and the real world because doing so will be more engaging for the students. Moreover, it

emphasizes the reading strategies to locate, understand, evaluate, and reflect on the texts through digital literacy. Explicit instruction of reading strategies should be followed by extensive reading and writing tasks to create a digital story. Teachers should structure their reading instruction with meaningful digital storytelling stages and tasks, including (1) planning to select a digital story topic, (2) conducting research, (3) drafting, (4) revising, and (5) publishing for authentic audiences. EFL reading teachers may adapt the digital storytelling intervention to best fit their contexts and purposes.

Reading and writing are believed by scholars and/or researchers to be mutually complementary. On the recommendation from Gao (2013) and Graham and Herbet (2011), English reading instruction should consist of writing tasks, which can accommodate students to summarize and comprehend the texts more effectively. Hence, EFL reading teachers should design activities or tasks in a way that they integrate writing into reading instruction. Reading motivation should be enriched because it plays an essential role in reading improvement. Reading teachers should develop teaching strategies to promote motivation in the reading class (Lustyanite & Aprilia, 2020). Teacher and peer scaffolding deserve a place in reading instruction since it is considered a prerequisite in the language-learning context (Gonulal & Loewen, 2018). The support from the teacher and peers is indispensable to students in their journey to become better readers. As a project-based reading instruction, it is recommended that novel, unique, or authentic elements with peer feedback and peer assessment be integrated with the design of a project, to foster the autonomy, creative thinking, and language skills of the students (Maruanaya & Latief, 2019). Thus, teachers should create and provide opportunities for such scaffolding to happen.

The problem-based tasks that require students to create multimedia artifacts, in particular, digital stories can be implied to support students' digital literacy. This is so because its process will allow them to develop and deploy their digital literacy. Such student-created artifacts should be presented to an authentic audience. Doing so is complementary rewarding for all students, thereby motivating them to keep on extending their digital literacy. Teachers should provide students with practical guidelines and opportunities to learn about the availability of digital tools and resources, and how to access and use them for language learning to effectively develop digital literacy skills (Son et al., 2017).

The research instruments used in this study underwent careful and rigorous validation. Thus, it is recommended that other researchers can make use of the research instruments to fit the context and purpose of their study. Noteworthy are the digital story rubric and the translated digital literacy questionnaire. As for the rubric, it can be potentially used in an experimental study to study the effect of digital storytelling on digital literacy. As for the questionnaire, the research whose interest lies in digital literacy in the context of Cambodia can use it to study the digital literacy of Cambodian students as that area is still an untapped area.

Recommendation for Future Studies

Following are the recommendations for further studies. First, future research studies should take on a true experimental research design (i.e., two groups with randomly selected participants, and pre- and post-tests) to gain stronger evidence of the effect of Digital Storytelling. Second, future research studies should maintain a manageable sample size of 18 to 30 since Digital Storytelling requires a lot of time

and effort from the teacher and students. Third, due to the multimodal nature of Digital Storytelling, it will be interesting for future studies to look at more than one macro skill but others in combination. Fourth, it will be equally worthwhile to study the number of hours the students spent outside the class provided how Digital Storytelling is considered as a project-based instruction.

Conclusion and Limitations of the Study

In sum, the implementation of Digital Storytelling could improve Cambodian undergraduate students' EFL reading and digital literacy. In particular to EFL reading literacy, Digital Storytelling accommodates the convergence of students' reading motivation, explicit reading instruction, extensive reading opportunities, and meaningful digital storytelling tasks. For digital literacy, Digital Storytelling engages students in a series of tasks that allow them to implement digital literacy.

Albeit the fact that this study was conducted successfully, some limitations were also discovered, which can act as caveats for the interpretation of the research findings of this study. Firstly, the study was conducted in the EFL context of Cambodia, thereby making its findings not generalizable to other EFL contexts in other countries. Secondly, the current study utilized the one-group, pre-test, post-test design, thus there might be a slight likelihood that the change in the dependent variable might not be due to the independent variable, but the external variable. Thirdly, the students joined the study voluntarily, and the majority of them studied at two universities at the same time. Hence, this might affect their performance and commitment throughout the study.

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APPENDICES

Appendix A

Sample of English Reading Test

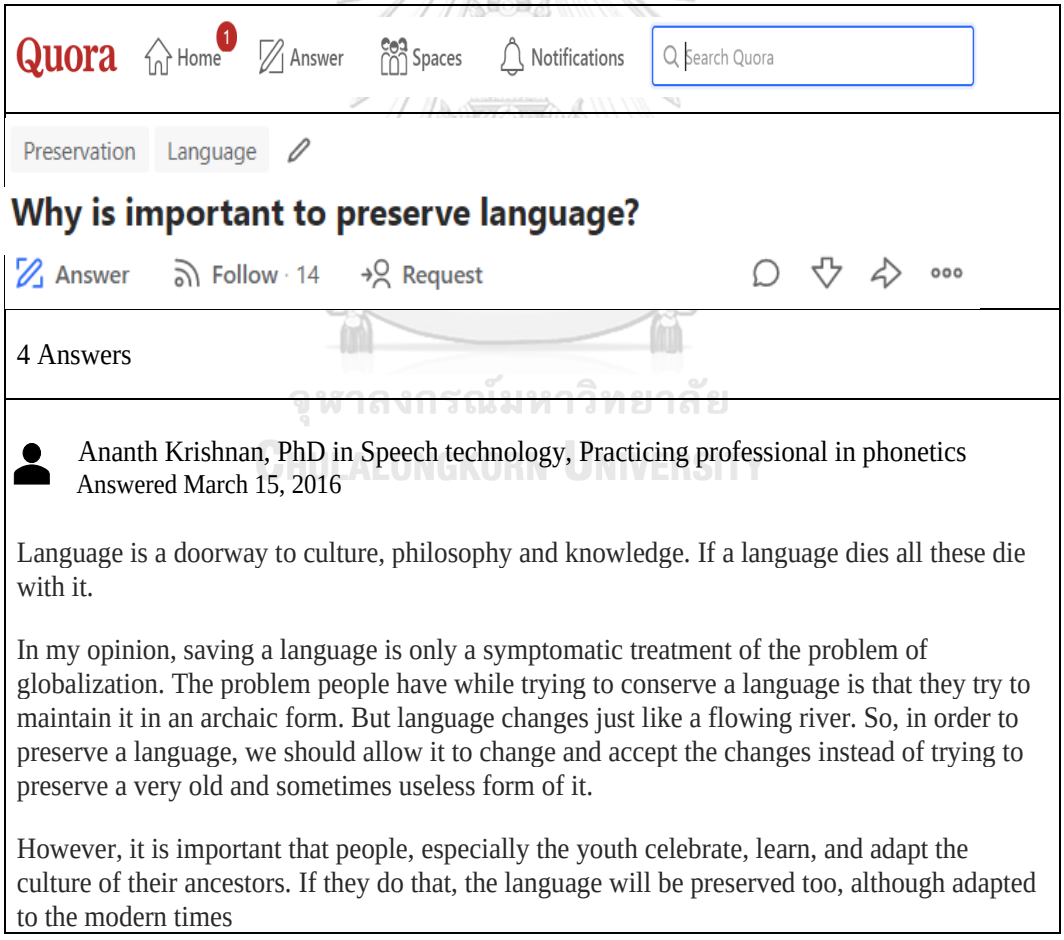
Instructions:

The test has four reading passages based on the topics as follows: Linguistics, Sociology, Media Studies, and International Relations. Each passage has 8 items.

Read each passage and answer the questions. Write your answers on the answer sheet. You are given 60 minutes to complete the test

PASSAGE 1: ENDANGERED LANGUAGE

Read the forum on Quora on the question "Why is it important to preserve a language", and answer questions 1 – 8 (8 points).



Daniel Schwarz Carigiet, Senior Consultant (2006 – present)
Answered January 15, 2016

. I'm a linguist. I studied language. I speak four fluently and a smattering of about three or four more. I love language. It makes me sad when a language dies…

But… In answer to the question, I'm going to go with "No, we do not need to preserve languages that exist." Or more specifically: "We need to record them and capture as much of them as we can for research. And for history."

Because if a language is dying, unless it is being actively suppressed politically, then the fact that it is dying shows a loss of its social identity. And that's okay. That's normal. And with the increasing globalization and mobility of people for study, work or (best reason of all) for love… strictly local tribal identities are fading. And along with them, the corresponding languages/geolects fade and eventually die.

It's sad, but it's a reflection of our world becoming smaller and more accessible

Brandon T. Cole, Spanish Major; Cherokee (Kituhwa), French, German, Italian language student. Answered February 20, 2016

Language is an inheritance to our descendants; to deprive them of language is to deprive them of culture, knowledge, and a point of view. Unfortunately, languages die every day because people only care about the language that will help them the most in a specific area of life (e.g. work); they rarely stop to think about learning a language to help in all areas of life (e.g. distant family connections).

Javier Hudson
Answered February 16, 2016

When a language dies, the knowledge of and ability to understand the culture who spoke it is threatened because the teachings, customs, oral traditions and other inherited knowledge are no longer transmitted among native speakers. As each language dies, science in linguistics, anthropology, prehistory and psychology lose some diversity in data sources.

There are different ideas about the best ways to preserve a language. One way is to encourage younger generations to speak the language as they grow, so they will then teach their children the language as well. In many cases, this option is nearly impossible. There are often many factors that endanger a language, and it is impossible to control each of these factors to ensure its survival.

https://www.quora.com/Why-is-important-to-preserve-language

Locate Information

Access and retrieve information within a text

1. In Ananth Krishnan's answer, what did he compare the transformation of a language to?
    A. shifting sand
    B. wind
    C. flowing river
    D. hurricane

Search for and select relevant text

2. Whose idea was it to preserve a language by motivating the younger generation to speak it?
    A. Ananth Krishnan's
    B. Daniel Schwarz Carigiet's
    C. Brandon T. Cole's
    D. Javier Hudson's

Understand

Represent literal information

3. Who said that people care only about the language that is the most useful in their lives, such as at workplace?
    A. Ananth Krishnan
    B. Daniel Schwarz Carigiet
    C. Brandon T. Cole
    D. Javier Hudson

Integrate and generate inferences

4. In Daniel Schwarz Carigiet's answer, he wrote, "*.....if a language is dying, unless it is being actively suppressed politically, then the fact that it is dying shows a loss of its social identity.*" What can you infer from it?
    A. It is normal when a language is dying.
    B. When a language is dying, it shows that its social identity is disappearing.
    C. A political pressure can be a reason why a language is dying.
    D. It is okay when a language is dying.

Integrate and generate inferences across multiple sources

5. Which statement below is likely to support the views of Ananth Krishnan and Javier Hudson on preserving language?
    A. It is not important to preserve a language.

B. A language can be preserved through archiving its record for research purposes.
C. To preserve a language, the speakers of that language should be flexible and adapt to the changes in the language.
D. Youth plays an integral part in preserving the language.

Evaluate and Reflect

Assess quality and credibility

6. Of all the respondents, whose post is the least credible in this Quora forum? Write a reason for your answer in the box provide.
    A. Ananth Krishnan's
    B. Daniel Schwarz Carigiet's
    C. Brandon T. Cole's
    D. Javier Hudson's

Give the reason for your answer:…….

Reflect on content and form

7. Who did not think that it is important to preserve a language?
    A. Ananth Krishnan
    B. Daniel Schwarz Carigiet
    C. Brandon T. Cole
    D. Javier Hudson

Detect and handle conflict

8. What is the point that Ananth Krishnan and Daniel Schwarz Carigiet disagree on?
    A. The ways to preserve a language
    B. The impacts of a language loss
    C. The origin of globalization
    D. The comparation of losing a language

Appendix B

Sample of Reading Test Evaluation Form

Please click on the small box accordingly to your opinion (-1 = Disagree, 0 = Not sure, +1 = Agree) regarding the *appropriateness or relevancy of the items* to the construct. For the question that you give -1, please provide the reasons why in the comment by clicking on the "Click or tap here to enter text" and then write your comment.

Construct		**Explanations**	**Test Items**			
Locate information	Access and retrieve information within a text	*Scanning a text to obtain the wanted info (e.g., phrases, a few words, or numerical values)*	1. In Ananth Krishan's answer, what did he compare the change in a language to?	-1 ☐	0 ☐	+1 ☐
			Comment/suggestion Click or tap here to enter text.			
			9. In Peter Bahn's answer, what did he claim as a cause of poverty?	-1 ☐	0 ☐	+1 ☐
			Comment/suggestion Click or tap here to enter text.			
			17. Who wrote Article 1?	`-1 ☐	0 ☐	+1 ☐
			Comment/suggestion Click or tap here to enter text.			

Appendix C

IOC Result for English Reading Test Evaluation

Construct		Item	IOC Result			Mean	Interpretation
			Expert A	Expert B	Expert C		
Locate information	Access and retrieve information within a text	*1*	*1*	*-1*	*-1*	*-0.34*	*Revise*
		9	1	1	0	0.67	Keep
		17	1	0	1	0.67	Keep
		25	1	1	1	1	Keep
	Search for and select relevant text	2	1	1	1	1	Keep
		10	1	1	0	0.67	Keep
		18	1	0	1	0.67	Keep
		26	1	1	1	1	Keep
Understand	Represent literal information	3	1	1	1	1	Keep
		11	1	1	1	1	Keep
		19	1	1	1	1	Keep
		27	1	1	1	1	Keep
	Integrate and generate inferences	4	0	1	1	0.67	Keep
		12	1	1	0	0.67	Keep
		20	1	1	1	1	Keep
		28	1	1	1	1	Keep
	Integrate and generate inferences across multiple sources	5	1	0	1	0.67	Keep
		13	1	1	1	1	Keep
		21	1	1	1	1	Keep
		29	1	1	1	1	Keep
Evaluate and Reflect	Assess quality and credibility	*6*	*0*	*1*	*0*	*0.34*	*Revise*
		14	0	1	1	0.67	Keep
		22	*0*	*0*	*1*	*0.34*	*Revise*
		30	*0*	*1*	*0*	*0.34*	*Revise*
	Reflect on content and form	7	1	1	1	1	Keep
		15	1	1	1	1	Keep
		23	1	1	1	1	Keep
		31	0	1	1	0.67	Keep
	Detect and handle conflict	8	1	1	1	1	Keep
		16	0	1	1	0.67	Keep
		24	1	1	1	1	Keep
		32	1	1	1	1	Keep

According to the IOC result, items 1, 6, 22, and 30 received a mean score lower than 0.5; therefore, they had to be revised based on the suggestions from all experts.

Following are the aforementioned items, experts' comments on / suggestions about them, and their revised versions:

Item 1

In Ananth Krishan's answer, what did he compare the change in a language to?

A. shifting sand

B. wind

C. flowing river

D. hurricane

Expert B said that the answer to this question is too obvious. Agreeing with Expert B, Expert C also suggested the use of synonyms to the word "change" in the question stem to make it more challenging. The revised version of Item 1 is as follows:

The Revised Version of Item 1.

