# EFFECTS OF DIGITAL LITERACIES ON ENGLISH READING FLUENCY FOR UNDERGRADUATE STUDENTS

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# ผลการสอนการรู้ดิจิทัลที่มีต่อการอ่านภาษาอังกฤษเร็วสำหรับนักศึกษาปริญญาตรี

น.ส.พิมพ์พนิต โชติสวัสดิ์



วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาครุศาสตรมหาบัณฑิต
สาขาวิชาการสอนภาษาอังกฤษเป็นภาษาต่างประเทศ ภาควิชาหลักสูตรและการสอน
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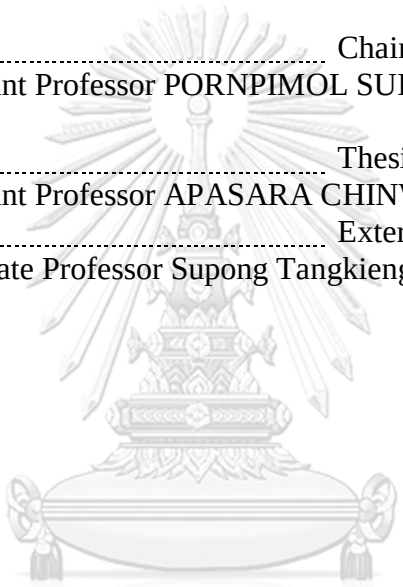

พิมพ์พนิต โชติสวัสดิ์ : ผลการสอนการรู้ดิจิทัลที่มีต่อการอ่านภาษาอังกฤษเร็วสำหรับนักศึกษาปริญญาตรี. ( EFFECTS OF DIGITAL LITERACIES ON ENGLISH READING FLUENCY FOR UNDERGRADUATE STUDENTS) อ.ที่ปรึกษาหลัก : ผศ. ดร.อาภัสรา ชินวรรโณ

การศึกษางานวิจัยแบบผสมผสานมีวัตถุประสงค์เพื่อ 1) ศึกษาผลการรู้ดิจิทัลที่มีต่อการอ่านเร็ว 2) ศึกษาการใช้การรู้ดิจิทัล กลุ่มตัวอย่างของงานวิจัยประกอบไปด้วยนักศึกษาระดับชั้นปริญญาตรี ระดับชั้นปีที่ 3 คณะสถาปัตยกรรมศาสตร์ จากมหาวิทยาลัยรัฐบาลแห่งหนึ่งในกรุงเทพมหานคร จำนวน 60 คน เป็นเวลา 10 สัปดาห์ โดยมีตัวแปรต้นคือการรู้ดิจิทัล และตัวแปรตามคือการอ่านเร็ว เครื่องมือที่ใช้ในการรวบรวมข้อมูลได้แก่ ข้อสอบประเมินการอ่านเร็วก่อนและหลังเรียน แบบฝึกหัดการอ่านเร็ว ซึ่งประกอบไปด้วยแผนภูมิบันทึกอัตราการอ่าน และบันทึกสรุปการเรียนรายวิชา ข้อมูลจากการวิจัยเชิงปริมาณได้จากสถิติที่ใช้ในการวิเคราะห์ข้อมูลประกอบด้วย การทดสอบค่าที (Paired sample *t*-test) และข้อมูลที่ได้จากการวิจับเชิงคุณภาพใช้การวิเคราะห์รหัสของข้อมูล (Coding Analysis)

ผลจากการวิจัยพบว่านักเรียนมีผลคะแนนหลังเรียนมากกว่าผลคะแนนก่อนเรียนจากการสอนโดยใช้กลวิธีการรู้ดิจิทัลต่อการอ่านเร็วทั้งอัตราการอ่านและความเข้าใจในการอ่านอย่างมีนัยสำคัญทางสถิติ ($p<.05$) ที่ค่าขนาดผลของอัตราการอ่านคือ .71 และ ความเข้าใจในการอ่านคือ.40 นอกจากนี้จากรายงานบันทึกสรุปการเรียนรายวิชาเป็นไปในเชิงบวกต่อองค์ประกอบหลักทั้งสี่ในการรู้ดิจิทัล คือ (1) การสื่อสาร (2) ข้อมูล (3) การทำงานร่วมกัน (4) การออกแบบใหม่ การวิจัยอธิบายว่าแต่ละองค์ประกอบช่วยเพิ่มการอ่านภาษาอังกฤษเร็วซึ่งสามารถนำเสนอเป็นแนวทางสำหรับการบูรณาการการรู้ดิจิทัลเพื่อการอ่านเร็วในการเรียนภาษาอังกฤษ



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Pimpanitt Chottsawhas : EFFECTS OF DIGITAL LITERACIES ON ENGLISH READING FLUENCY FOR UNDERGRADUATE STUDENTS. Advisor: Asst. Prof. APASARA CHINWONNO, Ph.D.

This mixed-methods study aimed to 1) examine the effects of Digital Literacies on reading fluency in terms of reading rate and reading comprehension, 2) investigate the uses of Digital Literacies. Participants comprised 60 third-year undergraduate students from a public university in Thailand (N = 60), the Faculty of Architecture, during a 10-week intervention. The independent variable was Digital Literacies, while the dependent variable was reading fluency. The instruments used to collect data were the Online English Reading Fluency Test, Reading Fluency Practice: Reading Rate Chart, and Learning Logs. Quantitative data were analyzed through students' Online English Reading Fluency Test using Pair Sample *t*-test, while qualitative data were obtained through students' Reading Fluency Practice: Reading Rate Chart and Learning Logs were analyzed through coding analysis.

The results from the Pair Sample *t*-test revealed that students significantly increased their reading fluency in both rate and comprehension. Students' posttest scores from reading rate were higher than the pretest scores at a significant level ($p<.05$) with a medium effect size of .71, while students' reading comprehension with a small effect size of .40. After the intervention. They reported positively upon four elements of Digital Literacies, including (1) Communication, (2) Information, (3) Collaboration, and (4) (Re-) Design. The study explained how each element enhanced reading fluency. Implications offered guidelines to integrate Digital Literacies into English reading instruction.



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Finally, this message is to my future self whenever I needed to boost my self-confidence. To bring out the best in me, I hope this message shines a light on my positive attributes; 'Always Stay Motivated and Inspired.'.

Pimpanitt Chottsawhas

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# CHAPTER I
# INTRODUCTION

## 1.1 Background of the Study

Promoting students' digital literacy to literacies has become an increasingly significant challenge for education authorities and course designers (Dashtestani & Hojatpanah, 2020). To train students in higher education to be digitally literate is a crucial responsibility of universities. Digital transformation and the Internet play a significant role in students' technology integration, especially for their acquisition and skills in preparing them for the workplace (Techataweewan & Prasertsin, 2018). Those with high 21st-century digital skills are advantageous for organizations indicated by immediate technological changes and complex knowledge bases (Laar et al., 2018).

Digital literacy is one of many components that higher education embraces and uses in a wide range of ways (Walton, 2016). For example, digital literacies knowledge and skills in Computer Class (Richards-Mealy, 2018); assessment instrument (Shannon, 2017); academic and culturally-inclusive abroad experience (Cote & Miliner, 2017); E-tutorials for online and blended learning (McGuinness and Fulton, 2019). The components for digital literate also include teacher educators' digital tools and skills for digital competence in higher education (Amhag, Hellström & Stigmar, 2019; Gerben, 2017). Moreover, the increasing need for online instruction also requires educators to overcome the coronavirus pandemic. The need for faculty to acquire skills in academic performance and mobile devices learning is anticipated (Ng et al., 2020).

Using digital tools to encourage disciplinary learning is a challenge because technologies require extended time and collaboration among teachers, literacy coaches, and leadership teams. Therefore, disciplinary knowledge rewards students' opportunities to participate and collaborate with authentic learning (Goss, Castek, & Manderino, 2016). Youth and adults deserve opportunities to read and write the word they occupied, including the use of digital to earn the chance to consume and express

their thoughts even via the digital medium to access and deliver meaningful conception and communication (Manderino & Castek, 2017).

Reading, writing, and communication in digital medium demand a wider domain of skills and masteries related to digital culture and social contexts in which they appeared rather than relying only on print-based literacy (Tour, 2019). The concept of reading in this day could be different from what it was once defined, with the popular ways and access to reading resources and various forms of reading provided (Liew & English, 2017).

Reading is a complex ability that demanded fluent readers to draw information from the visible appearance on a page and blend the input with readers' background knowledge to form a meaningful interpretation of text meaning (Grabe & Stoller, 2020a). Scholars commonly use the term fluent reader to describe the activity of 'skills' and 'strategies' (Grabe & Stoller, 2020b). For Lou (2020), reading is one of the strategies that faculty use to facilitate undergraduate learning and integrate students into the disciplinary discourse. The courses also include the way to design English for Academic Purposes (EAP) courses such as Nursing (Padages & Hajan, 2020); Engineering (Shanahan et al., 2016), Computer Science (Isra & Bezad, 2018), and History (De La Paz, 2017). 'Reading Fluency' is defined as "reading at an appropriate rate with adequate comprehension." The present study should discuss the questions that arose at 'appropriate rate' and 'adequate comprehension' (Anderson 1999a; 2008: as cited in Anderson, 2018).



What undergraduates perceive about reading assignments is the effects on reading. They expect to achieve a target reading as a result (Gorzycki et al., 2019). However, reading is considered a second-language skill with the greatest strength and practical one, and it is the most under-researched second language area (Bernhardt & Leffell, 2019). It is essential to present a concrete example that reading fluency is one of many elements that framed a successful reading instruction (Anderson, 2018).