In Ananth Krishan's answer, what did he compare the transformation of a language to?

A. shifting sand

B. wind

C. flowing river

D. hurricane

Item 6

2. Of all the respondents, whose post is the least credible in this Quora forum?

A. Ananth Krishnan's

B. Daniel Schwarz Carigiet's

C. Brandon T. Cole's

D. Javier Hudson's

Give a reason for your answer:……

Expert A expressed her concern that this item and others (14, 22, and 30) under the same construct are subjective, and she suggested ensuring the marking criteria used to mark them are as clear as possible. To apply the expert's suggestion into these items, the marking criteria for them are made as follows: (1) if students choose the correct choice and provide reasonable justification, the grammatical errors of which will not be factored in the marking as it is not the objective, they will get one full mark, (2) but they choose the correct choice but provide unreasonable justification or fail to provide any, they will only get 0.5 marks.

Item 22

Which article that is not trustworthy?

A. Article 1

B. Article 2

C. Both are not trustworthy

D. Both are trustworthy

Give a reason for your answer:……

Expert A pointed out the grammatical error in the item that lies with the use of "that". Moreover, Expert C recommended using "None are trustworthy" rather than "Both are not trustworthy" in Choice C. The revised version of item 22 is as follows:

The Revised Version of Item 22

which article is not trustworthy?

A. Article 1

B. Article 2

C. None are trustworthy

D. Both are trustworthy

Item 30

Which article is more current?

A. Article 1

B. Article 2

C. Both are not current

Give a reason for your answer:……

Expert C showed his concern that this question is quite easy for B1 students. Therefore, to make it more challenging, another choice was added. The revised version of item 30 is as follows:

The Revised Version of Item 30

which article is more current?

A. Article 1

B. Article 2

C. None are current

D. Both are curren

Appendix D

Difficulty (P) and Discrimination (R) Indices for English Reading Test

Test item	Students										UG	LG	P	R	Meaning
	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10					
#1	1	1	1	1	1	1	1	1	0	1	3	2	0.5	0.3	Keep
#2	1	1	1	0	1	1	0	1	0	0	3	1	0.4	0.7	Keep
#3	***1***	***0***	***0***	***1***	***1***	***1***	***0***	***1***	***0***	***1***	***1***	***2***	***0.3***	***-0.3***	***Revise***
#4	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***1***	***0***	***0***	***1***	***0.1***	***-0.3***	***Revise***
#5	1	0	1	1	0	1	0	1	0	0	2	1	0.3	0.3	Keep
#6	1	1	0	1	1	1	0	0	1	0	2	1	0.3	0.3	Keep
#7	0	1	1	1	1	0	1	0	0	0	2	0	0.2	0.7	Keep
#8	***0***	***1***	***0***	***0***	***0***	***0***	***1***	***1***	***0***	***0***	***1***	***1***	***0.2***	***0.0***	***Revise***
#9	1	1	1	1	1	0	0	1	0	1	3	2	0.5	0.3	Keep
#10	1	1	1	1	1	0	0	1	1	0	3	2	0.5	0.3	Keep
#11	1	1	1	0	1	1	1	1	0	0	3	1	0.4	0.7	Keep
#12	1	1	1	1	1	0	1	0	0	1	3	1	0.4	0.7	Keep
#13	1	0	1	0	1	0	1	0	0	0	2	0	0.2	0.7	Keep
#14	1	1	1	1	1	0	1	0	0	0	3	0	0.3	1.0	Keep
#15	1	1	1	0	0	1	1	1	1	0	3	2	0.5	0.3	Keep
#16	1	1	1	1	1	1	1	0	1	1	3	2	0.5	0.3	Keep
#17	***1***	***0***	***1***	***1***	***1***	***1***	***0***	***1***	***1***	***1***	***2***	***3***	***0.5***	***-0.3***	***Revise***
#18	1	0	1	0	0	1	0	0	1	0	2	1	0.3	0.3	Keep
#19	1	1	1	1	0	1	1	1	0	0	3	1	0.4	0.7	Keep
#20	***1***	***0***	***0***	***0***	***1***	***0***	***1***	***0***	***0***	***0***	***1***	***0***	***0.1***	***0.3***	***Revise***
#21	***0***	***1***	***0***	***0***	***1***	***0***	***1***	***0***	***0***	***0***	***1***	***0***	***0.1***	***0.3***	***Revise***
#22	1	1	0	0	0	0	1	0	0	0	2	0	0.2	0.7	Keep
#23	1	1	0	1	0	0	1	1	0	0	2	1	0.3	0.3	Keep
#24	1	1	1	1	0	1	0	1	1	0	3	2	0.5	0.3	Keep
#25	1	1	1	1	1	1	1	1	0	1	3	2	0.5	0.3	Keep
#26	1	1	1	1	1	1	1	1	0	0	3	1	0.4	0.7	Keep
#27	1	1	1	1	1	1	0	1	0	0	3	1	0.4	0.7	Keep
#28	1	1	0	0	0	0	0	0	0	0	2	0	0.2	0.7	Keep
#29	***1***	***0***	***0***	***1***	***1***	***1***	***1***	***0***	***0***	***0***	***1***	***0***	***0.1***	***0.3***	***Revise***
#30	1	1	1	1	0	0	1	0	0	0	3	0	0.3	1.0	Keep
#31	1	1	1	1	1	1	0	0	0	1	3	1	0.4	0.7	Keep
#32	***1***	***1***	***1***	***0***	***1***	***0***	***1***	***1***	***1***	***1***	***3***	***3***	***0.6***	***0.0***	***Revise***

Note. S = Student, UG = Upper Group, LG = Lower Group, P = Difficulty Index, R = Discrimination Index

According to Difficulty and Discrimination Indices, some items are too difficult and/or are not able to effectively discriminate the test-takers, thereby requiring revisions. Thus, these items and/or their distractors were simplified and/or changed to

make them appropriate in terms of the level of difficulty and discrimination. As follows are the aforementioned items categorized based on their Difficulty Discrimination Indices and followed by their respective revisions.

Items 20, 21, and 29 received Difficulty Index of 0.1 (Difficult) and Discrimination index of 0.3 (High discrimination).

Item 20

In article 2, the author wrote, "*While digital literacy initially focused on digital skills and stand-alone computers, the advent of the internet and use of social media, has caused some of its focus to shift to mobile devices*". What can you infer from it?

A. Originally, the focus of digital literacy is on digital skills and computers.
B. With more changes in technology, the focus of digital literacy will probably keep changing.
C. Nowadays, the focus of digital literacy move to mobile devices.
D. The change in focus to mobile devices is due to the internet and social media

The Revised Version of Item 20

In article 2, the author wrote "While digital literacy initially focused on digital skills and stand-alone computers, the advent of the internet and use of social media, has caused some of its focus to shift to mobile devices." What can be inferred from it?

A. Digital literacy originally focused on computers and digital skills.
B. Digital literacy will probably keep changing its focus when there are changes in technology.
C. Digital literacy nowadays changes its focus to mobile devices.
D. The internet and the use of social media have made the focus of digital literacy move to mobile tools.

Item 21

What can you infer from the information on digital literacy from both articles?

A. Digital literacy is confined to the use of technologies.

B. Digital literacy goes beyond the use of technologies.

C. Being able to create texts, images, and audios is digital literacy

D. A marketer's digital literacy is different from that of a university student.

The Revised Version of Item 21

What can you infer from the information on digital literacy from both articles?

A. Digital literacy refers to the use of technologies.

B. The definition of digital literacy goes beyond the use of technologies.

C. Digital literacy refers to the ability to create texts, images, and audios.

D. The digital literacy of a marketer is not the same as that of a student.

Item 29

What can you conclude from reading these two articles?

A. Lifting tariffs benefits ASEAN countries greatly.

B. ASEAN provides the Free Trade, from which its members can benefit.

C. Despite having many advantages, ASEAN also possesses some notable disadvantages, which are challenging for some of its members.

D. The country in which ASEAN summit takes place will change every time.

The Revised Version of Item 29

What can be concluded about ASEAN based on the information from the two articles?

A. Removing tariffs is beneficial to ASEAN countries.

B. ASEAN provides the Free Trade, which benefits its members.

C. Despite having many advantages, ASEAN also has some disadvantages, which are difficult for some ASEAN members.

D. The country in which ASEAN summit takes place will change every time.

Items 3, 8, 17, and 32 respectively received Difficulty Index of 0.3, 0.2, 0.5, and 0.6 (Good in terms of difficulty). While items 3, 8, and 17 received a Discrimination Index of -0.3 (no discrimination), item 32 received a discrimination index of 0 (no discrimination).

Item 3

Who said that people only focus on the language that is the most helpful to them in a certain aspect of their lives, such as at workplace?

A. Ananth Krishnan

B. Daniel Schwarz Carigiet

C. Brandon T. Cole

D. Javier Hudson

The Revised Version of Item 3

Who said that people care only about the language that is the most useful in their lives, such as at the workplace?

A. Ananth Krishnan

B. Javier Hudson

C. Brandon T. Cole

D. Daniel Schwarz Carigiet

Item 8

What is the main point that Ananth Krishnan, and Daniel Schwarz Carigiet disagree on?

A. Methods used to preserve a language

B. Effects of a language loss

C. The existence of globalization

D. Comparation of a language loss

The Revised Version of Item 8

What is the point that Ananth Krishnan and Daniel Schwarz Carigiet disagree on?

A. The ways to preserve a language

B. The impacts of a language loss

C. The origin of globalization

D. The comparation of losing a language

Item 17

What wrote Article 1?

A. American Library Association

B. Not mentioned

C. Jo Codwell-Neilson

D. A & C

The Revised Version of Item 17

Who or what wrote Article 1?

A. American Library Association

B. Wikipedia

C. Jo Codwell-Neilson

D. A & C

Item 32

Which statement is supported by the authors from the two articles?

A. ASEAN members might be reluctant to openly discuss issues related to democracy or human right happening in the country of its members.

B. ASEAN can provide a platform where its members can promote their identity while preserving their traditional values.

C. ASEAN members can benefit from the elimination of tariffs.

D. A & B

The Revised Version of Item 32

Which statement is supported by both articles?

A. ASEAN members might not be willing to discuss issues about democracy or human right that is happening in ASEAN members' countries.

B. ASEAN members can promote their identities while preserving their traditional values.

C. Eliminating tariffs benefits ASEAN members.

D. A & B

Item 4 received a Difficulty Index of 0.1 (Difficult) and Discrimination Index of -0.3 (No discrimination).

Item 4

In Daniel Schwarz Carigiet's answer, he wrote, "*Because if a language is dying, unless it is being actively suppressed politically, then the fact that it is dying shows a loss of its social identity. And that's okay*." What can you infer from it?

A. A dying language is normal.

B. A dying language shows that its social identity is disappearing.

C. A dying language can result from a political pressure.

D. A dying language is abnormal.

The Revised Version of Item 4

In Daniel Schwarz Carigiet's answer, he wrote, *"..if a language is dying, unless it is being actively suppressed politically, then the fact that it is dying shows a loss of its social identity.*" What can you infer from it?

A. It is normal when a language is dying.

B. When a language is dying, it shows that its social identity is disappearing.

C. A political pressure can be a reason why a language is dying.

D. It is okay when a language is dying

Appendix E

Interview Protocol

Rationale

The semi-structured interview is a part of the Digital Storytelling (DST) intervention. It aims to gauge Cambodian undergraduate students' opinions toward DST projects and the development of their EFL reading literacy and digital literacy.

The participants and methodology

Five students are randomly selected from the study sample to join the semi-structured interview. The researcher acts as the interviewer.

The interview, which lasts about 60 minutes, takes place in week 10 once the students have completed the DST projects. The students take turns answering the questions asked by the researcher who records the answers for later analysis. The questions that the researcher asks the students are as follows:

Interview Question

Constructs in Proposed DST Instructional Framework	Interview Questions
EFL Reading Literacy	1. Do you think that vocabulary and reading strategies are important to help you read effectively? If yes, how? តើអ្នកគិតថាវាក្យសព្ទ និងយុទ្ធសាស្ត្រអានមាន សារៈសំខាន់ក្នុងការជួយឲ្យអ្នកអានប្រកបដោយ ប្រសិទ្ធភាពដែរឬទេ? បើមាន សូមបញ្ជាក់។

Digital Literacy		2. Do you think that being digitally literate only involves the ability to use digital tools? *តើអ្នកគិតថាអក្ខរកម្មឌីជីថលទាក់ទងតែសមត្ថភាពក្នុងការប្រើប្រាស់ឧបករណ៍ឌីជីថលដែរឬទេ?*
DST Project Stages	***Stage 1: Planning/ selecting topic***	3. How does the background-building activity help you with your DST project? *តើ Background-building activity ជួយអ្នកក្នុងការធ្វើ DST project យ៉ាងដូចម្តេចដែរ?* 4. How does the activity that involves the analysis of digital story samples help you with your DST project? *តើ activity ដែលតម្រូវឲ្យអ្នកវិភាគគំរូនៃ digital story ជួយអ្នកក្នុងការធ្វើ DST project យ៉ាងដូចម្តេចដែរ?*
	Stage 2: Conducting research	5. Do the reading strategies that you learn help you with your online searching? If yes, how? *តើយុទ្ធសាស្ត្រក្នុងការអានដែលអ្នកបានរៀននៅក្នុងថ្នាក់អាចផ្តល់ជំនួយដល់ការស្រាវជ្រាវរកឯកសារ និងព័ត៌មានតាមអ៊ីនធឺណិតយ៉ាងដូចម្តេចដែរ?* 6. What do you think of the research tasks? What are the challenges you encounter while doing it? *តើអ្នកគិតយ៉ាងដូចម្តេចដែរចំពោះការងារស្រាវជ្រាវរកឯកសារ និងព័ត៌មានតាមអ៊ីនធឺណិត? ហើយតើអ្នកជួបប្រទះបញ្ហាប្រឈម ឬការលំបាកអ្វីខ្លះដែរ?*
	Stage 3: Drafting	7. Do you find comments from friends on your draft helpful? If yes, how? *តើអ្នកគិតថាមតិពីមិត្តរបស់អ្នកចំពោះ draft របស់អ្នកមានអត្ថប្រយោជន៍ដែរឬទេ? បើមាន សូមបញ្ជាក់។* 8. How is chunking the information in the draft helpful to you in your DST project?

		តើការដាក់ព័ត៌មាននៅក្នុង draft របស់អ្នកជា chunk ជួយអ្នកក្នុងការធ្វើ DST project របស់អ្នកយ៉ាងដូចម្តេចដែរ? 9. How does the storyboard help you plan for your DST project? *តើ storyboard បានជួយអ្នកក្នុងការធ្វើ DST project របស់អ្នកយ៉ាងដូចម្តេចដែរ?*
	Stage 4: Revising	10. Do you find comments on the design of the digital stories the teacher helpful to you? If yes, how? *តើអ្នកគិតថាមតិពិ គ្រូរបស់អ្នកទៅលើ digital stories របស់អ្នកមានអត្ថប្រយោជន៍ដែរឬទេ? បើមាន សូមបញ្ជាក់។*
	Stage 5: Publishing for authentic audience	11. What do you think about publishing your digital stories and share them with the public? *តើអ្នកគិតយ៉ាងណាដែរចំពោះការចែករំលែក digital stories របស់អ្នកជាសាធារណៈ?*
EFL Reading Literacy		12. How does participating in the DST projects help you improve your English reading ability? Any difficulties or challenges in your projects so far? *តើការចូលរួមក្នុង DST projects ជួយអ្នកឱ្យបង្កើនសមត្ថភាពអានគាសាអង់គ្លេសយ៉ាងដូចម្តេចដែរ? តើការចូលរួមក្នុង DST projects ជួយអ្នកឱ្យបង្កើនសមត្ថភាពអានគាសាអង់គ្លេសយ៉ាងដូចម្តេចដែរ? មានការលំបាក ឬបញ្ហាប្រឈមដែរឬអត់ក្នុងការធ្វើ project កន្លងមក?*

Appendix F

Sample of Interview Question Evaluation Form

Please click on the small box (☐) under -1, 0, or +1 accordingly to whether you agree, disagree, or are not sure with the appropriateness or relevancy of each question to the present study. If you want to change your answer, just click on the box again. For the statement that you give -1, please provide the reasons why in the comments / suggestions by clicking on the "Click or tap here to enter text" to write.

-1 = Disagree	0 = Not sure	+ 1 = Agree

1. Do you think that vocabulary and reading strategies are important to help you read effectively? If yes, how? *តើអ្នកគិតថាវាក្យសព្ទ និងយុទ្ធសាស្ត្រក្នុងអានមានសារៈសំខាន់ក្នុងការជួយឲ្យអ្នកអានប្រកបដោយប្រសិទ្ធភាពដែរឬទេ? បើមាន សូមបញ្ជាក់។*	-1 ☐	0 ☐	+1 ☐
Comments / Suggestions Click or tap here to enter text.			
2. Do you think that being digital literate only involves the ability to use digital tools? *តើអ្នកគិតថាអក្ខរកម្មឌីជីថលទាក់ទងតែសមត្ថភាពក្នុងការប្រើប្រាស់ឧបករណ៍ឌីជីថលដែរឬទេ?*	-1 ☐	0 ☐	+1 ☐

Appendix G

IOC Result of Interview Question Evaluation

Question	IOC Result			Mean	Interpretation
	Expert A	Expert B	Expert C		
1	0	1	1	0.67	Keep
2	1	1	1	1	Keep
3	1	1	1	1	Keep
4	1	1	1	1	Keep
5	1	1	1	1	Keep
6	1	1	1	1	Keep
7	1	1	1	1	Keep
8	1	1	1	1	Keep
9	1	1	1	1	Keep
10	1	1	1	1	Keep
11	1	1	1	1	Keep
12	***-1***	***1***	***1***	***0.34***	***Revise***

Based on the result of IOC, Question 12 did not receive a mean higher than 0.5; therefore, it was revised. Question 12 with the experts' comments and its revision is as follows:

Question 12

What do you think about your English reading ability after participating in the DST project?

(Khmer Translation) *តើអ្នកគិតយ៉ាងណាដែរចំពោះសមត្ថភាពការអានភាសាអង់គ្លេសរបស់អ្នក បន្ទាប់ពីបានចូលរួមធ្វើ DST projects កន្លងមក?*

According to Expert A, he claimed that Question 14 might be hard for the students to answers because they might not be sure about their English Proficiency. Hence, they would not be able to answer the question properly. To revise it, the focus of the question was shifted from students' view toward their English reading ability after joining DST projects to their view toward how DST projects help them improve their English reading ability.

The Revised Version of Question 12

How does participating in the DST projects help you improve your English reading ability?

(Khmer Translation) *តើការចូលរួមក្នុង DST projects ជួយអ្នកឱ្យបង្កើនសមត្ថភាពអានភាសាអង់គ្លេសយ៉ាងដូចម្តេចដែរ?*

Appendix H

Digital Literacy Questionnaire

DIGITAL LITERACY QUESTIONNAIRE – LANGUAGE LEARNER

កម្រងសំណួរអក្ខរកម្មឌីជីថលសម្រាប់អ្នករៀនភាសា

Thank you for your participation in answering this questionnaire. Your responses will be treated in strict confidence and individuals will not be identified in any report or publication. Please answer all questions as accurately as you can.

សូមអរគុណចំពោះការចូលរួមឆ្លើយសំណួរនេះ។ ការឆ្លើយតបរបស់អ្នកគឺដោយសម្ងាត់ នឹងមិនត្រូវបានបង្ហាញនៅក្នុងរបាយការណ៍ឬការបោះពុម្ពផ្សាយណាមួយឡើយ។ សូមមេត្តាឆ្លើយសំណួរទាំងអស់ឲ្យត្រឹមត្រូវតាមដែលអ្នកអាចធ្វើបាន។

SECTION I *ផ្នែកទី១*

- For each question, please mark your response with a tick (√), unless otherwise indicated. For 'Other' response, provide a brief response.

ចំពោះសំណួរនីមួយៗសូមគូសចំណាំការឆ្លើយតបរបស់អ្នកដោយធីក (√) លើកលែងតែមានការបញ្ជាក់ផ្សេងពីនេះ។ សម្រាប់ការឆ្លើយតប "ផ្សេងទៀត" សូមផ្តល់ជាចម្លើយខ្លី។

Q1. Gender
ភេទ

Male ☐ *ប្រុស* Female ☐ *ស្រី*

Q2. Age (please specify)
អាយុ (សូមបញ្ជាក់)

_____ years old
ឆ្នាំ

Q3. Your native language (mother tongue)
ភាសាកំណើតរបស់អ្នក

_____

Q4. Your target language you want to learn and improve further
ភាសាដែលអ្នកចង់រៀននិងពង្រឹងបន្ថែមទៅអនាគត

Q5. What is your current academic level?
តើកម្រិតវប្បធម៌បច្ចុប្បន្នរបស់អ្នកត្រឹមណាដែរ?

Primary school ☐
កម្រិតបឋមសិក្សា

Secondary school ☐
កម្រិតទុតិយភូមិ

University preparation ☐
កំពុងតែត្រៀមចូលមហាវិទ្យាល័យ

Undergraduate ☐
កម្រិតបរិញ្ញាប័ត្រ

Postgraduate ☐
កម្រិតថ្នាក់ក្រោយឧត្តមសិក្សា

Other (please specify) ☐
ផ្សេងទៀត (សូមបញ្ជាក់)

Q6. How long have you been using computers?
តើអ្នកប្រើប្រាស់កុំព្យូទ័រអស់រយៈពេលប៉ុន្មានឆ្នាំហើយ?

☐ year(s)
ឆ្នាំ

Q7. What type of computer have you used? Please fill out the following table.
តើអ្នកធ្លាប់បានប្រើកុំព្យូទ័រប្រភេទអ្វីខ្លះ? សូមបំពេញតារាងខាងក្រោម។

Type of computer *ប្រភេទកុំព្យូទ័រ*	Length of time *រយៈពេលនៃការប្រើប្រាស់*	Purposes *គោលបំណងនៃការប្រើប្រាស់*
Example: Desktop PC (windows) *ឧទាហរណ៍៖ កុំព្យូទ័រលើតុ (Window)*	*1 year* *១ឆ្នាំ*	*Personal use at home, word processing* *ប្រើផ្ទាល់ខ្លួននៅផ្ទះ ប្រើសម្រាប់ Word Processing ប្រើសម្រាប់ Email*
Example: Laptop Macintosh *ឧទាហរណ៍៖ កុំព្យូទ័រយួរដៃ ម៉ាក Macintosh (OS X)*	*6 months* *៦ខែ*	*Computer lab at school, email, etc.* *ប្រើនៅបន្ទប់ពិសោធន៍កុំព្យូទ័រនៅសាលារៀន ប្រើសម្រាប់ អ៊ីមែល ប្រើសម្រាប់ web search*

Q8. Who taught you how to use the computer in the first place?
តើអ្នកណាជាអ្នកបង្រៀនអ្នកពីរបៀបប្រើកុំព្យូទ័រដំបូង?

Teacher ☐ *គ្រូបង្រៀន / អ្នកហ្វឹកហាត់*	Friend ☐ *មិត្តភក្តិ*	Family ☐ *សមាជិកគ្រួសារ*
Book ☐ *សៀវភៅ*	Magazine ☐ *ទស្សនាវដ្តី*	Video ☐ *វីដេអូ*
Yourself ☐ *ខ្លួនអ្នក*	Other (please specify) ☐ *ផ្សេងទៀត (សូមបញ្ជាក់)*	

Q9. What type of mobile device do you own? Please fill out the following table.
តើអ្នកមានឧបករណ៍ចល័ត (mobile device) ប្រភេទអ្វីខ្លះ? សូមបំពេញតារាងខាងក្រោម។

Type of mobile device *ប្រភេទឧបករណ៍ចល័ត*	Length of time *រយៈពេលនៃការប្រើប្រាស់*	Purposes *គោលបំណងនៃការប្រើប្រាស់*
Example: Electronic dictionary *ឧទាហរណ៍៖ វចនានុក្រមអេឡិចត្រូនិច*	*2 years* *២ឆ្នាំ*	*Studying at home and school* *សម្រាប់ការប្រើប្រាស់នៅផ្ទះនិងនៅសាលា*
Example: Smartphone (Galaxy S5) *ឧទាហរណ៍៖ Smartphone (Galaxy S5)*	*10 months* *១០ខែ*	*Phone calls, email, listening to music* *ការហៅទូរស័ព្ទ អ៊ីមែល ស្តាប់តន្ត្រី*
Example: Microsoft surface *ឧទាហរណ៍៖ កុំព្យូទ័រយួរដៃ (Microsoft surface)*	*6 months* *៦ខែ*	*Web search, watching videos, etc.* *ស្វែងរកតាមគេហទំព័រមើលវីដេអូ។ ល។*

Q10. How do you find out about new digital technologies? Please tick (√) all that apply.
តើអ្នកស្វែងយល់អំពីបច្ចេកវិទ្យាឌីជីថលថ្មីៗយ៉ាងដូចម្តេច? សូមធីក (√) ចម្លើយទាំងអស់ដែលសមស្រប។

Teacher ☐ *គ្រូបង្រៀន*	Friends ☐ *មិត្តភក្តិ*	Family ☐ *សមាជិកគ្រួសារ*	Books ☐ *សៀវភៅ*
Magazine ☐ *ទស្សនាវដ្តី*	Newspaper ☐ *កាសែត*	TVs ☐ *ទូរទស្សន៍*	Radios ☐ *វិទ្យុ*
Websites ☐ *គេហទំព័*	Blogs ☐ *ប្លក់*	Email lists ☐ *បញ្ជីអ៊ីមែល*	Social Networks ☐ *បណ្តាញសង្គម*
Other (please specify) ☐ *ផ្សេងទៀត (សូមបញ្ជាក់*			

SECTION II *ផ្នែកទី២*

Q11. How would you rate your typing skills? Please tick (√) one that best applies.
តើអ្នកវាយតម្លៃជំនាញ typing របស់អ្នកយ៉ាងដូចម្តេចដែរ? សូមធីក (√) ចម្លើយទាំងដែលសមស្របបំផុត។

Very Poor ☐ *ខ្សោយខ្លាំង* Poor ☐ *ខ្សោយ* Acceptable ☐ *អាចទទួលយកបាន* Good ☐ *ពូកែ* Very Good ☐ *ពូកែខ្លាំង*

Q12. How would you rate your web search skills? Please tick (√) one that best applies.
តើអ្នកវាយតម្លៃជំនាញ web search របស់អ្នកយ៉ាងដូចម្តេចដែរ? សូមធីក (√) ចម្លើយទាំងដែលសមស្របបំផុត។

Very Poor ☐ *ខ្សោយខ្លាំង* Poor ☐ *ខ្សោយ* Acceptable ☐ *អាចទទួលយកបាន* Good ☐ *ពូកែ* Very Good ☐ *ពូកែខ្លាំង*

Q13. How would you rate your computer literacy (the ability to use computer)? Please tick (√) one that best applies.
តើអ្នកវាយតម្លៃអក្ខរកម្មកុំព្យូទ័រ (សមត្ថភាពក្នុងការប្រើកុំព្យូទ័រ) របស់អ្នកយ៉ាងដូចម្តេចដែរ? សូមធីក (√) ចម្លើយទាំងដែលសមស្របបំផុត។

Very Poor ☐ Poor ☐ Acceptable ☐ Good ☐ Very Good ☐*ខ្សោយខ្លាំង* *ខ្សោយ* *អាចទទួលយកបាន* *ពូកែ* *ពូកែខ្លាំង*

Q14. How would you rate your internet literacy (the ability to use the internet)? Please tick (√) one that best applies.
តើអ្នកវាយតម្លៃអក្ខរកម្មអ៊ីនធឺណិត (សមត្ថភាពក្នុងការប្រើអ៊ីនធឺណិត) របស់អ្នកយ៉ាងដូចម្តេចដែរ? សូមធីក (√) ចម្លើយទាំងដែលសមស្របបំផុត។

Very Poor ☐ Poor ☐ Acceptable ☐ Good ☐ Very Good ☐
ខ្សោយខ្លាំង *ខ្សោយ* *អាចទទួលយកបាន* *ពូកែ* *ពូកែខ្លាំង*

Q15. How would you rate your digital literacy (the ability to use digital technologies)? Please tick (√) one that best applies.
តើអ្នកវាយតម្លៃអក្ខរកម្មឌីជីថល (សមត្ថភាពក្នុងការប្រើប្រាស់បច្ចេកវិទ្យាឌីជីថល) របស់អ្នកយ៉ាងដូចម្តេច? សូមធីក (√) ចម្លើយទាំងដែលសមស្របបំផុត។

Very Poor ☐ Poor ☐ Acceptable ☐ Good ☐ Very Good ☐*ខ្សោយខ្លាំង* *ខ្សោយ* *អាចទទួលយកបាន* *ពូកែ* *ពូកែខ្លាំង*

SECTION III *ផ្នែកទី៣*

Q16. Please respond to each of the following questions by putting a tick (√) in the box at the appropriate spot. "Yes" or "No".
សូមឆ្លើយនឹងសំនួរនីមួយៗដោយដាក់សញ្ញាធីក (√) ទៅក្នុងប្រអប់ក្នុងប្រអប់ខាងក្រោម៖ បាទ/ចាស ឬ ទេ។