### 1.2 Statement of the Problem

According to Gilbert (2017), much research has focused on second language reading, interacting, and decoding printed text. However, a small amount of research has been conducted on how English language learners access web text, navigate the

Internet, or evaluate and comprehend what they are reading through digital literacy skills. Likewise, the number of undergraduate students enrolls in higher education institutions increasingly matriculated with the notion of their ability to access digital devices and the Internet confidently daily. They can value digital literacies for personal practices or support others in their social community. However, they struggle with making connections of digital literacies to academic literacies. It is essential for students that they must be educated for academic literacies demanded in college educational contexts in a meaningful way (Caverly et al., 2019).

In conclusion, minimal attention had been directed towards higher education students (Dashtestani & Hojatpanah, 2020). Also, to evaluate reading fluency, little research has paid less attention to investigate reading comprehension assessments in parallel with the reading rate (Hiebert & Daniel, 2018). This gap has led to the investigation of the effects of digital literacies instruction on reading fluency with undergraduate students concerning the English language learning context in architecture courses. It also offers a guideline to develop suitable English courses in the future for English for Specific Purposes (ESP). The next section presents the study's research objectives, research questions, statement of hypothesis, definition of terms, and significants.



**1.3 Objectives of the Study**

The aims of this study are as follows:

1.3.1 To examine the effects of Digital Literacies on undergraduate students' reading fluency.

1.3.1.1. To examine the effects of Digital Literacies on undergraduate students' reading rate.

1.3.1.2. To examine the effects of Digital Literacies on undergraduate students' reading comprehension.

1.3.2. To investigate undergraduate students' uses of Digital Literacies.

**1.4 Research Questions**

1.4.1.1. What are the effects of Digital Literacies on undergraduate students' reading fluency?

1.4.1.2 What are the effects of Digital Literacies on undergraduate students' reading rate?

1.4.1.2. What are the effects of Digital Literacies on undergraduate students' reading comprehension?

1.4.2. What are the uses of undergraduate students' Digital Literacies?

**1.5 Statement of Hypothesis**

The research study hypothesizes that Digital Literacies (independent variables) positively impacts English Reading Fluency (dependent variable) regarding reading rate and reading comprehension for Thai undergraduate students.

After the intervention of Digital Literacies on reading fluency, quantitative data analysis from the posttest means scores of undergraduate students' Online English Reading Fluency Test should be significantly higher than or equal at 0.5 level of significance. Students complete 110 test items (Ma'rof, 2014) consisting of 2,000 words within 20 minutes with 70% of comprehension (Anderson, 2018), while qualitative data anlysis reveals the uses of effects of Digital Literacies from students' Learning Logs. Mterials used for the Digital Literacies framework (Pegrum, Dudeney & Hockly, 2018) and reading fluency (Anderson, 2018) are adequate and appropriate for students to improve their English reading fluency.



**1.6 Scope of the Study**

The present study conductes at a public university in the central region of Thailand. In the education system, students are required to enroll in Language and Communication Course Requirement as a part of the General Education Program. Students must study English as one of the compulsory subjects as their language and communication skills should increase over time. For example, Foundation English, English for Communication, and English for Academic Purposes.

The study examines the effects of Digital Literacies on the reading fluency of Thai undergraduate students. The materials are created and developed for a program that focuses on students' uses of Digital Literacies on reading fluency. Digital Literacies components are focused based on four elements. A one-group pretest-posttest design employs in this research study. The Online English reading fluency

Test will be administered before and after the intervention. The classes are conducted online throughout the semester. After ten weeks of the intervention, students will be asked to take the same Online English Reading Fluency test as a posttest. Students' uses of Digital Literacies are investigated from students' Learning Logs collected at the end of each learning unit.

**1.6.1 Participants**

The participants comprise 60 third-year undergraduate students from the Faculty of Architecture in English for Professional Presentation Course.

**1.6.2 Variables**

The independent variable of the study is Digital Literacies, while the dependent variable of the study is English reading fluency

## 1.7 Definition of Terms

**1.7.1. Digital Literacies** refers to the ability to process technology and literacy skills in language learning through the intervention of reading materials and practices. Digital Literacies consisting of four main components: Communication (Language), Information, Collaboration, and (Re-) Design (Prgrum, Dudeney & Hockly, 2018). The intervention includes the process of transferring disciplined learning in reading, writing, speaking, and interpretation skills into practice (Dobbs, Ippolito & Charner-Lard, 2017). The method includes three steps implemented in Disciplinary Learning: Assess and Evaluate, Use and Represent, and Produce and Exchange Information (Castek & Manderino, 2017).



**1) Communication**

Communication or Language is defined as a set of abilities to effectively comprehend, interpret, and create text through print or media through the knowledge of linguistic features such as grammar and vocabulary associated with reading and writing skills. Students interpret texts in multiple media such as images, sounds, and videos.

**2) Information**

Information is defined as the ability to use search engines effectively and document evaluation to assess content's credibility through general to specific

information searching, such as asking critical questions, comparing sources, tracking the roots of information, and searching beyond filter bubbles.

**3) Collaboration**

Collaboration is defined as creating awareness and effectively using information from the individual to intercultural aspects concerning the ethical environment. Personal literacy or security used digital tools to shape and project the identity needed concerning defining references sources.

**4) (Re-) Design**

(Re-) Design is defined as the ability to develop new meanings by interpretation through Communication, Information, and Collaboration. The process also includes evaluating, appreciating, taking positions, and engaging information in an online environment with technological innovations and implications. Critical thinking concerns digital tools that allow students to engage in meaningful academic research with new technologies are employed.

**1.7.2. English Reading Fluency** refers to a reading rate of 200 words per minute (wpm) with 70% reading comprehension (Anderson, 2018). Developing word recognition could be carried out through timed reading activities, which is essential in promoting reading fluency (Grabe & Stoller, 2020). The definition also includes *English Reading Fluency Practice* which refers to Reading Rate Chart: Rate Buildup Reading. The practice concerns reading rate and reading comprehension.



**1) Reading rate** refers to the reading of 200 words per minute. Rate Buildup Reading practice is a pedagogical practice to keep students focus on a fluency goal as they read the exact text with a given time of 60 seconds for three cycles. As their eyes move faster in each reading cycle, students learn to increase their reading rate (Anderson, 2018).

**2) Reading comprehension** refers to the ability to understand a reading passage with 70% comprehension. The capabilities included lexical quality, such as word reading efficiency and vocabulary knowledge, and cognitive load factors, such as prior knowledge and the working memory of text type and graphical overview (Fesel, Segers, & Verhoven, 2018).

**1.7.3. Undergraduate Students** refer to the undergraduate students from the Faculty of Architecture who enrolled in the English for Professional Presentation Course, one of the compulsory subjects for the Language and Communication Course.

## 1.8 Significance of the Study

Reading fluency concerning reading rate and reading comprehension is the most under-researched of the second language areas. This study aims to examine the effects of Digital Literacies on undergraduate students' English reading fluency. This study is concerned with the student's abilities to achieve reading fluency's reading rate at 200 words per minute with 70% comprehension through Digital Literacies intervention. Reading fluency progress should increase over time after the intervention. The data obtained from Online English Reading Fluency Tests (pretest and posttest) should increase at the expected level.

Materials developed for the class, including Digital Literacies as an instruction for the intervention. Students should reveal theirs uses for Digital Literacies' four components through the theme of the framework. Thus, this present study may show the process of the components rather than the end product of the journey along the way. Students should find their use of digital technology in academic settings through their engagement. However, encouraging students might be more challenging. Moreover, the usefulness of Digital Literacies on English Reading Fluency Practice will be investigated, such as how students build the connections between Digital Literacies and academic content areas in the discipline.

# CHAPTER II
# REVIEW OF THE LITERATURE

This research study aims to examine the effects of Digital Literacies of undergraduate students on English Reading Fluency. Thus, the following topics are discussed in this chapter.

2.1 Digital Literacies

2.2 Disciplinary Learning

2.3 Reading Fluency

2.4 Digital Literacies and Reading Fluency

## 2.1 Digital Literacies

### 2.1.1 Digital Literacies Framework

Pegrum, Dudeney & Hockly (2018) discovered that none of the current frameworks in digital literacies represented a complete list of the literacies. Instead, they described what we believed a 'process' to be critical literacies connected to language learning. Those literacies should not be interpreted as separate structures since the additional literacies played an 'implicit' role in the original framework. Thus, more 'explicit' recognition for the sake of modern technological and sociopolitical developments was demanded. The Revised Framework of Digital Literacies was proposed and adopted as the main framework in this research study. A Revised Framework of Digital Literacies extended from Dudeney, Hockly, and Pegrum (2013) were represented four components in the Digital Literacies Framework.

First, Communication or Language was described as a set of abilities to effectively comprehend, interpret, and create text through print or media through the knowledge of linguistic features such as grammar and vocabulary associated with reading and writing skills. Including multimodality to help students interpret texts in multiple media such as images, sounds, and videos. Second, Information was described as the ability to effectively used search engines and document evaluation to assess content's credibility through tagging or hashtag, getting familiar with the

functionality and limitations of search engines, interpreting and monitoring infographics, and using online networks as a screening mechanism. Third, Collaboration was described as creating awareness and effectively using information from the individual to intercultural aspects concerning the ethical environment, including personal to participatory digital tools to shape and project the identity needed concerning defining sources of references. Fourth, (Re-) Design was defined as the ability to develop new meanings by interpretation through Communication, Information, and Collaboration. The process also included evaluating, appreciating, taking positions, engaging information in an online environment with technological innovations and implications, and becoming critical thinkers concerning digital tools that allow students to engage in meaningful academic research with new technologies.