		Yes *បាទ/ចាស*	No *ទេ*
1	Do you understand the basic functions of computer hardware components? *តើអ្នកយល់ពីមុខងារមូលដ្ឋាននៃសមាសភាគផ្នែករឹងរបស់កុំព្យូទ័រទេ?*		
2	Do you have a personal homepage or a personal portfolio on the web? *តើអ្នកមានគេហទំព័រផ្ទាល់ខ្លួនឬ portfolio ផ្ទាល់ខ្លួននៅលើគេហទំព័រដែររឺទេ?*		
3	Do you use keyboard shortcuts? *តើអ្នកប្រើ keyboard shortcuts រឺទេ?*		
4	Do you use the computer for learning purposes? *តើអ្នកប្រើកុំព្យូទ័រសម្រាប់ការរៀនសូត្ររឺទេ?*		
5	Do you find it easy to learn something by reading it on the computer screen? *តើអ្នកយល់ថាវាមានភាពងាយស្រួលក្នុងការរៀនអ្វីមួយដោយអានវានៅលើអេក្រង់កុំព្យូទ័ររឺទេ?*		
6	Do you find it easy to learn something by reading it on the computer screen? *តើអ្នកយល់ថាវាភាពងាយស្រួលក្នុងការរៀនអ្វីមួយដោយមើលវានៅលើអេក្រង់កុំព្យូទ័ររឺទេ?*		
7	Do you use social networking services? *តើអ្នកប្រើប្រាស់សេវាកម្មបណ្តាញសង្គមរឺទេ?*		
8	Do you have any online friend you have never met in person? *តើអ្នកមានមិត្តភក្តិតាមអ៊ីនធឺណិតដែលអ្នកមិនធ្លាប់ជួបដោយផ្ទាល់រឺទេ?*		
9	Do you feel competent in using digital learning resources? *តើអ្នកគិតថាអ្នកមានសមត្ថភាពក្នុងការប្រើប្រាស់ធនធានសិក្សាឌីជីថលទេ?*		
10	Do you have mobile apps you use for language learning purposes? *តើអ្នកមានកម្មវិធីទូរស័ព្ទដែលអ្នកប្រើសម្រាប់រៀនភាសារឺទេ?*		

Q17. Please respond to each of the following questions by putting a tick (√) in the box at the appropriate spot. "Yes" or "No".
សូមឆ្លើយនឹងសំនួរនីមួយៗដោយដាក់សញ្ញាធីក (√) ទៅក្នុងប្រអប់ក្នុងប្រអប់ខាងក្រោម៖ បាទ/ចាស ឬ ទេ។

		Yes *បាទ/ចាស*	No *ទេ*
1	Can you change computer screen brightness and contrast? *តើអ្នកអាចផ្លាស់ប្តូរពន្លឺអេក្រង់ និងកម្រិតពណ៌របស់កុំព្យូទ័របានដែរឬទេ?*		
2	Can you minimize, maximize and move windows on the computer screen? *តើអ្នកអាចបង្រួម ពង្រីក និងប្តូរទីតាំងរបស់window នៅលើអេក្រង់កុំព្យូទ័របានដែរឬទេ?*		
3	Can you use a 'search' command to locate a file? *តើអ្នកអាចប្រើពាក្យបញ្ជា "ស្វែងរក" ដើម្បីរកទីតាំងរបស់ឯកសារបានដែរឬទេ?*		
4	Can you scan disks for viruses? *តើអ្នកអាចស្កេនរកមេរោគនៅលើdisks បានដែរឬទេ?*		
5	Can you write files onto a CD, a DVD or a USB drive? *តើអ្នកអាចសរសេរឯកសារចូលស៊ីឌី ឌីវីឌី ឬUSB drive បានដែរឬទេ?*		
6	Can you create and update web pages? *តើអ្នកអាចបង្កើតនិងធ្វើបច្ចុប្បន្នភាពគេហទំព័របានដែរឬទេ?*		
7	Can you take and edit digital photos? *តើអ្នកអាចថតនិងកែរូបថតឌីជីថលបានទេ?*		
8	Can you record and edit digital sounds? *តើអ្នកអាចថតនិងកែសម្លេងឌីជីថលបានទេ?*		
9	Can you record and edit digital videos? *តើអ្នកអាចថតនិងកែវីដេអូឌីជីថលបានទេ?*		
10	Can you download and use apps on digital devices? *តើអ្នកអាចទាញយកនិងប្រើកម្មវិធីនៅលើឧបករណ៍ឌីជីថលបានទេ?*		

Q18. Please indicate your level of frequency of using each of the followings by putting a tick (√) in the box at the appropriate spot: 'Very Frequently', 'Frequently', 'Occasionally', 'Rarely', 'Very Rarely' or 'Never'. If there is any item you do not know, it can be assumed that you do not have any experience with the item.

សូមបញ្ជាក់កម្រិតនៃភាពញឹកញាប់របស់អ្នកក្នុងការប្រើប្រាស់ឧបករណ៍ឌីជីថលនីមួយៗខាងក្រោមដោយ គូសធីក (√) ក្នុងប្រអប់ខាងក្រោម៖ "ញឹកញាប់ណាស់" "ញឹកញាប់" "ម្តងម្កាល" "កម្រ" "កម្រណាស់" ឬ "មិនដែល"។ ប្រសិនបើមានចំនុចណាដែលអ្នកមិនដឹង វាអាចសន្មតបានថាអ្នកមិនមានបទពិសោធន៍ជាមួយវា។

		Very Frequently *ញឹកញាប់ណាស់*	Frequently *ញឹកញាប់*	Occasionally *ម្តងម្កាល*	Rarely *កម្រ*	Very Rarely *កម្រណាស់*	Never *មិនដែល*
1	Word processor *កម្មវិធីវាយអត្ថបទ*						
2	Email *អ៊ីមែល*						
3	World Wide Web *វើលវ៉ាយវ៉ែប*						
4	Graphic Software *ផ្នែកទន់ក្រាហ្វិក*						
5	Database *មូលដ្ឋានទិន្នន័យ*						
6	Spreadsheet (for data organization) *សៀវភៅបញ្ជី (សម្រាប់ការរៀបចំទិន្នន័យ)*						
7	Concordancer (for text analysis) *Concordancer (សម្រាប់ការវិភាគការប្រើប្រាស់ភាសាក្នុងអត្ថបទ)*						
8	Language learning software (CD-ROM) *កម្មវិធីកុំព្យូទ័រសម្រាប់ការរៀនភាសា (CD-ROM, DVD)*						
9	Language learning website *គេហទំព័រសម្រាប់ការសិក្សាភាសា*						
10	Language learning mobile app *កម្មវិធីទូរស័ព្ទសម្រាប់ការរៀនភាសា*						
11	Blog *ប្លក់*						
12	Wiki *វីគី*						
13	Text chatting *ការជជែកកំសាន្តជាអក្សរ*						
14	Voice chatting *ការជជែកកំសាន្តជាសំឡេង*						
15	Video conferencing *ការធ្វើសន្និសីទវីដេអូ*						
16	Computer game *ល្បែងកុំព្យូទ័រ*						
17	Electronic dictionary						

Q19. How would you rate your skills for using each of the following? Please put a tick (√) in the box at the appropriate spot. ‘Very Good’, ‘Good’, ‘Acceptable’, ‘Poor’, ‘Very Poor’, or ‘Do Not Know’**.**

តើអ្នកវាយតម្លៃជំនាញរបស់អ្នកយ៉ាងដូចម្តេចចំពោះការប្រើប្រាស់ឧបករណ៍ ឌីជីថលនីមួយៗខាងក្រោម? សូមគូសធីក (√) ក្នុងប្រអប់ខាងក្រោម៖ “ពូកែខ្លាំង” “ពូកែ” “អាចទទួលយកបាន” “ខ្សោយ” “ខ្សោយខ្លាំង” ឬ “មិនស្គាល់”។

		Very Good *ពូកែខ្លាំង*	Good *ពូកែ*	Acceptable *អាចទទួលយកបាន*	Poor *ខ្សោយ*	Very Poor *ខ្សោយខ្លាំង*	Do not Know *មិនស្គាល់*
1	Word processor application (e.g., MS Word) *កម្មវិធីវាយអត្ថបទ (ឧទាហរណ៍៖ MS Word)*						
2	Spreadsheet applications (e.g., MS Excel) *កម្មវិធីស្ប៉ាវកៅបញ្ជី (ឧទាហរណ៍៖ MS Excel)*						
3	Database applications (e.g., MS Access) *កម្មវិធីមូលដ្ឋានទិន្នន័យ (ឧទាហរណ៍៖ MS Access)*						
4	Presentation application (e.g., MS PowerPoint) *កម្មវិធីធ្វើបទបង្ហាញ (ឧទាហរណ៍៖ MS PowerPoint)*						
5	Communication application (e.g., Skype) *កម្មវិធីសម្រាប់ធ្វើការទំនាក់ទំនង (ឧទាហរណ៍៖ Skype)*						
6	Learning management systems (e.g., Moodle) *ប្រព័ន្ធគ្រប់គ្រងការសិក្សា (ឧទាហរណ៍៖ Moodle)*						
7	Virtual worlds (e.g., Second Life) *ពិភពនិម្មិត (ឧទាហរណ៍៖ Second Life)*						
8	Social networking services (e.g., Facebook) *បណ្តាញសង្គម (ឧទាហរណ៍៖ Facebook)*						
9	Blogs (e.g., Blogger) *ប្លក់ (ឧទាហរណ៍៖ Blogger)*						
10	Wiki (e.g., PBwordks) *វីគី (ឧទាហរណ៍៖ PBworks)*						
11	Podcasts (e.g., Apple Podcasts) *ផតខាស់ (ឧទាហរណ៍៖ Apple Podcasts)*						
12	File Sharing sites (e.g., Dropbox) *គេហទំព័រសម្រាប់ការចែករំលែកឯកសារ (ឧទាហរណ៍៖ Dropbox*)						
13	Photo sharing sites (e.g., Picasa) *គេហទំព័រសម្រាប់ការចែករំលែករូបភាព (ឧទាហរណ៍៖ Picasa)*						
14	Video sharing sites (e.g., YouTube) *គេហទំព័រសម្រាប់ការចែករំលែកវីដេអូ (ឧទាហរណ៍៖ Youtube)*						
15	Web design application (e.g., Dreamweaver) *កម្មវិធីរចនាគេហទំព័រ (ឧទាហរណ៍៖ Dreamweaver)*						
16	Web search engines (e.g., Google) *ម៉ាស៊ីនស្វែងរកគេហទំព័រ (ឧទាហរណ៍៖ Google*)						
17	Dictionary apps (e.g., Dictionary.com) *កម្មវិធីវចនានុក្រម (ឧទាហរណ៍៖ Dictionary.com)*						

SECTION IV *ផ្នែកទី៤*

The following questions cover general areas of digital literacy. You may not know the answer to all questions, but please attempt to answer them without asking others or referring to books

សំណួរខាងក្រោមនេះគឺផ្តោតទៅលើផ្នែកទូទៅនៃអក្ខរកម្មឌីជីថល។ សូមអ្នកព្យាយាមឆ្លើយសំនួរទាំងនេះដោយមិនសួរអ្នកដទៃឬបើកសៀវភៅមើល។

Q20. Please choose the best answer for each question and put a tick (√) in the box at the
appropriate spot: “1”, “2”, “3”, or “4”.

សូមជ្រើសរើសចម្លើយដែលល្អបំផុតសម្រាប់សំណួរនីមួយៗដោយគូសធីក (√) ក្នុងប្រអប់របស់ចម្លើយដែលអ្នកជ្រើសរើស៖ “១” “២” “៣” ឬ “៤”។

- Which device do you need to install on your computer in order to have a video conference with your friends?
  តើឧបករណ៍មួយណាដែលអ្នកត្រូវការដំឡើងនៅលើកុំព្យូទ័ររបស់អ្នកដើម្បីធ្វើសន្និសីទវីដេអូជាមួយមិត្តភក្តិរបស់អ្នក?
  - Scanner
    ម៉ាស៊ីនស្កេន
  - Webcam
    វេបខេម
  - Printer
    ម៉ាស៊ីនព្រីន
  - DVD player
    ម៉ាស៊ីនចាក់ឌីវីឌី

- Where does a digital camera store its pictures?
  តើកាមេរ៉ាឌីជីថលផ្ទុករូបភាពរបស់វានៅទីណា?
  - Battery
    ថ្ម
  - Film
    ហ្វីម
  - Adapter
    អាដាប់ធ័រ
  - Memory card
    កាតមេម៉ូរី

- What are AVI and MP4 examples of
  តើ AVI និង MP4 ជាឧទាហរណ៍របស់អ្វី?
  - Digital audio file formats
    ទ្រង់ទ្រាយឯកសារសំឡេងឌីជីថល
  - Digital video file formats
    ទ្រង់ទ្រាយឯកសារវីដេអូឌីជីថល
  - Digital graphic file formats
    ទ្រង់ទ្រាយឯកសារក្រាហ្វិកឌីជីថល
  - Digital text file formats
    ទ្រង់ទ្រាយឯកសារអត្ថបទឌីជីថល

- Which technology is the process of converting spoken words into text?
  តើបច្ចេកវិទ្យាមួយណាជាដំណើរការនៃការបំលែងពាក្យនិយាយទៅជាអត្ថបទ?
  - Audio analysis
    ការវិភាគសំលេង
  - Audio compression
    ការបង្ហាប់សំឡេង
  - Speech synthesis
    សំយោគការនិយាយ
  - Speech recognition
    ការទទួលស្គាល់សុន្ទរកថា

- What is Bluetooth?
  តើប៊ីធូសគឺជាអ្វី?
  - A digital tool to add special effects to recorded audios and videos
    ឧបករណ៍ឌីជីថលដើម្បីបន្ថែមបែបផែនពិសេសទៅអូឌីយ៉ូនិងវីដេអូដែលបានថតទុក
  - A program designed to disrupt or damage a computer system
    កម្មវិធីដែលត្រូវបានរចនាឡើងដើម្បីរំខានឬបំផ្លាញប្រព័ន្ធកុំព្យូទ័រ
  - A technology standard for the short-rang wireless interconnection of mobile devices
    ស្តង់ដារបច្ចេកវិទ្យាសម្រាប់អន្តរកម្មឥតខ្សែខ្លីនៃឧបករណ៍ចល័ត
  - A network security system that control the incoming and outgoing network traffic
    ប្រព័ន្ធសុវត្ថិភាពបណ្តាញដែលគ្រប់គ្រងចរាចរបណ្តាញចូលនិងចេញ

- Which of the following does not need to be asked when evaluating information provided on websites?
  តើអ្វីដែលយើងមិនចាំបាច់ត្រូវសួរនៅពេលវាយតម្លៃព័ត៌មាននៅលើគេហទំព័រ?