**2.1.2 Definition of Digital Literacies**

There has been a debate over the concept of literacy globally in the past decades. The definition of 'digital literacy' should be reviewed (Ranieri, 2021). Harris (2020) defined digital literacies as "the ability to define, access, manage, integrate, communicate, evaluate, and create information safely and appropriately through digital technologies and networked devices for participation in economic and social life." 'Digital literacies' should be considered in terms of diversity, rather than seeing 'digital literacy' as an individual occurrence (Lankshear & Knobel, 2015). Literacies were no longer seen as an ability to develop in school but rather in advancing a set of skills, knowledge, and strategies to which individuals construct their entire life (Shanahan and Shanahan, 2017). Moreover, Sang (2017) stated that 'Literacy' expanded from its areas as 'New Literacies' and 'Multiliteracies.' They were set as the theoretical innovation of rapid economic, social, and cultural life changes. Also, the transition from literacy to news literacies was a form of explicit recognition to overcome the traditional frame of education.

Cappello (2017) defined literacy as "a set of cognitive abilities, including reading and writing, the other as a social practice." At the same time, Hobbs and Coiro (2018) defined digital literacy as an extended expression of literacy, which included the changing processes in information and communication technologies that were part of daily life as a design feature for a professional development program in digital literacy.

In the field of Higher Education in Thailand, Khamcharoen & Polnigongit (2019) stated that digital literacy was “the ability to use both digital hardware and software to study, work, entertain, communicate and participate in creating and producing digital content.” Techataweewan and Prasertsin (2018) conducted research to identify the actual definition, factors, and indicators of digital literacy in Thai society with Thai undergraduate students through questionnaires. The results indicated that digital literacy criteria for Thai undergraduates included four elements—first, operation skills, cognition, invention, and presentation. Second, thinking skills; research, evaluation, and creativity. Third, collaboration skills; teamwork, networking, and sharing. And fourth, awareness skills; ethics, law literacy, and safeguarding self.

**2.1.3 Previous Studies of Digital Literacies**

In the field of English as an Additional Language (EAL) and English as a Second Language (ESL), Tour (2019) proposed pedagogy for digital literacies to make students more confident to interpret and produce appropriate meanings in a new language across different contexts, situation, and digital spaces with authenticity in three as aspects. First, real audience; classroom community as the audience. Second, an actual purpose; reading information to share with someone. And third, authentic texts; material that was typically used in everyday lives. To implement digital literacy practices in action, Tour introduced the three practices as an example of a learning unit: designing a web page, searching for information from a web engine, and creating an online profile. Tour (2019) also recommended that since no publication could develop adequate “ready-to-use” teaching resources in planning for digital literacies, therefore, L2 teachers constantly needed to adapt and create resources further for increasingly complex and meaningful contexts. Also, to maintain a digital existence, these models needed to be adjusted or used to develop materials.

In the L1 context, Clarke (2020) created a project for elementary students to walk around the room with markers in their hands and record what they perceived about different countries on hanging chart paper. Clark found that digital literacy could deepen students’ growth in cross-culture understanding for a global citizen and global community. It was convenient to find others interested in

collaboration and share ideas through online sources such as Google and YouTube to connect with other classrooms worldwide.

Tucker-Raymond et al. (2016) explored the relationships between digital-based literacies and social and intellectual practices of making through an online community for engineering practices on 'Instructable' (www.instructable.com). In this case, it was a how-to, 'How to Make a Book Cover with Living Hinges.' Members posted instructions for projects they made and gave feedback to projects others had made. There were three relationships highlighted for this engagement. First, problem-solving; creating an object in the world that satisfied the tension by a real-world problem, such as identifying the problem, planning, bringing engineering background knowledge to remodel the existing design, and sharing the work on the website to seek recognition of his career and learn. Second, engaging selves; sharing the position to inspire and encourage others to participate and practice. Finally, distributing expertise; acting as a part of the contribution to help sustain a community on exchanging knowledge and providing support to achieve each member's goals.

**2.2 Disciplinary Learning**

According to Dobbs, Ippolito & Charner-Lairs (2017), Based on an L1 domain, digital literacy was one of the essential domains for adolescents for disciplinary learning. They adopted Shanahan and Shanahan's proposal in 2008, and learners had the potential and ability to develop their literacy skills to be more advanced in reaching disciplinary practice. They defined 'disciplinary literacy' as "the particular literacy skills and ways of knowing from a discipline or content community." The new focus in the area of literacy could be classified into three levels. First, Basic Literacy; literacy skills common to almost all reading tasks, such as decoding or using high-frequency vocabulary. Second, Intermediate Literacy; literacy skills common across disciplines, such as fluency or general comprehension. Last, Disciplinary Literacy; particular literacy skills and ways of knowing from discipline or content community. Manderino and Castek (2017) explained 'Disciplinary literacies' as literacy practices used to engage in a disciplinary inquiry. The texts and discourses usually represented four areas: social study and history, math, English and language arts, and science. It was not directly learning tasks but

instruments that helped individuals explain conceptual and real-world problems in practice.

Another framework from Castek and Manderino (2017), based on a planning framework developed by Goss, Castek, and Manderino (2016), described the framework that bridges connections to texts and theory of knowledge that link digital disciplinary and literacies. However, the framework was designed to be used flexibly, not sequentially, and it encouraged teachers to think about the plan for integrating digital literacies and disciplinary learning. A Three-Part Planning Framework that teachers planned to teach students consists of three steps.

STEP 1: How to Access and Evaluate Information: locating quality resources, making sense of data and evidence represented in digital models and simulations, and discussing texts and concepts found online. Also, evaluating the information and reflecting whether the information located fulfills the intended purpose; STEP 2: How to Use and Represent Information: critically reflecting on content found online and opportunities for students to use digital texts and tools to express their interpretation. Also, practicing brokers how tools could be used, and the tools expand counted as disciplinary representations and; STEP 3: How to Produce and Exchange Information: utilizing many representational possibilities, such as videos, blogs, podcasts, and infographics as the habits of practice within disciplines shift with changing digital patterns.



To conclude, it should be noted that digital literacies (as a whole) was shaped by ‘disciplinary learning.’ Shaping individuals to create and communicate disciplinary knowledge as a part of the way they read and write text, while authorship, credibility, and accuracy could be covered on the open Web (Manderino & Castek, 2017). This also included the embed in broader cultural, social, and political developments concerning languages and literacies (Pegrum, 2016) based on technological developments such as mobile literacies (Pegrum, 2014).

### 2.3 Reading Fluency

As a means to discuss ‘Reading Fluency,’ it is crucial to recognize the definition of the terms. Though in the field of TESOL (Teaching English to Speakers of Other Languages), the description of reading fluency is ubiquitous (Zwick, 2018).

Many linguists or experts in reading fields have defined reading fluency in different ways. Anderson (2018; as cited in Anderson, 1999a; 2008) stated that it is "reading at an appropriate rate with adequate comprehension... it depends on who is reading and what the purpose of reading is. It also depends on whether the reader is reading orally or silently." While Hasbrouck and Glaser (2018; as cited in Hasbrouck and Glaser, 2012) defined it as a "reasonably accurate reading, at an appropriate rate, with suitable expression, that leads to accurate and deep comprehension and motivation to read." Other researchers also claimed that scholars generally agreed that fluency was made up of two components—first, the combination of word recognition and automaticity. The second was prosody reading (Laberge and Samuels, 1974; Rasinski, 2010; as cited in Rasinski et al., 2017). However, most studies have relied on oral reading fluency (Shimono, 2019; Jiang, 2016; Ness, 2016; Piper, Schroeder & Trydell, 2015), only a few works in the literature demonstrate silent reading fluency. Anderson (2018; as cited in 1999a, 1999b, 2003, 2006, 2008) suggested that for adult L2 readers studying at a college or university, 200 words per minute (wpm) with 70% comprehension should be the silent reading fluency expectation.

Ma'Rof (2014) investigated the improvement in L2 literacy skills in young learners through collaborative reasoning within a six-week time frame. One of the reading fluency test items was a reading activity to show how fast students could read and understand English sentences. The students were expected to complete the 100 True/False items (True 55 items and False 55 items). The given time was 10 minutes. The results indicated that reading skills could be significantly improved when students engaged in meaningful discussions about the text. Even though there was no data collection in a vocabulary test or evaluation speed of lexical access. However, Fesel, Segers & Verhoeven (2018) examined children's reading comprehension explained by lexical quality (word reading efficiency and vocabulary knowledge), cognitive load factors (prior learning and working memory), and text type and graphical overview. The results indicated that students with low prior knowledge significantly impacted reading comprehension, no matter the same or different of the text types. But it was reported that visual overview helped when readers' prior knowledge was insufficient.

The findings from students with low prior knowledge were related to Grabe (2010). The most significant issue for reading fluency concerned its role in academic settings, secondary and university contexts. It was positively ordinary for L2 students to read in a second language with reasonable comprehension but limited fluency. These students could read at 80-120 words per minute, half to one-third of an L1 student, even given sufficient time to complete the tests. However, some researchers questioned whether students needed to develop reading fluency if they could read with comprehension, even if reading slowly.

### 2.3.1 Reading Rate

According to Tortorelli (2019), in theory, reading rate referred to reading as a 'thermometer' (as cited in Hasbrouck and Timdal, 2006), as readers developed reading ability when they started reading at an early age, they begin to build automaticity in word recognition and increase reading speed. Although the rate was reported as one of the critical elements of reading fluency, it could not be relied upon as the solitary one (Zwick, 2018).

According to Anderson (2018), 'Rate Buildup Reading' was one of the five pillars in silent reading pedagogical practices to focus students' attention on a fluency goal. For example, in rate buildup reading practice, students were given 60 seconds to read the passage as much as possible. After 60 seconds, readers were asked to begin reading again from the beginning of the exact text with an additional 60 seconds. The practice kept repeated until the third cycle. After that, the students checked their comprehension. The point was eye movement. As their eyes moved faster each time they read, students learned how to increase their reading rate.



Ari (2015) found that repeated readings appeared to encourage reading strategies, which helped struggling readers. Serrano & Huang (2018) examined repeated reading and learning vocabulary between repeated reading every day and reading repeated only once in five weeks. The results indicated immediate vocabulary gains for repeated reading but more excellent long-term retention for spaced distribution. In summary, the information on measuring reading rate was mainly associated with recognizing individual words instead of in sentence structures or comprehending paragraphs or longer pieces of text (Rayner et al., 2016).

### 2.3.2 Reading Comprehension

Reading for general comprehension was the ability to understand and interpret information from a text appropriately. However, the definition was much deeper than the description suggested (Grabe & Stoller, 2020b). An important question associated with previous research was that reading comprehension was a complex process that required complicated interaction among multiple skills and factors (Shin, Dronjic & Park, 2019). The skills and characteristics involved Metacognitive awareness, which defined that knowledge of what we know by making conscious efforts to learn words and structures through comprehension. When the attention was developed to what strategies could function best, it supported literacy development (Grabe & Jiang, 2018).

Reading comprehension required 'skills' and 'strategies.' Skills portrayed linguistic processing abilities that were concerning automatic in their use and combination, such as word recognition, lexical access, and syntactic processing. 'Strategies' was portrayed as a set of abilities under the potentially conscious control of the reader. (Anderson 2009; as cited in Grabe & Stoller, 2020b). This supported Hiebert and Daniel's (2018) point of view that students with poor comprehension in independent silent reading of the accessible text may be due to other factors than reading ability such as assessment context, when students read with understanding, their rate was the primary indicator of their reading ability. To design either multiple-choice questions or long-answer questions that involved synonyms could lead to learners failing to answer the questions. They instead copied from the text without comprehension (Cobb, 2018).



Jiang (2016) investigated the role of oral reading fluency in reading comprehension. This investigation indicated that background knowledge of the various first language (L1) was relatively significant in English reading comprehension. Verbal reading fluency was measured through four componential elements: oral reading rate (word per minute/wpm), accuracy (word correct/wc), efficiency (word correct per minute/wcpm), and prosody. The results demonstrated that prosody of Chinese and Japanese L1 backgrounds was a substantial predictor of English reading comprehension. Arabic L1 backgrounds, oral reading efficiency was a significant predictor of English reading comprehension, and Spanish L1

backgrounds, accuracy, and rate were significant predictors of English reading comprehension.

### 2.3.3 Reading English in First and Second Language

Grabe and Jiang (2018) stated that there were numerous studies investigating reading in the first language (L1) and second language (L2) in the past 30 years since Anderson (1984) had a critical open question on students' L1 reading abilities and L2 proficiency played an essential role as a foundation for L2 reading whether it was a language problem or a reading problem to be concerned. Even though a series of recent investigations indicated a relationship between reading in L1 and L2, it was essential to understand the definition of reading (in general) and the relationship between L1 and L2 reading.

There were some differences between L1 readers and L2 readers to be noticed. First, metalinguistic and metacognitive awareness; L2 students perceive L2 reading differently since cognitive processing involves two language systems. Second, motivations for reading in the L2; L2 students' perceptions in L1 and L2 lesson on different combinations of general background. Third, the amount of print exposure and the kinds of texts read; L2 students may have limited sources in accessing through reading exposure. Last, cultural knowledge and content schema; L2 learners encounter cultural assumptions in L2 text that they may not be familiar with or challenging to embrace (Grabe, 2014). Grabe and Stoller (2020b) stated that an excellent L1 reader read most texts at rates around 240 and 300 words per minute, relying on reading purposes.



## 2.4 Digital Literacies and Reading Fluency

Technology has always been associated with promoting reading fluency. Especially in the English for Academic Purposes (EAP)/ English for Specific Purposes (ESP) course. A number of the following were the studies in the area found in the past five years. For instance, Online Extensive Reading courses (Zhou and Day, 2021); Online dictionary (Kol & Schcolnik, 2021); Teaching tools for reading (Love, 2020); Materials for reading (Ruegg, Williams & Araki, 2018); and Reading instruction (Somayeh & Adel, 2018). The range and quantity of new technologies for reading applications had also multiplied, with the numbers of online activities with

individual study tools and portable devices. For instance, mobile devices (Alzubi, 2021; Ronimus et al., 2020; Lin et al., 2020; Liew & English, 2017).

The use of text technologies provided opportunities to support L2 readers' experience on-screen reading than challenges. Changes in technology and reading habits strongly indicated how teaching online reading comprehension helped students report their culturally situated perspective when digital inquiry projects (Nash, 2021). For instance, students could integrate the Internet's networking and knowledge resources with problems and solutions (Coiro, Castek & Quinn, 2016). According to Herman and Ciampa (2019), digital literacy supported students' comprehension of informational e-Books. The results highlighted the students' ability to use digital literacy support tools and understanding the relevant application of the digital literacy support tools.

Rogtigue (2017) stated that students 'engage' digital texts with reading comprehension strategies by using a cursor while reading. Gilbert (2017) researched to understand the online reading strategies of English language learners clearly. The study aimed to explore the need for the English as a Second Language profession to technological digital literacy in the language classroom. The findings suggested that language learners engage in recognizably different reading practices through a wide range of web resources such as Google and Wikipedia. Also, the participants apply strategies when reading web text, such as reading for details and skimming and scanning. In addition, the need for digital literacy skills to be instructed in combination with the development of traditional literacy skills in the target language to encourage students to develop and apply new critical reading strategies. Neebe (2017) investigated how multimedia examples explicitly model students' reading habits through think-alouds, which involved students saying aloud what they were thinking about when reading, facilitating effective communication to differentiate analytical reading instructions with high school students. The findings revealed the significant differences for the analytical reading comprehension tests. Students expressed that think-aloud worked example videos increased the attention to detail, depth of analysis, ease of study, level of focus, and willingness to overcome a challenging task.

Lim and Toh (2020) suggested that digital reading required knowledge and strategies, basic to critical information skills, and a multimodal relating to signs and symbols awareness. According to Cobb (2018), The challenges required practical engagement and comprehension of the use of technologies and alternatives involved. However, it was crucial to systematically create the electronic resourcing of texts with instruction and guarantee to promote reading and learning rather than distraction and text anxiety. Caverly et al. (2019) identified college students' digital literacies to build academic literacies. The results exhibited characteristics of the students as 'digital natives,' they grew up with the feeling of comfort in using digital devices such as smartphones, iPads, laptops, etc., in their social lives. However, students were learning how to incorporate digital devices rather than integrate them into their academic lives. They had perceptions of how digital device use influenced their educational literacy practice. One of the factual findings showed that one student developed typing skills by playing an online game during the reading and writing course development.

In addition, Altay and Altay (2021) studied the impact of online reading tasks and reading strategies on L2 learners' reading tests and scores. They were using metacognitive reading strategies. Interestingly, the results indicated no significant difference between test scores, no strategies preferred by learners, and online reading tasks and reading strategies did not affect learners' reading comprehension. This has confirmed why learners failed to differentiate between the online world and the abundance of literacies concepts. The use of technology in the language should be selected carefully concerning online reading tasks' potential to improve students' reading scores. Morever, Vorobel, Voorhees & Gokcora (2021) studied language learners' digital information literacies and reading practices. The results indicated that learners struggled with the number of developments in search engines, keywords, and evaluation of digital text for relevance and reliability. However, not all digital resources promoted active and engaged literacy learning in meaningful and socially interactive contexts since locating suitable resources could be confusing due to the curriculum outcomes and what products were considered educational (Kervin, Danby & Mantei, 2019). The role of multimodality and other factors that affected when

students seek reading information online practices should be considered for future research.

In summary, this chapter reviews two related vital concepts of the study, digital literacies and reading fluency. The term ‘literacies’ was defined within digital literacies frameworks as the ability to read, write, and communicate in a meaningful way. Also, the relationship between digital literacy as disciplinary learning was added as three steps in teaching instruction. Moreover, the significant role of technology in reading was also demonstrated. The following chapter presents the research methodology to investigate the effect of digital literacies instruction on English reading fluency.

# CHAPTER III
# RESEARCH METHODOLOGY

This chapter outlines the design of the research methodology and the procedures used in the study, including the participants, research instruments, data collection, and data analysis.

## 3.1 Research Design

This study was a quasi-experiment mixed-method approach based on a one-group pretest-posttest design. The purposive sampling, based on the characteristics of the population, was used for the research study. The independent variable was Digital Literacies, and the dependent variable is reading fluency consisted of rate and comprehension.

**Figure 3.1 One-Group Pretest-Posttest Design**


O means pretest and posttest of Online English Reading Fluency

X means the intervention in Digital Literacies on Reading Fluency

The explanatory research design was conducted for a problem that was not well researched before in-depth, for understanding the problem more efficiently. The quantitative data collection results from pretest and posttest indicated scores on the Online Reading Fluency Test (Pretest and Posttest). The qualitative data collection was Reading Fluency Practice: Reading Rate Chart. Coding analysis from students' Learning Logs was selected based on 10% of the range of students with the highest and lowest posttest scores.

### 3.2 Population and Participants

This research study's population was third-year undergraduate students in the academic year of 2020, semester two at King Mongkut's Institute of Technology of Ladkrabang. This research study participant consisted of 60 undergraduate students who majored in Architecture. The participants were purposely selected due to completing all English courses' requirements as a prerequisite, such as Foundation English, Development of Reading and Writing Skills in English, and English for Communication Courses over the previous semester. Some specific characteristics of students majoring in this department require a lot of strategy and planning, including planning, focusing on design features.