  - Accuracy
    ភាពត្រឹមត្រូវ
  - Authority
    ព័ត៌មានទាក់ទងទៅនឹងអ្នកនិពន្ធ
  - Computation
    ការគណនា
  - Currency
    បច្ចុប្បន្នភាព

- What is the term for junk emails or unsolicited messages sent over the internet?
  តើអ្វីទៅជាពាក្យសម្រាប់អ៊ីម៉ែលឥតបានការ ឬអ៊ីម៉ែលដែលត្រូវបានផ្ញើដោយមិនបានស្នើសុំដោយអ្នកទទួល?
  - Spam
    សារឥតបានការ
  - Firewall
    ជញ្ជាំងភ្លើង
  - Malware
    ម៉ាល់វែរ
  - Spyware
    ស្ពាយវែរ

- What is the process of confirming your username and password on the computer?
  តើអ្វីជាដំណើរការនៃការបញ្ជាក់ឈ្មោះនិងពាក្យសម្ងាត់របស់អ្នកប្រើនៅលើកុំព្យូទ័រ?
  - Authorization
    ការអនុញ្ញាត
  - Authentication
    ការផ្ទៀងផ្ទាត់ភាពត្រឹមត្រូវ
  - *Hacking*
    ការហោក
  - *Defamation*
    បរិហារកេរ្តិ

- What is the fraudulent attempt to acquire sensitive information such as passwords and credit card details in an electronic communication?
  តើអ្វីទៅជាការប៉ុនប៉ងក្លែងបន្លំដើម្បីទទួលបានព័ត៌មានដូចជាលេខសម្ងាត់និងកាតឥណទាននៅក្នុងការទំនាក់ទំនងតាមអេឡិចត្រូនិក?

  - Synthesizing
    ការសំយោគ
  - Crowdsourcing
    ការប្រមូលមូលនិធិពីសាធារណជនទូទៅ
  - Phishing
    ការវាយប្រហារបោកបញ្ឆោតតាមអ៊ីនធឺណិត
  - Streaming
    ការស្ទ្រីម

- Which of the following is not considered to be safe password practice?
  តើចំនុចខាងក្រោមមួយណាដែលមិនត្រូវបានគេចាត់ទុកជាការអនុវត្តន៍ល្អក្នុងការការពារសុវត្ថិភាពនៃពាក្យសម្ងាត់របស់អ្នក?
  - *Do* not share passwords with others
    កុំចែករំលែកពាក្យសម្ងាត់ជាមួយអ្នកដទៃ
  - *Increase* the strength of a password with symbols
    បង្កើនភាពខ្លាំងនៃពាក្យសម្ងាត់ដោយបញ្ចូលសញ្ញាទៅក្នុងពាក្យសម្ងាត់របស់អ្នក
  - *Avoid* using the same password across multiple user accounts
    ជៀសវាងប្រើពាក្យសម្ងាត់ដូចគ្នានៅលើគណនីដែលមានម្ចាស់ច្រើន
  - *Generate* a password that is easy to guess systematically
    បង្កើតពាក្យសម្ងាត់ដែលងាយស្រួលទាយតាមប្រព័ន្ធ

SECTION V ផ្នែកទី៥

Q21. What do you think are the factors affecting the use of digital technologies for language learning? Please tick (√) all that apply.
តើអ្នកគិតថាកត្តាអ្វីខ្លះដែលជះឥទ្ធិពលដល់ការប្រើប្រាស់បច្ចេកវិទ្យាឌីជីថលសម្រាប់រៀនភាសា? សូមធីក (√) ចម្លើយទាំងអស់ដែលសមស្រប។

Lack of time *កង្វះពេលវេលា*		Lack of budget *កង្វះថវិកា*	
Lack of knowledge of teachers *ខ្វះគ្រូដែលមានចំណេះដឹងខាងបច្ចេកវិទ្យាឌីជីថល*		Lack of knowledge of students' *អ្នកសិក្សាខ្វះចំណេះដឹងខាងបច្ចេកវិទ្យាឌីជីថល*	
Lack of skills of teachers *ខ្វះគ្រូដែលមានជំនាញខាងបច្ចេកវិទ្យាឌីជីថល*		Lack of skills of students *អ្នកសិក្សាខ្វះជំនាញខាងបច្ចេកវិទ្យាឌីជីថល*	
Lack of interest of teachers *ខ្វះគ្រូដែលមានចំណាប់អារម្មណ៍ទៅលើបច្ចេកវិទ្យាឌីជីថល*		Lack of interest of students *អ្នកសិក្សាខ្វះចំណាប់អារម្មណ៍ទៅលើបច្ចេកវិទ្យាឌីជីថល*	
Lack of training *កង្វះការបណ្តុះបណ្តាល*		Lack of learning materials *កង្វះខាតសម្ភារៈសិក្សា*	
Lack of supporting resources *កង្វះធនធានជំនួយ*		Lack of facilities *កង្វះខាតគ្រឿងបរិក្ខារ*	
Other (please specify) *ផ្សេងទៀត (សូមបញ្ជាក់)*			

Q22. Please indicate the extent to which you agree or disagree with the following statements by putting a tick (√) in the box at the appropriate spot: 'Strongly Agree', 'Agree', 'Uncertain', Disagree' or 'Strongly Disagree'.

សូមបញ្ជាក់ពីភាពយល់ស្រប ឬមិនយល់ស្របរបស់អ្នកទៅនឹងប្រយោគខាងក្រោមដោយដាក់សញ្ញាធីក (√) ទៅក្នុងប្រអប់ដែលបញ្ជាក់ពីចម្លើយរបស់អ្នក៖ "យល់ស្របពេញទំហឹង" "យល់ស្រប" "មិនច្បាស់" "មិនយល់ស្រប" ឬ "មិនយល់ស្របពេញទំហឹង"។

		Strongly Agree យល់ស្របយ៉ាងខ្លាំង	Agree យល់ស្រប	Uncertain មិនច្បាស់	Disagree មិនយល់ស្រប	Strongly Disagree មិនយល់ស្របយ៉ាងខ្លាំង
1	I enjoy using digital devices. *ខ្ញុំចូលចិត្តប្រើឧបករណ៍ឌីជីថល។*					
2	I feel comfortable using digital devices. *ខ្ញុំគិតថាការប្រើប្រាស់ឧបករណ៍ឌីជីថលគឺងាយស្រួល។*					
3	I am aware of various types of digital devices. *ខ្ញុំយល់ដឹងអំពីឧបករណ៍ឌីជីថលជាច្រើនប្រភេទ។*					
4	I understand what digital literacy is. *ខ្ញុំយល់ថាអក្ខរកម្មឌីជីថលគឺជាអ្វី។*					
5	I am willing to learn more about digital technologies. *ខ្ញុំមានឆន្ទៈក្នុងការរៀនបន្ថែមទៀតអំពីបច្ចេកវិទ្យាឌីជីថល។*					
6	I feel threatened when others talk about digital technologies. *ខ្ញុំមានអារម្មណ៍ដូចជាត្រូវបានគំរាមកំហែងនៅពេលអ្នកដទៃនិយាយអំពីបច្ចេកវិទ្យាឌីជីថល។*					
7	I feel that I am behind my fellow students in using digital technologies. *ខ្ញុំមានអារម្មណ៍ថាសមត្ថភាពនៃការប្រើប្រាស់បច្ចេកវិទ្យាឌីជីថលរបស់ខ្ញុំនៅខ្សោយជាងសិស្សដទៃទៀត។*					
8	I think that it is important for me to improve my digital fluency. *ខ្ញុំគិតថាវាមានសារៈសំខាន់ណាស់សម្រាប់ខ្ញុំក្នុងការពង្រឹងសមត្ថភាពឌីជីថលដោយមានភាពស្ទាត់ជំនាញ (digital fluency)។*					
9	I think that my learning can be enhanced by using digital tools and resources. *ខ្ញុំគិតថាការរៀនសូត្ររបស់ខ្ញុំនឹងអាចល្អប្រសើរតាមរយៈការប្រើប្រាស់ឧបករណ៍ឌីជីថលនិងធនធានឌីជីថល។*					
10	I think that training in technology-enhanced language learning should be included in language education programs. *ខ្ញុំគិតថាការបណ្តុះបណ្តាលលើការរៀនភាសាតាមបច្ចេកវិទ្យាគួរតែបញ្ចូលទៅក្នុងកម្មវិធីអប់រំភាសា។*					

Q23. If you have any comments you would like to make regarding digital literacy, please write them below.

ប្រសិនបើអ្នកមានយោបល់ណាមួយដែលទាក់ទងទៅនឹងអក្ខរកម្មឌីជីថលសូមសរសេរវានៅខាងក្រោម។

Thank you for completing the questionnaire!

សូមអរគុណដែលបានបំពេញកម្រងសំណួរ!

Appendix I

Sample of Language in Questionnaire Evaluation Form

Please click on the small box under -1, 0, or +1 accordingly to your opinion (-1 = Disagree, 0 = Not sure, +1 = Agree) regarding the *similarity of interpretation* of the two question versions. If you want to change your answer, just click on the box again. For the question that you give -1, please tell the reasons why in the comment by just clicking on the "Click or tap here to enter text" and then write your comment.

	The Original Version	**The Back-translated Version**			
Q1	Gender: Male / Female	Gender: Male/Female	**-1**	**0**	**+1**
			☒	☐	☐
	Comment: Click or tap here to enter text.				
Q2	Age (please specify) ……. years old	Age (please specify) ……. years old	**-1**	**0**	**+1**
			☐	☐	☐
	Comment: Click or tap here to enter text.				
Q3	Your native language (mother tongue)	Your native language	**-1**	**0**	**+1**
			☐	☐	☐
	Comment: Click or tap here to enter text.				

Appendix J

IOC Result of Questionnaire Language Evaluation

Note:
Insrt.: Instruction

Questions		IOC Result			Mean	Interpretation
		Expert A	Expert B	Expert C		
Q1		1	1	1	1	Keep
Q2		1	1	1	1	Keep
Q3		0	1	1	0.67	Keep
Q4		1	1	1	1	Keep
Q5		***-1***	***1***	***1***	***0.34***	***Reconcile***
Q6		1	1	1	1	Keep
Q7		1	1	1	1	Keep
Q8		1	1	1	1	Keep
Q9		1	1	1	1	Keep
Q10		1	1	1	1	Keep
Q11		1	1	1	1	Keep
Q12		1	1	1	1	Keep
Q13		1	1	1	1	Keep
Q14		1	1	1	1	Keep
Q15		1	1	1	1	Keep
Q16	*Insrt.*	1	1	1	1	Keep
	Q16.1	1	1	1	1	Keep
	Q16.2	1	1	1	1	Keep
	Q16.3	1	1	1	1	Keep
	Q16.4	1	1	1	1	Keep
	Q16.5	1	1	1	1	Keep
	Q16.6	1	1	0	0.67	Keep
	Q16.7	1	1	1	1	Keep
	Q16.8	1	1	1	1	Keep
	Q16.9	1	1	1	1	Keep
	Q16.10	1	1	1	1	Keep
Q17	*Insrt.*	1	1	1	1	Keep
	Q17.1	1	1	1	1	Keep
	Q17.2	***0***	***-1***	***1***	***0***	***Reconcile***
	Q17.3	1	1	1	1	Keep
	Q17.4	1	1	1	1	Keep
	Q17.5	1	1	1	1	Keep
	Q17.6	1	1	1	1	Keep
	Q17.7	1	1	0	0.67	Keep
	Q17.8	**1**	**1**	**-1**	**0.34**	***Reconcile***
	Q17.9	1	1	1	1	Keep
	Q17.10	1	1	1	1	Keep

Q18	*Insrt.*	9	1	1	0.67	Keep
	Q18.1	**0**	**1**	**-1**	**0**	***Reconcile***
	Q18.2	1	1	1	1	Keep
	Q18.3	1	1	1	1	Keep
	Q18.4	1	1	1	1	Keep
	Q18.5	1	1	1	1	Keep
	Q18.6	1	1	1	1	Keep
	Q18.7	1	1	1	1	Keep
	Q18.8	1	1	1	1	Keep
	Q18.9	1	1	1	1	Keep
	Q18.10	1	1	1	1	Keep
	Q18.11	1	1	1	1	Keep
	Q18.12	1	1	1	1	Keep
	Q18.13	1	1	1	1	Keep
	Q18.14	1	1	1	1	Keep
	Q18.15	1	1	1	1	Keep
	Q18.16	1	1	1	1	Keep
	Q18.17	1	1	1	1	Keep
Q19	***Insrt.***	***-1***	***1***	***0***	***0***	***Reconcile***
	Q19.1	***0***	***1***	***-1***	***0***	***Reconcile***
	Q19.2	1	1	1	1	Keep
	Q19.3	1	1	1	1	Keep
	Q19.4	1	1	1	1	Keep
	Q19.5	1	1	1	1	Keep
	Q19.6	1	1	1	1	Keep
	Q19.7	1	1	1	1	Keep
	Q19.8	1	1	1	1	Keep
	Q19.9	1	1	1	1	Keep
	Q19.10	1	1	1	1	Keep
	Q19.11	1	1	1	1	Keep
	Q19.12	1	1	1	1	Keep
	Q19.13	1	1	1	1	Keep
	Q19.14	1	1	1	1	Keep
	Q19.15	1	1	1	1	Keep
	Q19.16	1	1	1	1	Keep
	Q19.17	1	1	1	1	Keep
Q20	*Insrt.*	1	1	1	1	Keep
	Q20.1	1	1	1	1	Keep
	Q20.2	1	1	1	1	Keep
	Q20.3	1	1	1	1	Keep
	Q20.4	0	1	1	0.67	Keep
	Q20.5	1	1	0	0.67	Keep
	Q20.6	***1***	***1***	***-1***	***0.34***	***Reconcile***
	Q20.7	1	1	1	1	Keep
	Q20.8	1	1	1	1	Keep
	Q20.9	1	1	1	1	Keep

Q21	*Insrt.*	1	1	1	1	Keep
	Q21.1	1	1	1	1	Keep
	Q21.2	1	1	1	1	Keep
	Q21.3	1	1	1	1	Keep
	Q21.4	0	1	1	0.67	Keep
	Q21.5	***0***	***1***	***0***	***0.34***	***Reconcile***
	Q21.6	***0***	***1***	***0***	***0.34***	***Reconcile***
	Q21.7	1	1	1	1	Keep
	Q21.8	1	1	1	1	Keep
	Q21.9	1	1	1	1	Keep
	Q21.10	1	1	1	1	Keep
	Q21.11	1	1	1	1	Keep
Q22	*Insrt.*	1	1	1	1	Keep
	Q22.1	1	1	1	1	Keep
	Q22.2	1	1	1	1	Keep
	Q22.3	***0***	***1***	***-1***	***0***	***Reconcile***
	Q22.4	1	1	1	1	Keep
	Q22.5	1	1	1	1	Keep
	Q22.6	1	1	1	1	Keep
	Q22.7	1	1	1	1	Keep
	Q22.8	***1***	***-1***	***0***	***0***	***Reconcile***
	Q22.9	1	1	1	1	Keep
	Q22.10	1	1	1	1	Keep
Q23		1	1	1	1	Keep

Based on the result of IOC, Questions 5, 17, 18, 19, 20, 21, and 22 contain some issues in terms of interpretation of similarity between the original and the back-translated versions. Here are comments from the experts for each question along with the reconciliation from the researcher.

Question 5

Expert A said that the use of the word “college” in the back-translated version means differently in British and American English.

Reconciliation of Question 5

No change will be made to the Khmer version of the questionnaire because both “university” in the original version and “college” in the back-translated version means the same in Khmer “មហាវិទ្យាល័យ”.

Question 17

Expert A said that “minimize and maximize” in the original version and “zoom in and out” in the back-translated version mean differently. Similarly, Expert B said that reading that part in the back-translated version is confusing to him.

The Reconciliation of Question 17

No changes will be made to the Khmer version of the questionnaire because the problem lies in the back-translation version, not the Khmer version of the questionnaire. As the one in the Khmer version is read well and without any misunderstanding.

Question 18

Expert A said that “word processer” and “typing software” might be different.

The Reconciliation of Question 18

No change will be made to the Khmer version of the questionnaire because both “word processer” in the original version and “typing software” in the back translation have the same meaning in Khmer “កម្មវិធីវាយអត្ថបទ”.

Question 19

Expert A said the “excellent” and “outstanding” in the back-translated version are the same, while Expert C claimed that “Outstanding” is not a word normally used in rating.

The Reconciliation of Question 19

This issue lies in the back-translated version of the questionnaire because “ពូកែខ្លាំង” and “ពូកែ” convey the right message for “very good” and “good” respectively in the original version of the questionnaire. Therefore, changes will not be made to the Khmer version of the questionnaire.

Question 20

Expert C said that the word “updates” should be replaced with “timeliness” for sub-question 6 in Question 20 in the back-translated version of the questionnaire.

The Reconciliation of Question 20

Since the word “timeliness” Expert C suggested conveys the same meaning as “បច្ចុប្បន្នភាព” in the Khmer translation, no changes will be made to the Khmer version.

Question 21

Expert C said that the addition of the phrase “in digital technology” in the back-translated version is more precise than the original version.

The Reconciliation of Question 21

This goes to show that the back-translated version of the questionnaire provides a better understanding of the intended message conveyed in the original version of the question. Thus, no changes will be made to the Khmer version of the questionnaire because the back-translated version of the questionnaire is translated from it.

Question 22

Experts A and C said that the use of “understand” in the back-translated version of the questionnaire is not the same as “be aware” in the original version because, as suggested by Expert A, “be aware” means know about, while “understand” means know how to use. Moreover, Experts B and C added that the use of “crucial” in the back-translated version is not the same as the “important” in the original version.

The Reconciliation of Question 22

The problem lies in the backtranslation due to the difference in meaning in English words. However, the Khmer version of the questionnaire “យល់ដឹង” and “មានសារៈសំខាន់” convey the right meaning for their English counterparts (“be aware” and

“important”, respectively) in the original version of the questionnaire. Therefore, changes will not be made to the Khmer translation**.**

Appendix K

Digital Story Rubric

Criteria		Score		
		3	**2**	**1**
Information search & evaluation	Content/ connection to text	The content is relevant, and the message is clear.	The content is mostly relevant; however, there are some confusing points.	The content is not relevant.
	Detail	The digital story is told with sufficient detail to be coherent.	The digital story is told with too much detail although it is relevant	The digital story isn't told with enough detail
Creation	Relevancy of photography/videography	all images/videos are relevant and add to the overall impact of the presentation	Some images/videos were added to the presentation; however, a few are distracting/unrelated.	All the images/videos do not show relevance to the digital story
	Quality of photography/videography	all images/videos are of good quality	some images/videos are of good quality	all images/videos are not of good quality
	Narration	Voice narration is clear and flows well with the content and image.	Voice narration is not clear but flows well with the content and image, or vice versa.	Voice narration is not clear and does not flow well with the content and image.
	Editing	Transitions, effects, and edits are appropriate, well-timed, and do not distract from the digital story.	Some transitions and effects are distracting or ill-timed and do not add to the flow of the digital story.	There are little to no edits and even if there are, they are poorly timed and distract from the digital story.

\

Communication	Soundtrack – relevancy & emotion	Music is relevant to the image or content and can stir an emotional response.	Music is not relevant to the image or content but can stir emotional response, or vice versa.	Music is not relevant to the image or content and cannot stir an emotional response.
	Pacing (rhythm and voice punctuation)	The pace fits the storyline and helps the audience engaged with the story.	Occasionally speaks too fast or too slowly for the storyline. The pacing is relatively engaging for the audience.	Tried to use pacing, but it is often noticed that the pacing does not fit the storyline. The audience is not consistently engaged.
Collaboration	Planning/story boarding	The storyboard is detailed and shows consistent evidence of collaboration and planning throughout.	There is some evidence of planning and collaboration; however, the storyboard is incomplete.	There is no evidence of planning and collaboration. Storyboard sketches are minimal and inconsistent.
Online Safety	Professionalism	Include a title and credit page that contain appropriate citation/permission for any copy-written materials.	Include a title and credit page that contain some citation/permission for any copy-written materials that are appropriate and some that are not.	Include a title and but does not include a credit page that contains citation/permission for any copy-written materials that are appropriate.

Adapted from Son (2015), Barret (2006), Tobin (2012), and Stanley and Dillingham (200
cited in Stanley, 2018)

Appendix L

Sample of Digital Story Rubric Evaluation Form

Please click on the small box under -1, 0, or +1 accordingly to your opinion (-1 = Disagree, 0 = Not sure, +1 = Agree) regarding the statements below. If you want to change your answer, just click on the box again. For the statement that you give -1, please provide the reasons why in the comment by clicking on the "Click or tap here to enter text" and then write your comment / suggestions.

1. The description (e.g., the content is not relevant.) for each criterion (e.g., content/connection to text) is understandable and clear.	-1	0	+1
	☐	☐	☐
Comment / Suggestions Click or tap here to enter text.			

Appendix M

IOC Result of Digital Story Rubric Evaluation

Statements	IOC Result			Mean	Interpretation
	Expert A	Expert B	Expert C		
1. The description (e.g., the content is not relevant.) for each criterion (e.g., content/connection to text) is understandable and clear.	1	0	1	0.67	Keep
2. All criteria are measurable.	1	1	1	1	Keep
3. The sub-criteria (e.g., content/connection to text, detail) fit with their respective main criterion (e.g., Information search & evaluation).	1	1	1	1	Keep
4. The digital story rubric is appropriate for each mini project in this study.	1	1	1	1	Keep

The result from the IOC form shows that the Digital Story Rubric was appropriate in terms of understandability and clarity, measurability, relevancy, and appropriateness. Be that as it may, there are some comments and suggestions from Expert B and Expert C. Expert B and C commented on the rubric that the rubric is well-constructed and suitable to evaluate the improvement of students' digital literacy and digital stories. Moreover, Expert B provided four suggestions for improvement. Firstly, for criterion "Detail", it might be hard for evaluators to separate between "The digital story is told with some detail." and "The digital story isn't told with enough detail",

and the score aggregation does not account for a possibility that the story is told with too much relevant detail. Secondly, the description "The image/video do not show relevance to the digital story" needs a quantifier before image/videos (e.g. all, a majority of, most, etc.). Lastly, it was suggested that the focus should also be on the quality of the digital story (e.g., are the images/video clear or are they blurry? Do the sound blend well, and are they at the correct volume level? or does the text display in appropriate font types and sizes?).

Changes were made to the rubric based on Expert B's suggestions. As a result, there are 10 sub-criteria grouped under 5 main criteria, one of which was renamed. Thus the total score was 30, not 27 marks. The brief information of the revised Digital Story Rubric is as follows:

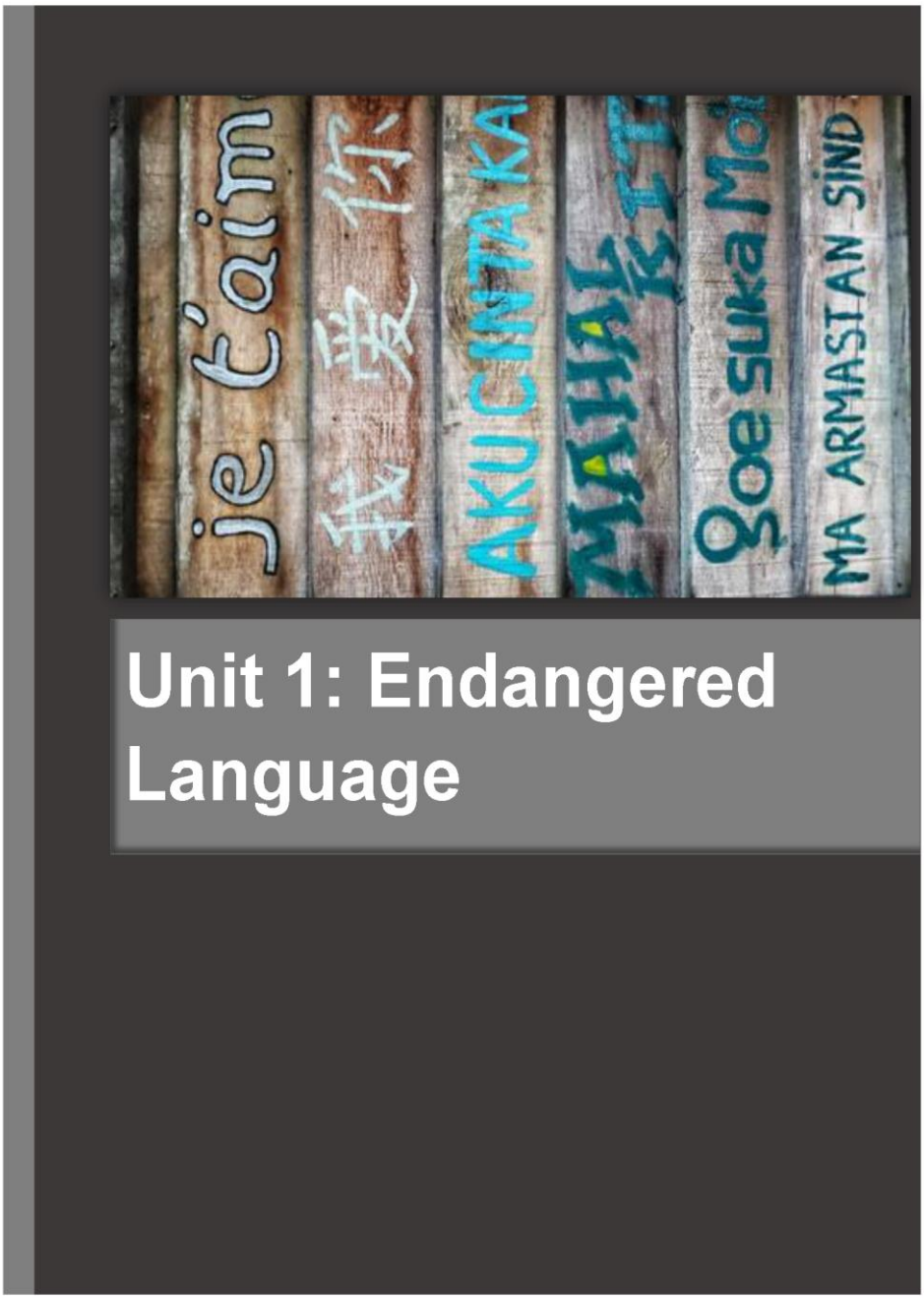
1. Information evaluation & search – this contains two criteria: Content/connection to the Text and Detail. The former looks at whether the content is relevant and clear while the latter focuses on the sufficiency of the detail being given in the digital story.
2. Creation – this consists of four criteria: Relevancy of photography/videography, Quality of photography/video, Narration, and Editing. The first one deals with the relevancy and impact of the images/videos used in the story. The second one concerns with the quality of photos or videos used in the digital story. The third one looks at the clarity of the narration and its flow with the content and image used. The fourth one concerns the appropriateness and timing of the transitions, effects, and edits in the story.

3. Communication – this encompasses two criteria. The first one is Soundtrack (relevancy and emotion), which focuses on the relevancy and emotional impact of the music used in the story. The second one is Pacing (rhythm and voice punctuation) which deals with whether the pacing fits with the storyline and helps the audience engaged with the story.
4. Collaboration – this includes one criterion, which is Planning/storyboard. It concerns whether the digital story is detailed and shows consistent evidence of collaboration and planning throughout.

Online Safety – this has one criterion, which is Professionalism. It deals with whether the digital story Includes a title and credit page that contains appropriate citation/permission for any copy-written materials

Appendix N

Sample of the Material



Unit 1: Endangered Language

Unit Question	*What happens when a language disappears?*

DST Stage 1: Planning & Selecting Topic

Activity 1: Building Background

Think-Pair-Padlet: ***Discuss this question with your partner and then scan the following QR code or click on this link [https://bit.ly/35eBvbi] to share your answer on Padlet.***

What is the importance of languages?

Brainstorm your answer here	
…… …… …… …… …… …… …… …… ……	

Ted-Talk Discussion: ***Watch the ted talk, take notes, and discuss with your notes with your partner.***

https://youtu.be/ZwkB92yIlsc

What are the effects of language loss?

……
……
……
……
……
……
……

Unit 1: Endangered Language

Activity 2: Preparing for Creating a Digital Story

Digital Story Analysis: ***Watch the following digital story and answer the following questions.***

https://youtu.be/APRyqgYmbR0

Watch & Answer these questions:

1. What is the story about?
2. What do you think about the music used? (e.g., its effect on you, its quality, etc.)
3. What do you think about the images used? (e.g., its effect on you, its quality, etc.)
4. What do you think about the narrator? (e.g., speaks too fast, no emotion, etc.)
5. Is there a reference for resources used?
6. After watching this digital story, what do you feel?

Activity 3: Selecting Topic

Topic Selection: ***Discuss with your partner and choose one of the following topics***

Choose your topic for the mini-project.

1) The Impact of local language loss in Cambodia
2) The importance of preserve a local language in Cambodia
3) The ways to preserve a local language in Cambodia
4) The causes of local language loss in Cambodia

Unit 1: Endangered Language

DST Stage 2: Conducting Research

Activity 4: Reading to Get More Familiar

Reading Strategy Reinforcement: Read the information on "Identifying Main Ideas and do the mini-exercise that follows

The main idea of the paragraph is the most important concept or point that the author aims to communicate to the readers. Identifying main ideas is an essential skill of an effective reader. Thus, when reading, one should skim for the main idea and scan for details.

Normally, in a paragraph, the main idea is provided in the topic sentence, which is the first sentence. This is then supported by the following sentences in the paragraph. Whereas, in an article with many paragraphs, the main idea is stated in the thesis statement, which is substantiated by the subsequent paragraphs.

However, sometimes the main idea is not directly stated but implied. Thus, the readers will have to read the content carefully and make a conclusion of what the paragraph might be about.

Tips to identifying main ideas

1. Scan for the topic sentence or thesis statement. Normally the main ideas is stated in the topic sentence or thesis statement. Once you have found it, skim through the details to confirm your answer.
2. If there is no topic sentence or thesis statement, read through the text again and then ask yourself this question – what is it mainly about?
3. Explain the answer in your own word in one short sentence and remember not to include your ideas.
4. Go back to the text and skim through the detail to confirm your answer.