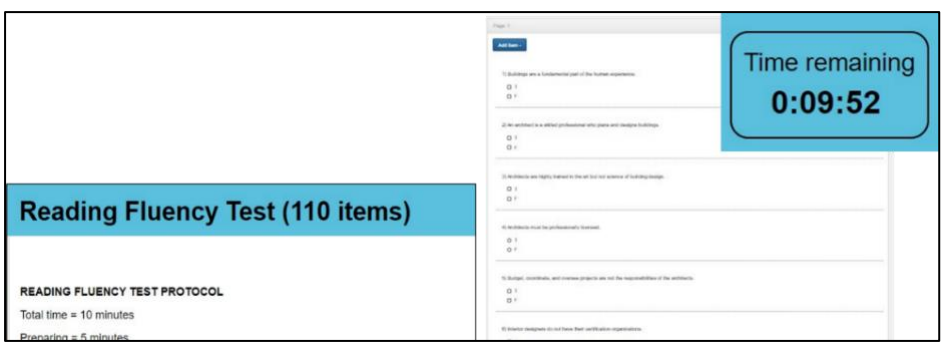
### 3.3 Research Instruments

Three main instruments were used for the study: 1) Online English Reading Fluency Test, 2) Reading Fluency Practice: Reading Rate Chart, and 3) Learning Logs.

#### 3.3.1 Online English Reading Fluency Test

The test was constructed as a pretest and posttest to assess English Reading Fluency through reading rate and comprehension based on Ma'rof (2014). The test's purpose was to show how students could read at an appropriate rate and comprehend sentence reading at the proper level. Students were given a 20-minute test of 110 True-or-Salse questions on Flexiquiz, an online test generator. This reading fluency test measured students' reading rate at 200 words per minute with 70% comprehension, as Anderson (2018) proposed. Three experts and pilot-tested validated the test to ensure its reliability before the main study. Figure 3.2 shows an Online English Reading Fluency Test. (APPENDIX A).

**Figure 3.2 Online English Reading Fluency Test (Pretest and Posttest)**



The Item-Objective Congruence (IOC) evaluated the questionnaire items based on the -1 to +1. The evaluation form contained a three-rating scale for each research instrument component and a written suggestion part. The three-rating scale of the experts' opinions was described as follows. Congruent = + 1, Questionable = 0, and Incongruent = -1

Based on the experts' responses, the Item-Objective Congruence Index (IOC) was employed to validate this research instrument.

$$IOC = \frac{R}{N}$$

| | | |
|---|---|---|
| IOC | means | the index of congruent |
| R | means | the total score from the opinions of the experts |
| N | means | the number of experts |

This study's quality of research instruments was presented to the thesis committee for any suggestions for improvement, comments, and recommendations.

The items that scored lower than 0.5 were revised. On the other hand, the items with higher than or equal scores to 0.5 were reserved. The three experts were asked to rate the validity and reliability of the test. Items scoring higher than 0.5 were accepted and those scoring lower than 0.5 were revised.

The validation results showed that the item could be used as a research instrument. Only some comments from the experts on the Online English Reading Fluency test items, on the objectives (APPENDIX F):

*"According to my understanding, the objectives of any tests are aiming to make the students understand why they have to take the tests and what they will get after it. Yet, there is no such statement in both the Pretest and Posttest"*

(Expert A)

And the following of reading fluency in terms of rate and comprehension on a specific level of students:

*"What is the level of the students?"*

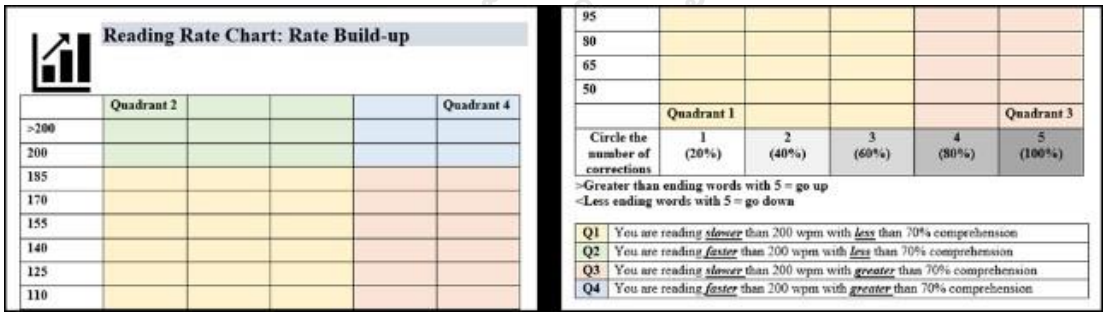
(Expert C)

### 3.3.2 English Reading Fluency Practice

Reading rate chart to record their reading rate. Reading Fluency Practice: Reading Rate Chart measured students' reading rate at 200 words per minute (wpm) with 70% comprehension based on Anderson (2018). The practice for each learning unit consisted of a 200-word passage with five comprehension questions. Students were asked to read a selection three times with one minute per reading each time. After students finished reading the first time, they recorded word counts on the chart.

Then they repeated the same process on their second and third readings. The reading passage and context were relatively based on students' areas in architecture. The pedagogical implications consisted of the following activities: 1) Rate Buildup Reading, and 2) Repeated Reading and Tracking Process. The students were expected to reach level Q4. Item-Objective Congruence Index (IOC) validated another three experts as acceptable (APPENDIX H), indicating that the format was suitable for students to practice reading fluency. The Reading Fluency Practice was pilot-tested before the main study. Figure 3.3 shows Reading Fluency Practice: Reading Rate Chart (APPENDIX B).

**Figure 3.3 Reading Fluency Practice**



**Reading Rate Chart: Rate Build-up**

| | Quadrant 2 | | | | Quadrant 4 |
|---|---|---|---|---|---|
| >200 | | | | | |
| 200 | | | | | |
| 185 | | | | | |
| 170 | | | | | |
| 155 | | | | | |
| 140 | | | | | |
| 125 | | | | | |
| 110 | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 95 | | | | | |
| 80 | | | | | |
| 65 | | | | | |
| 50 | | | | | |
| | Quadrant 1 | | | | Quadrant 3 |
| Circle the number of corrections | 1 (20%) | 2 (40%) | 3 (60%) | 4 (80%) | 5 (100%) |

>Greater than ending words with 5 = go up
<Less ending words with 5 = go down

| | |
|---|---|
| Q1 | You are reading *slower* than 200 wpm with *less* than 70% comprehension |
| Q2 | You are reading *faster* than 200 wpm with *less* than 70% comprehension |
| Q3 | You are reading *slower* than 200 wpm with *greater* than 70% comprehension |
| Q4 | You are reading *faster* than 200 wpm with *greater* than 70% comprehension |

### 3.3.3 Learning Logs

Learning Logs were used to investigate students' uses of Digital Literacies at the end of each unit. Students were encouraged to write down their reflections on the Digital Literacies, such as favorable or unfavorable parts of the Digital Literacies interventions, reasons, perspectives on digital technology used in the learning units, and progress on the Reading Fluency Practice (APPENDIX C).

## 3.4 Research Procedures

### 3.4.1 Digital Literacies Framework

The conceptual framework of Digital Literacies (Pegrum, Dudeney & Hockly, 2018) was adopted for this research study. The purposes were to specify a particular term in Digital Literacies, and there were four areas chosen, Communication (Language) focus, Information, Collaboration, and (Re-) Design based on the four elements in the category. The framework also promoted Disciplinary Learning, three steps in disciplinary learning were also implemented in the instructions, there were three steps involved (Castek & Manderino, 2017): STEP 1: Access and Evaluate Information; STEP 2: Use and Represent Information; STEP 3: Produce and Exchange Information. Also, the conceptual framework of reading fluency (Anderson, 2018) would be adopted, and the purposes were to investigate the use of students' Digital Literacies on English reading fluency concerning rate and comprehension

### 3.4.2 Research Procedures

There were two main phases in research procedures, the first phase was the preparation, and the second was the intervention period on Digital Literacies for English reading fluency. Figure 3.4 shows Research Procedures.

**Figure 3.4 Research Procedures**



**Phase 1: Preparation of Digital Literacies**

| | |
|---|---|
| Step 1.1: | Explore the reading topics in architecture areas |
| Step 1.2: | Study the concepts and related documents |
| Step 1.3: | Design and create Digital Literacies Framework on English Reading Fluency plans and materials |
| Step 1.4: | Verify content validity for the effectiveness of the materials used in the research study by the experts |
| Step 1.5: | Pilot study |
| Step 1.6: | Revise the Digital Literacies on English Reading Fluency plans |

**Phase 2: Intervention of Digital Literacies**

Step 2.1: Pretest
- Administer the Online English Reading Fluency Test

Step 2.2: During the intervention
- Conduction the Digital Literacies Framework for English Reading Fluency

Step 2.3: Posttest
- Administer the Online English Reading Fluency Test

Step 2.4: Evaluate the effectiveness of the instruction
- Compare students' mean scores of pretests and posttest
- Identify the students' uses or the effectiveness of Digital Literacies on English Reading Fluency from the Learning Logs

**Phase 1: Preparation of Digital Literacies**

The preparation of Digital Literacies intervention was carried out in six steps.

*Step 1.1: Explore the reading topics in architecture areas*

To explore the reading topics in architecture areas, first, it was essential to go through the university's curriculum in the Department of Architecture, such as goals and objectives in English Language Proficiency and the required courses that architect students required to take. Then, authentic materials such as online articles, news, or stories matching with the course description.

*Step 1.2: Study the concepts and related documents*

To study the associated concepts and documents, besides the topics for reading to be concerned. Sources from the previous study, such as recommended journals or theses related to the survey last published within five years, were also included. After gathering all the information needed, the next step was to develop a research framework and instructions for the research study. Conceptual frameworks were relevant to the research questions and objectives that needed to be explored.

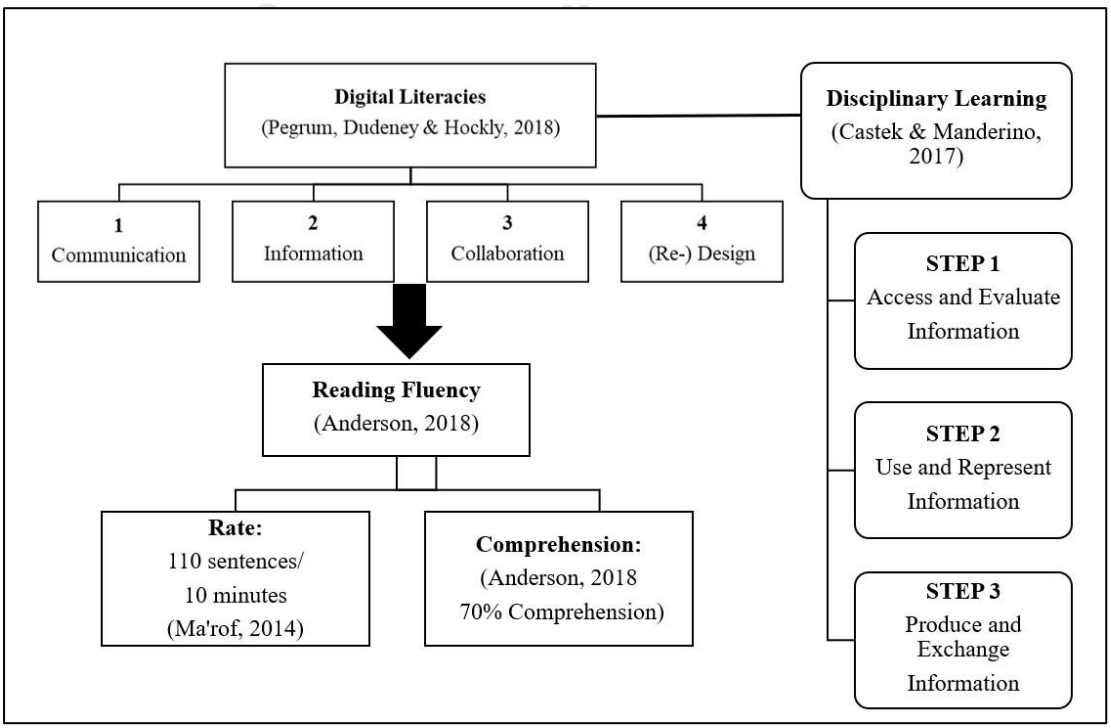
*Step 1.3: Design and create Digital Literacies Framework on English Reading Fluency plans and materials*

Before implementing the Digital Literacies Framework into the lesson, the content and digital tools in learning were explored for Digital Literacies and reading fluency instructions. Digital Literacies Framework (Pegrum, Dudeney, & Hockly, 2018) was used to specify a particular term of the research tools. There were four areas chosen: communication (Language) focus, Information, Collaboration, and (Re-) Design based on the four elements in the category. Then Disciplinary Learning (Castek & Manderino, 2017) was added as a part of the instructions: STEP 1: Access and Evaluate Information; STEP 2: Use and Represent Information; STEP 3: Produce and Exchange Information.

Reading fluency materials such as Online English Fluency Test and instructions for learning units were developed. The test was adopted from Ma'rof's reading comprehension (2014). An Online English Reading Fluency Test consisted of 110 true/ false items with 2,000 words. The conceptual framework from Anderson (2018) on reading fluency was adopted for this study. To test students' English reading fluency in terms of reading rate and reading comprehension. The test was designed to evaluate students' reading rate at 200 words per minute with 70% comprehension. Figure 3.5 presents the proposed Digital Literacies on English Reading Fluency Framework.

**Figure 3.5 Digital Literacies Framework**

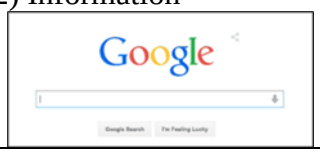




Materials and instructions for the study were also developed for the course. Digital Literacies on English reading fluency instructions would be used as a tool for the activities. There were three learning units concerning the intervention of Digital Literacies on English reading fluency. Unit 1: The Profession of an Architect; Unit 2 Exterior & Interior Features; and Unit 3: Urban Design & Landscape Architecture. Each unit contained four components in Digital Literacies to focus on: Communication; Information; Collaboration; and (Re-) Design,

Disciplinary Learning was also concluded in each unite, but it would be implemented as a part to support Digital Literacies. There were three steps for disciplinary learning, and each step was separated and distributed as a part of each learning unit. For example, Unit 1: The Profession of an Architect; Digital Literacies; and Disciplinary Learning. However, it should be noted that for Disciplinary Learning Steps, instructors were not required to follow a series of steps or teach students in order as well as the components for Digital Literacies activity, any suitable and flexible instructions can be adjusted for the appropriateness of each class, including areas of literacies and technologies used in learning. Table 3.1 shows Digital Literacies plans and instructions (APPENDIX D).

**Table 3.1 Digital Literacies Instructions**

| **Topic** | **Digital Literacies** | | | **Disciplinary Learning** |
|---|---|---|---|---|
| | **Components** | **Areas** | **Technologies** | |
| **Unit 1:** The profession of an Architect<br><br>**Unit 2:** Exterior & Interior Features | 1) Communication   | Multimodal literacy | YouTube.com | **STEP 1:** Access and Evaluate Information<br><br>**STEP 2:** Use and Represent Information |
| | 2) Information   | Information literacy | Google search engine | |
| | 3) Collaboration | Ethical literacy | References of information (at least from | |

| | | | | |
|---|---|---|---|---|
| **Unit 3:** Urban Design & Landscape Architecture |  | | three different sources) | **STEP 3:** Produce and Exchange Information |
| | 4) (Re-) Design   | Critical literacy | Digital/ mobile/ material/ academic literacy | |

- **Disciplinary Learning**

The first of the three aspects in digital and Disciplinary Learning from Castek and Manderio (2017) was introduced in this part. The first step of implementing Disciplinary Learning using Digital Literacies Framework, it was meant to introduce students to STEP 1: Access and Evaluate Information from digital sources.

Students were asked questions related to the activities or content to draw their attention to the topic. This was the first beginning where students could determine which resources offered the most knowledgeable perspectives and whether the information came from the most reliable sources. Figure 3.6 shows the sample of Access and Evaluation.

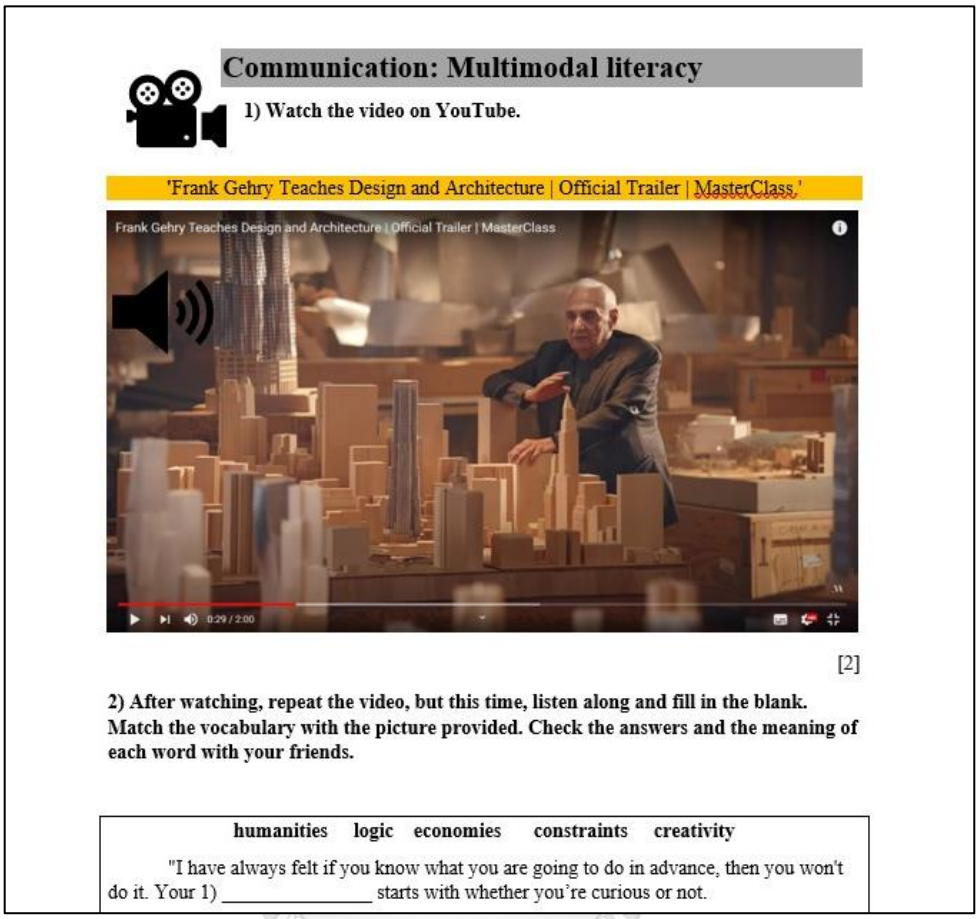
**Figure 3.6 Access and Evaluate Information**


- **Digital Literacies**

Then Digital Literacies from Pegrum, Dudeney & Hockly (2018) consisted of four focuses: Communication; Information; Collaboration; and (Re-)design were used as activities for students' lessons. The second step was Communication (or Language). Multimodal Literacy, a sub-literacy, was used to help students interpret texts in multiple media using images, sound, and video.