Unit 1: Endangered Language

A. Read each paragraph and choose a, b, or c that is considered as the main idea of the paragraph.

1) It is said that with every language you speak you gain a new soul. But 80% of the world's population now speak just 1.1% of its languages, and universal languages, like English, dominate the internet and the majority of published texts. So, will the Anthropocene age be the time when language diversity is reduced to Mandarin, English or Spanish? Are we in danger of losing our soul?
    a. When a person stop using his or her own language and start using the universal language, he or she will lose a part of who he or she is.
    b. Nowadays it is the time in which some languages are spoken by the majority of the population.
    c. Language is a window to your soul.
2) The loss of languages is happening faster than we expect. Every 14 days a language dies and over half of the 7,000 languages spoken on the planet may disappear by the end of the century. We are living in a time when language extinction is happening faster than species extinction. Many of these endangered languages have no written form. Once the last speaker dies, so does the language.
    a. Every 14 days a language dies, which his contrary to our expectation.
    b. Contrary to our expectation, the language loss is not occurring at a rapid rate
    c. Contrary to our expectation, the language loss is occurring at rapid rate.
3) A BBC reporter explains one case: I travelled four hours west from the city of Arusha, in Tanzania, to meet the Hadza, an ancient tribe of hunter-gatherers. They are poor in material possessions, but rich in the skills and creativity they need to live in their environment. But, that's not all that sets them apart from most societies. The Hadza are believed to be the most ancient ethnic group in the modern world. Their language is equally unique: they speak a clicking tongue (also called Hadza), which is unrelated to other clicking languages indigenous to Africa. According to some linguists, Hadza may be close to humankind's first ancestral language.
    a. The uniqueness and ingenuity of Hadza people
    b. Hadza people are related to the human ancestors.
    c. The anecdote of one reporter who met a tribe accidentally

Unit 1: Endangered Language

Reading for Comprehension: ***You are going to read a passage from VOA CAMBODIA. Before you read, please do the exercise A.***

A. These are difficult words from the reading passage. Read their definitions and do the following gap-filling exercise.

- preserve (v.): to keep something as it is, especially in order to prevent it from decaying or being damaged or destroyed
- document (v.): to record information about something by writing about it or taking photographs of it
- census (n.): an official count or report containing the number and information (e.g., age, sex, race, or language, etc.) of people living in a particular country
- promote (v.): to encourage people to like, buy, use, do, or support something
- indigenous (adj.): existing naturally or having always lived in a place; native
- unique (adj.): being the only existing one of its type or, more generally, unusual, or special in some way
- association (n.): a group of people who work together in a single organization for a particular purpose
- mobility (n.): the fact that it is easy for someone to change their situation, for example by doing different work, becoming part of a different social class, or moving to a different place
- contribute (v.): to be one of the reasons why something happens
- linguistics expert (n.) refers to a person with high knowledge or skill relating to the field of development of language in general or of particular languages.

1. As a _____ who researches and teaches the use of the Khmer language and the way it changes over time, Mony Sothivath is interested in how people view its different aspects.
2. Upward _____ has meant that most indigenous people tend to use their native languages less as they move into another social status where they need to use another language.
3. The indigenous people in my community has formed an _____ to promote their native languages.

Unit 1: Endangered Language

B. Read the passage entitled "Researcher Warn of a Loss of Language" and do the following exercise.

Researchers Warn of a Loss of Language

The world is losing one language every two weeks, linguistics experts warned on Tuesday, estimating that half of the 7,000 different languages spoken today will be lost by 2100.

"The loss of a single language is really a loss for all of us," Susan Penfield, program director of the National Science Foundation, said during a talk at the Voice of America in Washington. "It is not just a loss for the speakers. It is something that we all have to think about, and I think, take some responsibility for."

Hayib Sosseh on the left

Endangered languages range from Africa to America and Asia. The mobility of one group or another can contribute to the death of a language, and a younger generation's refusal to learn a native language is one sign of danger.

"When a language dies, certain aspects of culture die with it. Some of these languages are very unique," said Hayib Sosseh, a linguistics expert at Northern Virginia Community College.

Cambodia has a national policy to protect its indigenous languages, Tun Sa Im, a secretary of state for the Ministry of Education, told VOA Khmer.

"Our policy clearly provides for their access to education, radio [programs] to promote their languages, and the use of their language for communication," she said.

According to a 1998 census by the Ministry of Planning, there are 17 different groups of indigenous people in Cambodia. They belong to two different linguistic families: the Austronesian-speaking Jarai and the Mon-Khmer-speaking Brao, Kreung, Tampuan, Punong, Stieng, Kui and Poar.

Unit 1: Endangered Language

Yun Mane, who is Phnong and works in Phnom Penh, said she always tries to speak her native language when she visits her home province of Mondolkiri.

Yun Mane on VOA Cambodia

"I am not the only person fearing the loss of our language," she told VOA Khmer. "The majority of indigenous people and young people now living in Phnom Penh are also worried."

Some indigenous students in Phnom Penh have created an association to safeguard their tradition and culture.

And since 2003 the Ministry of Education has developed written forms of these languages based on the Cambodian alphabets. The ministry hopes this will help indigenous people document their history and culture and have better access to national education.

Language experts recommend the recording of a language and the collection of other data to preserve a dying language. And training and teachers can play a crucial role in bringing a language back to life.

https://www.voacambodia.com/a/a-40-2009-06-11-voa3-90171117/1357897.html

After reading the passage, please do the following exercises

1) Based on the passage, how many languages are estimated to be lost by 2100?
    a) 7,000 languages, including both spoken and non-spoken ones
    b) 3,500 language, including only the spoken ones
    c) 3,500 languages, including both spoken and non-spoken ones
2) What does Susan Penfield mean when she says, "the loss of a single language is really a loss for all of us?"
    a) The loss of language is a simple occurrence and should not be given much thought.
    b) When one language disappears, it only affects the community who uses that language.
    c) The disappearance of one language affects both those who speak the language and those who do not.

Appendix O

Instructional Manual

Unit 1 : Endangered Language

Unit Question: What happens when a language disappears?

Mini project task 1: A digital story on a topic related to the endangered language

Learning outcomes	Upon the completion of the lesson, students will be able to: 1. determine the main ideas from the details in a reading passage 2. work in pairs to create a digital story based on the topics related to the endangered language
Language skills	Reading Strategy: determining the main ideas in the passage
Stages of DST	Including five stages: planning/selecting a topic, conducting research, drafting, revising, and publishing for authentic audiences
Digital Literacies	Including five elements: information search and evaluation, creation, communication, collaboration, online safety
Time	180 minutes (over two class sessions, plus extracurricular time)
Materials	1. Exercises in the Student's book designed by the researcher 2. Links for helping students in their online searching 3. Storyboard 4. A ted-talk given By Bruno Beidacki 5. A sample of a digital story made by the researcher
Evaluation	1. Students complete the reading exercises after reading the passage. 2. Students cooperatively work in pairs to create a digital story based on the topics related to the endangered language.

Class session 1: (90 minute plus extracurricular time)

<table>
<tr><th>Procedure</th><th rowspan="2">Digital Literacies</th></tr>
<tr><th>DST Stage 1: Planning/selecting a topic (35 mins.)</th></tr>
<tr><td>

Activity 1: Building Background (20 mins.)

A teacher activates and builds students' background knowledge of the unit via Think-Pair-Padlet, and Ted-Talk Discussion:

Sub-activity 1.1.: Think-Pair-Padlet (10 mins.)

1. The teacher instructs students to brainstorm for the importance of language without discussing with their friends.
2. The teacher pairs students and asks each pair to share what they have brainstormed with their partners.
3. The teacher asks each pair to log in to Padlet (link: https://bit.ly/35eBvbl) and share their thoughts there.
4. The teacher asks each pair to explain their answers on Padlet.

Sub-activity 1.2.: Ted-Talk Discussion (10 mins)

5. The teacher combines pairs into groups.
6. The teacher tells each group that they are going to (i) listen to a ted-talk given by Bruno Beidacki on what happens when a language is lost (link: https://youtu.be/ZwkB92yIlsc) and (ii) take note on the effect of the language loss.

</td><td>

Collaboration: *Use a digital tool to work with others while sharing ideas and/or resource*

</td></tr>
</table>

7. The teacher asks each group to share their note with the whole class.

Activity 2: Preparing for Creating a Digital Story (10 mins.)

8. The teacher tells the class about their digital story project and shows the mini project sample (link: https://youtu.be/APRyqgYmbR0).
9. The teacher and students analyze the digital story together.

Activity 3: Selecting a Topic (5 mins.)

10. The teacher puts students in pairs.
11. Each pair discusses and decides to choose one topic for their digital story project.

    The topics to be given are (i) the impacts of local language loss in Cambodia, (ii) the importance of preserving a local language in Cambodia, (iii) the way to preserve a local

language in Cambodia, and (iv) the causes of local language loss in Cambodia.

DST Stage 2: Conducting a research (45 mins. plus extracurricular time)

Activity 4: Reading to Get More Familiar (45 mins.)

To further prepare students for the project, the teacher asks students to read the passage from VOA Cambodia on *Researcher Warn of a Loss of Language*. The students participate in the following sub-activities: Reading Strategy Reinforcement and Reading for Comprehension

Sub-activity 4.1.: Reading Strategy Reinforcement (20 mins.)

12. The teacher explicitly teaches reading strategy to identify main ideas.
13. Students practice using the reading strategy in the mini reading exercises.

Sub-activity 4.2.: Reading for Comprehension (25 mins.)

14. Students read the passage while the teacher reads along.
15. Students work on exercises (A & B).

Unit 1: Endangered Language

B. Read the passage entitled "Researcher Warn of a Loss of Language" and do the following exercise.

Researchers Warn of a Loss of Language

The world is losing one language every two weeks, linguistics experts warned on Tuesday, estimating that half of the 7,000 different languages spoken today will be lost by 2100.

"The loss of a single language is really a loss for all of us," Susan Penfield, program director of the National Science Foundation, said during a talk at the Voice of America in Washington. "It is not just a loss for the speakers. It is something that we all have to think about, and I think, take some responsibility for."

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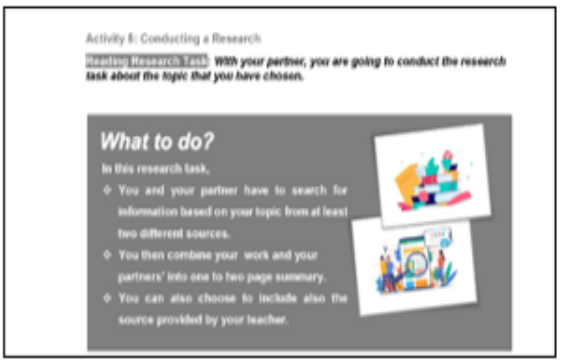
16. The teacher checks the answer with the whole class by going through exercises and discussing the answers with students.

Activity 5: Conducting a Research (Extracurricular time)

17. The teachers assigns a reading research task to each pair to gather information about each pair's topic. The teacher also provides useful resources to each pair based on their topics.
    (i) The Atlantic: What's Lost When A Language Dies (link: https://tinyurl.com/y3zd3axy)
    (ii) HUFFPOST: The importance of Preserving and promoting languages (link: https://tinyurl.com/y3drzno4)
    (iii) Chang-Castillo and Associates: Language Preservation: How Countries Preserve Their Language(s) (link: https://tinyurl.com/y3jkwq66),
    (iv) VOANEWS: Cambodia's Minority Languages Face Bleak Future (link: https://tinyurl.com/y2qvxqns),
    (v) Mises Daily Articles: Why do languages dies? (link: https://tinyurl.com/y6jmb2rp)

Information search and evaluation: *find, evaluate, and manage information*

18. Each pair member has to search for information based on his/her topic and write a paragraph about it. In addition to other sources, they can also have the option to include the information from the primary sources suggested by the teacher.

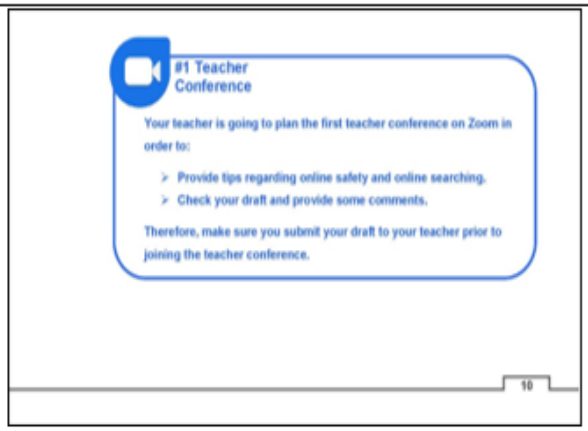


Teacher Conference #1 (extracurricular time)

19. The teacher plans the first set of teacher-conference sessions outside the class for all pair on Zoom.
20. Prior to joining the teacher-conference on Zoom, pairs must combine the information from their pair members and submit it to the teacher as a daft of one or two page summary.
21. The teacher provides tips to each pair regarding online safety and online searching.
22. The teacher gives comments to each pairs' drafts in terms of content. The teacher will not let students make changes yet as they will receive more comments from friends in the next stage.
23. The teacher instructs students to bring their laptops with them in the next session

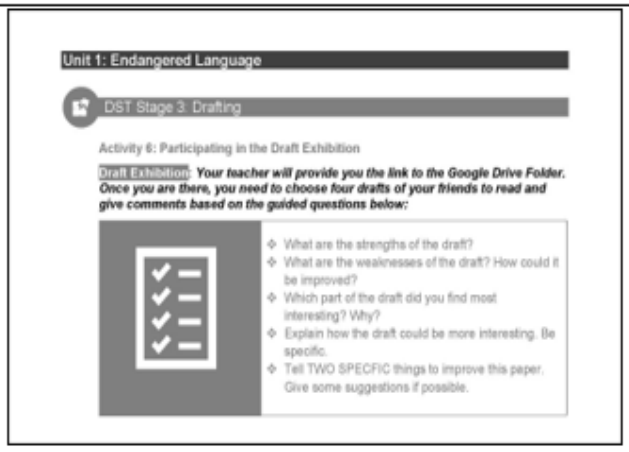
Communication: *Use a digital tool to communicate in digital networks effectively*

Online safety: *Develop critical engagement and safe practices*



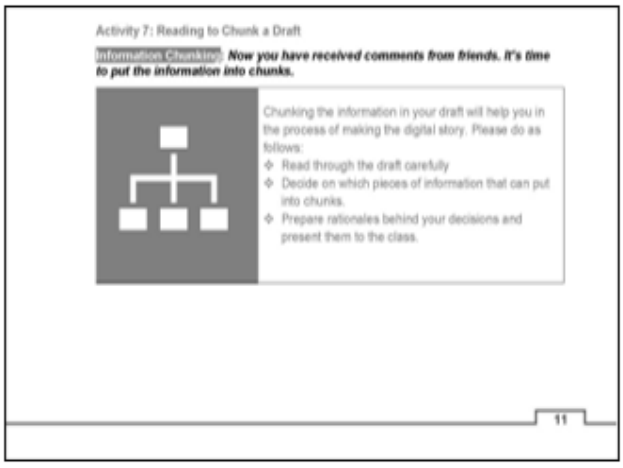
Class session 2: (90 minutes plus extracurricular time)

DST Stage 3: Drafting (90 mins plus extracurricular time)	
Activity 6: Participating in the Draft Exhibition (40 mins.) 24. The teacher provides students with a link (https://rb.gy/hk2hvb) of the Google Drive Folder containing the drafts they have submitted. 25. The teacher instructs all students to go to Google Drive Folder and choose four of their friends' drafts to read. They should avoid reading their own pairs' drafts. 26. Each student reads four of their friends' drafts and give comments based on the guided questions given. 27. After every student has done reading and commenting, the teacher puts students back into their original pairs. 28. The teacher instructs each pair to go to their draft to read their friends' comments.	**Collaboration:** *Use a digital tool to work with others while sharing ideas*



Activity 7: Reading to Chunk a Draft (10 mins.)