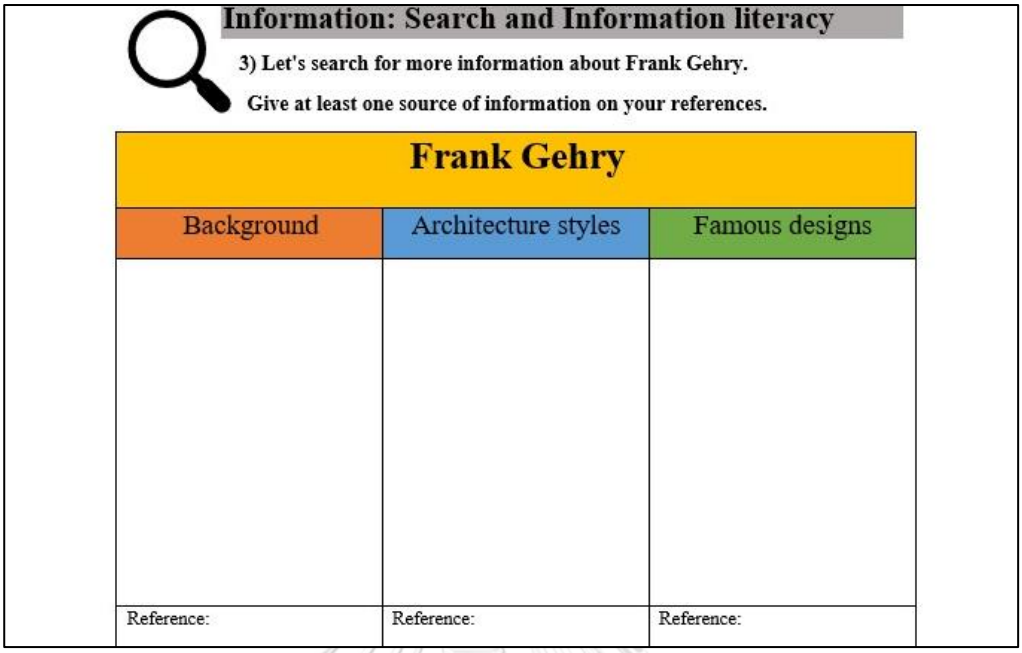
Students watched an online video as a generator of their background knowledge in the context of their academic areas or their English language proficiency. The footage was repeated twice on the first time without subtitles and on the first time without subtitles. Figure 3.7 shows Multimodal literacy for Communication (or Language).

**Figure 3.7 Communication: Multimodal literacy**



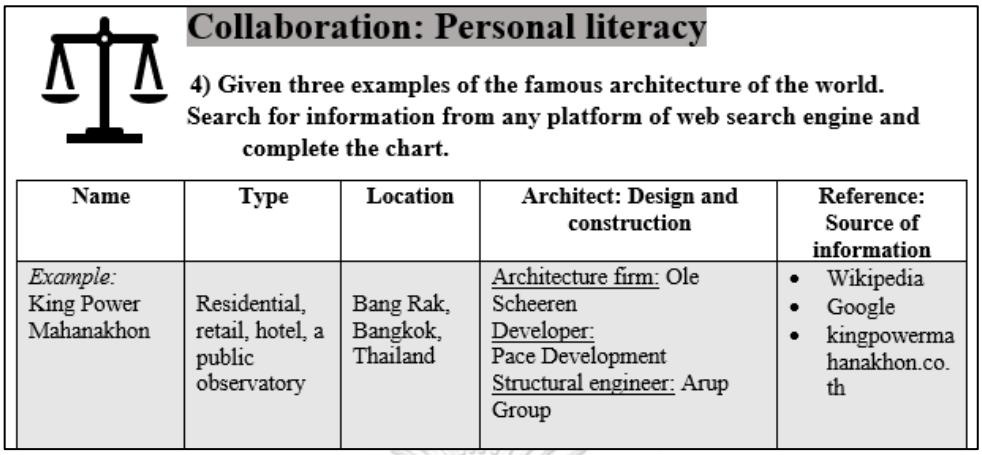

The third step was Information, after watching the video. Students were asked to make effective use of search engines and services to search for the contents or vocabulary they interested online. Students evaluated documents for assessing their credibility through Search and Information literacy. Students should be able to search and access to information in different forms Figure 3.8 shows Search and Information literacy for Information.

**Figure 3.8 Information: Search and Information Literacy**




The fourth step was Collaboration. Students used digital tools to shape and project a desired online identity, Personal literacy (or Security literacy)—also, students connected with relevant networks to communicate with and inform others. Students form a group and made use of Communication and Information to complete the task. Any sources of information they found online, they evaluated students should be able to give references concerning moral and ethics of online sources. Students raised the awareness of digital use, from individual to society. Figure 3.9 shows Personal literacy (or Security literacy) concerning Network literacy for Collaboration.

**Figure 3.9 Collaboration (Personal or Security literacy)**



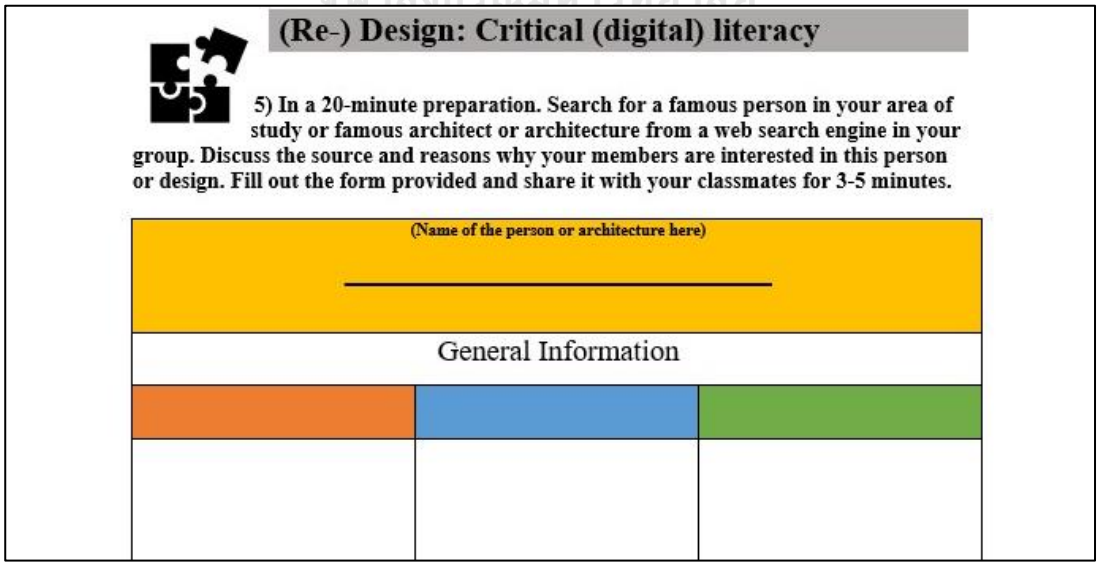
**Collaboration: Personal literacy**

**4) Given three examples of the famous architecture of the world. Search for information from any platform of web search engine and complete the chart.**

| Name | Type | Location | Architect: Design and construction | Reference: Source of information |
|---|---|---|---|---|
| *Example:* King Power Mahanakhon | Residential, retail, hotel, a public observatory | Bang Rak, Bangkok, Thailand | Architecture firm: Ole Scheeren<br>Developer: Pace Development<br>Structural engineer: Arup Group | • Wikipedia<br>• Google<br>• kingpowermahanakhon.co.th |

The fifth step was to (Re-) Design what was learned from the previous three steps. Students involved critical skills developed in Digital Literacies and created their interpretation. Students made connections from Communication, Information, and Collaboration to create presentations. They evaluated information and data to critique the material underrunning for an online environment. Students engaged with academic research into new technologies. Figure 3.10 shows Critical (digital) literacy for (Re-) Design.

**Figure 3.10 (Re-) Design: Critical (digital) Literacy**



**(Re-) Design: Critical (digital) literacy**

**5) In a 20-minute preparation. Search for a famous person in your area of study or famous architect or architecture from a web search engine in your group. Discuss the source and reasons why your members are interested in this person or design. Fill out the form provided and share it with your classmates for 3-5 minutes.**

(Name of the person or architecture here)

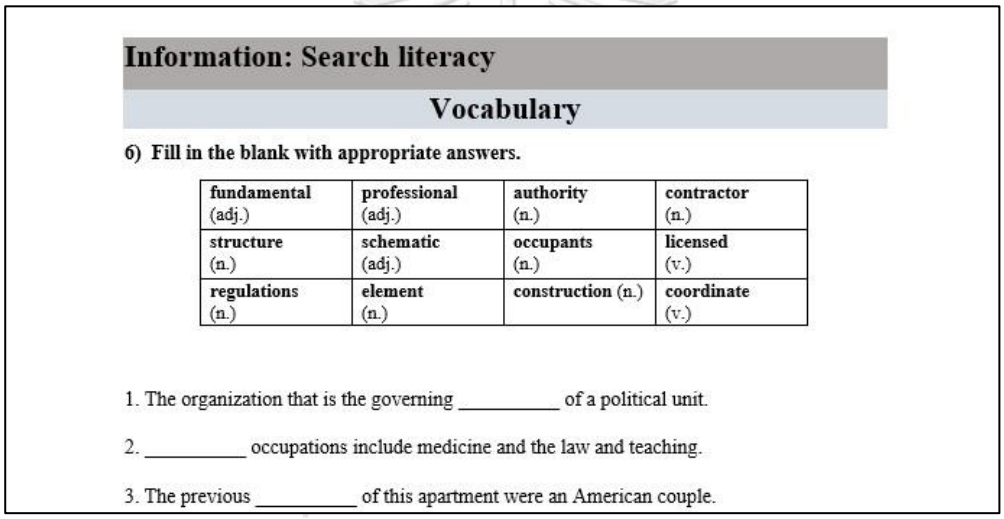
_____

General Information

- **English Reading Fluency: Rate and Comprehension**

After finishing the Digital Literacies instructions in all five steps, the following parts consisted of Reading Fluency Practices and activities based on Anderson (2018), to practice students to be automatic readers of the reading rate at 200 words per minute (wpm) with 70% comprehension. The vocabulary part and reading passage to demonstrate language content was introduced before the actual practice in reading. This part was the Vocabulary focus. Students worked with subject-specific vocabulary about the following reading passage. Figure 3.11 shows Vocabulary activity to search for literacy.