29. The teacher then advises each pair to read the information in their draft and put them into chunks.
30. After chunking their drafts, the pairs then present to the class and provide rationales.

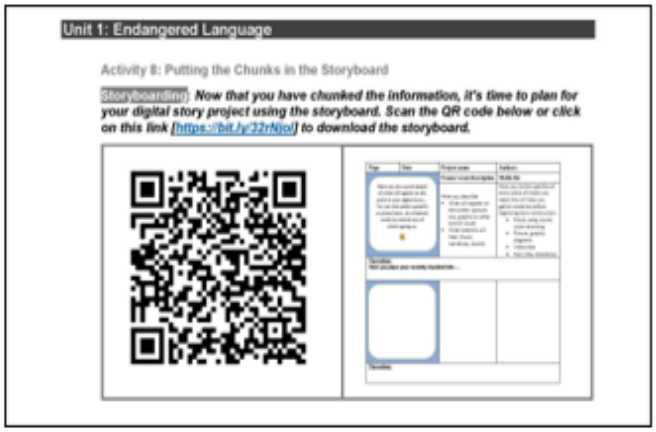


Activity 8: Putting the Chunk in the Storyboard (40 mins.)

31. The teacher distributes the link (https://bit.ly/32rNjoI) to the storyboard template to each pair.
32. The teacher then advises each pair to plan for their mini projects using the storyboard template by considering what to do and to add in each frame for each chunk of the information.

Creation:
Use a digital tool to create a material, or resource

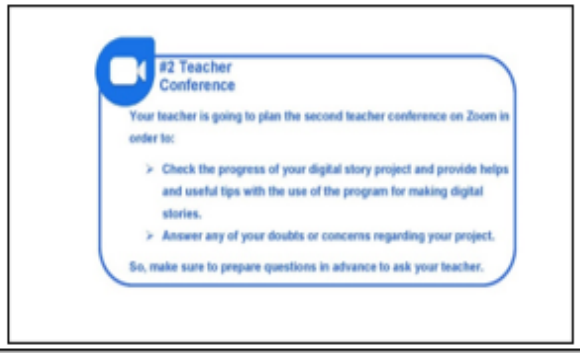
33. The teacher goes to each pair to provide help if needed.
34. Once all pairs are done, the teacher instructs them to use the storyboard as a plan for and start working on their digital story project.



35. Once done, each pair starts making their digital story at home.

Teacher Conference #2 (extracurricular time)

36. The teacher plans the second set of teacher-conference sessions outside the class for all pairs on Zoom.
37. The teacher checks the progress of each pair digital story project and provide helps and some useful tips to the students with the program used to make the digital story.
38. The teacher helps clear all pairs' doubts or concerns regarding their mini projects.



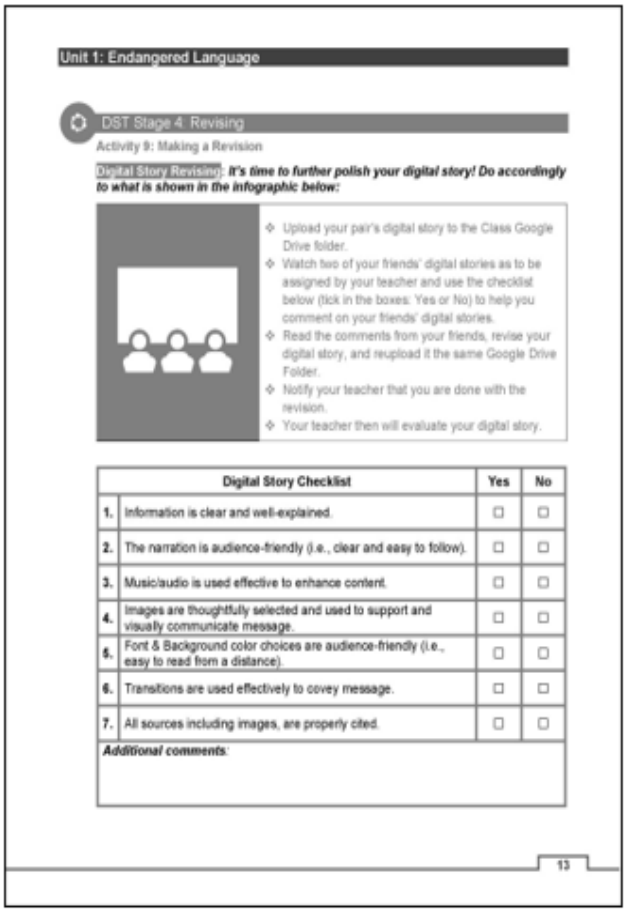
DST Stage 4: Revision (Extracurricular time)

Communication: *Use a digital tool to communicate in digital networks effectively*

Creation: *Use a digital tool to create a material, or resource.*

Activity 9: Making a Revision (extracurricular time)

39. After each pair has done making their digital stories, they uploaded their digital stories to the class shared Google Drive Folder (link: https://rb.gy/g3bqft).
40. All pairs will be assigned to watch and comments on their friends' digital stories using the checklist provided.
41. After receiving the comments, the pairs revise their digital stories accordingly and reupload it the same Google Drive Folder.
42. The pair notifies the teacher about the revision.
43. The teacher evaluates the digital stories using the scoring rubric and send the necessary feedback to each pair.



Unit 1: Endangered Language

DST Stage 4: Revising

Activity 9: Making a Revision

Digital Story Revising: ***It's time to further polish your digital story! Do accordingly to what is shown in the infographic below:***

- Upload your pair's digital story to the Class Google Drive folder.
- Watch two of your friends' digital stories as to be assigned by your teacher and use the checklist below (tick in the boxes: Yes or No) to help you comment on your friends' digital stories.
- Read the comments from your friends, revise your digital story, and reupload it the same Google Drive Folder.
- Notify your teacher that you are done with the revision.
- Your teacher then will evaluate your digital story.

	Digital Story Checklist	Yes	No
1.	Information is clear and well-explained.	☐	☐
2.	The narration is audience-friendly (i.e., clear and easy to follow).	☐	☐
3.	Music/audio is used effective to enhance content.	☐	☐
4.	Images are thoughtfully selected and used to support and visually communicate message.	☐	☐
5.	Font & Background color choices are audience-friendly (i.e., easy to read from a distance).	☐	☐
6.	Transitions are used effectively to covey message.	☐	☐
7.	All sources including images, are properly cited.	☐	☐

Additional comments:

13

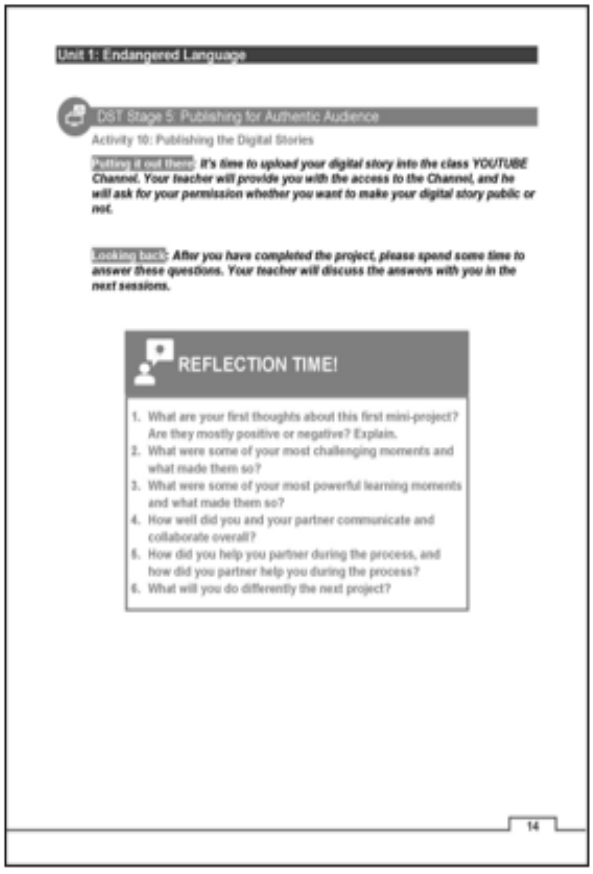
DST Stage 5: Publishing for Authentic Audience (Extracurricular time)

Collaboration:
Use a digital tool to work with others while sharing ideas and/or resources

Creation:
Use a digital tool to create a material, or resource

Activity 10: Publishing the Digital Stories (extracurricular time)

44. Each pair takes turn uploading their revised digital story into the class YouTube Channel (link: https://rb.gy/q8uqyo).
45. With the students' permission, the teacher shares the link to the public.
46. The student will then take some time to reflect on their performance in the project. They will share their reflections in the next session.



Unit 1: Endangered Language

DST Stage 5: Publishing for Authentic Audience

Activity 10: Publishing the Digital Stories

Putting it out there: ***It's time to upload your digital story into the class YOUTUBE Channel. Your teacher will provide you with the access to the Channel, and he will ask for your permission whether you want to make your digital story public or not.***

Looking back: ***After you have completed the project, please spend some time to answer these questions. Your teacher will discuss the answers with you in the next sessions.***

REFLECTION TIME!

1. What are your first thoughts about this first mini-project? Are they mostly positive or negative? Explain.
2. What were some of your most challenging moments and what made them so?
3. What were some of your most powerful learning moments and what made them so?
4. How well did you and your partner communicate and collaborate overall?
5. How did you help you partner during the process, and how did you partner help you during the process?
6. What will you do differently the next project?

14

Collaboration:
Use a digital tool to work with others while sharing ideas and/or resources

Appendix P

Sample of the Instructional Manual Evaluation Form

Please click on the small box under -1, 0, or +1 accordingly to whether you agree, disagree, or are not sure with each statement below. If you want to change your answer, just click on the box again. For the statement that you give -1, please provide the reasons why in the comments / suggestions by clicking on the "Click or tap here to enter text" to write.

-1 = Disagree	0 = Not Sure	+1 = Agree

❖ **Learning outcomes**			
1. The learning outcomes are clear and concise.	-1	0	+1
	☐	☐	☐
2. The learning outcomes are measurable.	-1	0	+1
	☐	☐	☐
Comments/suggestions Click or tap here to enter text.			
❖ **Materials**			
3. Materials are suitable for the students' level and unit.	-1	0	+1
	☐	☐	☐
4. Instructions in the materials are understandable.	-1	0	+1
	☐	☐	☐

Appendix Q

IOC Result for the Lesson Plan and Materials Evaluation

Section	Statement	IOC Result			Mean	Interpretation
		Expert A	Expert B	Expert C		
Objectives	1	0	1	1	0.67	Keep
	2	0	1	1	0.67	Keep
Materials	***3***	***-1***	***0***	***1***	***0***	***Revise***
	4	1	1	1	1	Keep
Time allotments	5	1	0	1	0.67	Keep
Evaluation	6	0	1	1	0.67	Keep
	7	0	1	1	0.67	Keep
Digital literacies	8	0	1	1	0.67	Keep
Teacher conference	9	1	1	1	1	Keep
DST Stage 1:	10	1	1	1	1	Keep
	11	0	1	1	0.67	Keep
	12	1	1	1	1	Keep
	13	1	1	1	1	Keep
DST Stage 2:	14	1	1	1	1	Keep
	15	1	1	1	1	Keep
	16	1	0	1	0.67	Keep
	17	1	1	1	1	Keep
DST Stage 3:	18	1	1	1	1	Keep
	19	1	1	1	1	Keep
	20	1	1	1	1	Keep
	21	1	1	1	1	Keep
DST Stage 4:	22	1	1	1	1	Keep
	23	1	0	1	0.67	Keep
DST Stage 5:	24	1	1	1	1	Keep
	25	1	1	1	1	Keep
	26	1	1	1	1	Keep

Based on the IOC result, the statement regarding the suitability of materials for students' level and unit did not receive the mean score higher than 0.5. Thus, changes were made to the materials, namely the TED Talks, based on the experts' comments. Both Experts A and B said that the use of TED Talks might be too difficult and long for B1 students, and the Experts recommended reducing the length of the TED Talks used. Therefore, the TED Talks used was reduced in length. Plus, English subtitles were added to support students' understanding. The finalized version of the unit plan and material in Appendices M and N.

Appendix R

List of Experts

Experts involved in editing the language

- Lect. Meassngoun Saint (*Faculty of Arts, Humanities and Language, Western University*)

Experts involved in back-translation process of the questionnaire

- Ms. Kong Rattanakthida (*Big Text Translation*)
- Mr. Travis Mitchell (*The American Chamber of Commerce in Cambodia*)
- Mr. Charles Andrew Whitis (*I-genius English Institute*)
- Mr. Bruce Wright (*Bangkok University*)

Experts involved in validating lesson plans

- Mr. Tep Livina (*Edniche English School)*
- Lect. Vichet Pak (*Department of English at Institute of Foreign Languages, Royal University of Phnom Penh*)
- Lect. Bounchan Suksiri (*Department of English at Institute of Foreign Languages, Royal University of Phnom Penh*)

Experts involved in validating English reading test

- Lect. Ping Songsouzana (*Department of English at Institute of Foreign Languages, Royal University of Phnom Penh*)
- Lect. Hor Tengsan (*Department of English at Institute of Foreign Languages, Royal University of Phnom Penh*)
- Mr. Tang Samnang (*MaxLearning Language Academy*)

Experts involved in validating digital story rubric

- Asst. Prof. Maneerat Ekkayokkaya, Ph. D. (*Faculty of Education, Chulalongkorn University*)
- Lect. Chea Panhavon (*Faculty of Learning Innovation and Technology, Kirriom Institute of Technology*)
- Lect. Makara Sokunthearith (*Department of English at Institute of Foreign Languages, Royal University of Phnom Penh*)

Experts involved in validating questions used in the interview protocol

- Mr. Tep Livina (*Edniche English School*)
- Lect. Vichet Pak (*Department of English at Institute of Foreign Languages, Royal University of Phnom Penh*)
- Lect. Bounchan Suksiri (*Department of English at Institute of Foreign Languages, Royal University of Phnom Penh*)

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