**Figure 3.11 Vocabulary**



**Information: Search literacy**

**Vocabulary**

**6) Fill in the blank with appropriate answers.**

| | | | |
|---|---|---|---|
| **fundamental** (adj.) | **professional** (adj.) | **authority** (n.) | **contractor** (n.) |
| **structure** (n.) | **schematic** (adj.) | **occupants** (n.) | **licensed** (v.) |
| **regulations** (n.) | **element** (n.) | **construction** (n.) | **coordinate** (v.) |

1. The organization that is the governing _____ of a political unit.

2. _____ occupations include medicine and the law and teaching.

3. The previous _____ of this apartment were an American couple.



The purpose of the first reading activity was to make students familiar with the text. The next step consisted of two reading exercises. The first one was a True/ False answer with no time limit. The second part was the Reading Fluency Practice: Rate Build-up Reading, matching vocabulary, and reading comprehension questions. Figure 3.12 shows Reading Comprehension: True/False exercise items.

**Figure 3.12 Reading Comprehension: True/False Exercise Items**

**a1) Check TRUE or FALSE. Correct the incorrect statement.**

| | Statement | TRUE | FALSE |
|---|---|---|---|
| 1 | We evaluate buildings based on how efficiently they serve their specific purposes. | | |
| 2 | Architects are highly trained in the mathematics and science of building design. | | |
| 3 | Architects design buildings, but their job description involves less responsibility than we thought, just the essential design elements. | | |

Then, when students participated in the reading practice, the following steps for developing students' English reading fluency were introduced. Similar to the instruction from the first reading. There were two components of skills included in this step. They were Reading Fluency Practice to build Reading Rate and reading comprehension. Students learned rate build-up reading to improve their fluency. The teachers of the procedures orally explained the instruction on the Reading 2 they would have to follow. Figure 3.13 shows reading instructions for Reading Fluency Practice, Figure 3.14 shows a sample of Reading passage 2, and Figure 3.15 shows a reading comprehension exercise for matching and multiple-choice items.



**Figure 3.13 Reading Instructions for Reading Fluency Practice**

**b) Reading 2: Reading Fluency Practice**

**Instructions:**

1) You need three different colors of your highlighters.

2) You have 60 seconds to read the article on the next page as much as you can.

3) After 60 seconds, or if you finish reading before 60 seconds, mark your timestamp on the passage where you have ended.

4) On your second cycle, you will have to proceed with the process on numbers 2) and 3) until you finish the third cycle.

5) After the end of the reading cycle. Answer the following questions without looking back at the passage (the answers will be given later on).

**Figure 3.14 Sample of Reading Fluency Passage 2**

**What Are the Different Types of Architects?**

[10]

There are several different "architect jobs" under the architect umbrella, and these specialized roles include:

**Design Architect:** Design architects most correspond to the popular notion of an architect. They're responsible for conceiving a project's overall design. They **interpret** a client's needs, analyze the building site and surrounding environment, consider the *(50 words)* budget, and create a structure within these parameters.

**Figure 3.15 Reading Comprehension**

**b1) Match the vocabulary with the correct meaning**

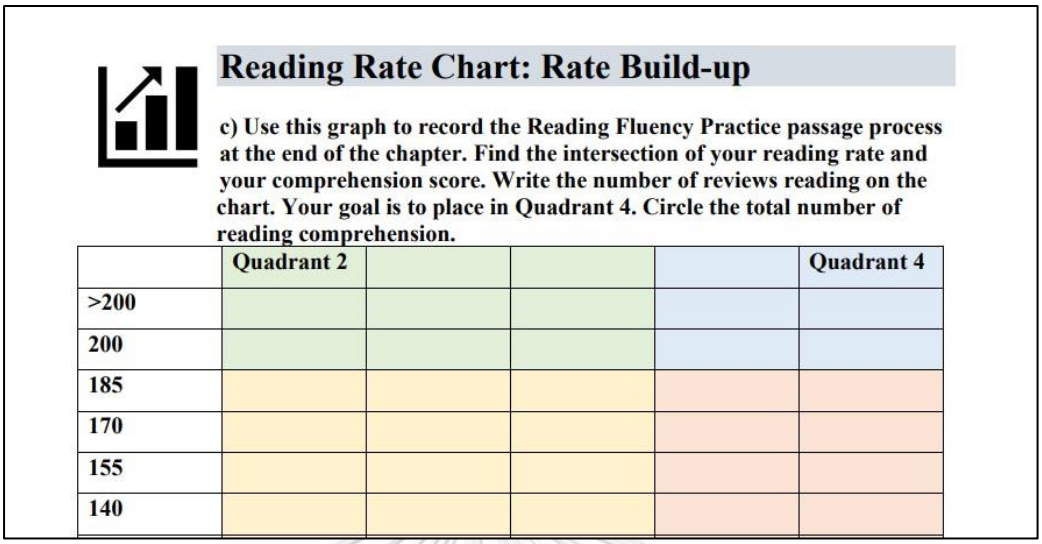
| | | | |
|---|---|---|---|
| **interpret** (v.) | o | o | particular importance, value, or prominence given to something. |
| **essential** (n./adj.) | o | o | explain the meaning of (information, words, or actions). |
| **emphasis** (n.) | o | o | necessary; extremely important. |

**b2) Choose the correct answer.**

| | | |
|---|---|---|
| 1 | What is the possible alternative for **interpret** (line 5)? | |
| | a) | mystify |
| | b) | clarify |
| | c) | distort |
| | d) | obscure |
| | | |
| 2 | These are the alternatives of **essential** (line 10) ***EXCEPT***? | |
| | a) | crucial |
| | b) | fundamental |

Reading Fluency Practice: Reading Rate Chart: or Rate Build-up Reading was then used to track students' reading practices and processes. To increase English Reading Fluency, students were asked to record their reading process according to reading 2. Students engaged in practicing rate-buildup reading and repeated reading. After that, they recorded their results. Figure 3.16 shows Reading Rate Chart to improve students' English Reading Fluency Practice: Rate Build-up.

**Figure 3.16 Reading Fluency Practice**



**Reading Rate Chart: Rate Build-up**

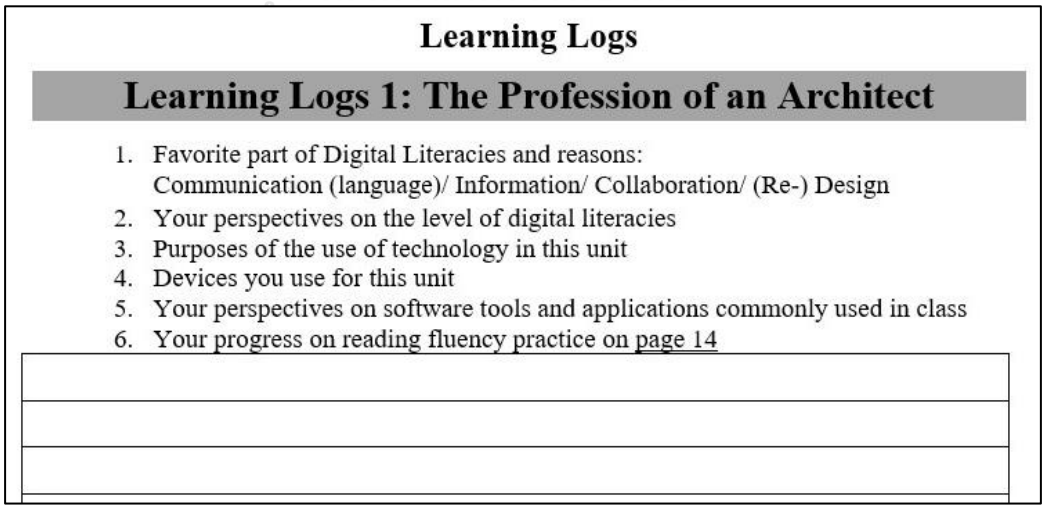
**c) Use this graph to record the Reading Fluency Practice passage process at the end of the chapter. Find the intersection of your reading rate and your comprehension score. Write the number of reviews reading on the chart. Your goal is to place in Quadrant 4. Circle the total number of reading comprehension.**

| | Quadrant 2 | | | | Quadrant 4 |
|---|---|---|---|---|---|
| >200 | | | | | |
| 200 | | | | | |
| 185 | | | | | |
| 170 | | | | | |
| 155 | | | | | |
| 140 | | | | | |

To reflect on the lesson from Unit 1. Students were asked to write down in Learning Logs as a means of facilitating or assessing learning. It helped deepen and personalize the quality of education and assist learners in integrating the material of knowledge. Figure 3.17 shows the samples of Learning Logs leading phrases and questions.

**Figure 3.17 The Samples of Learning Logs**





**Learning Logs**

**Learning Logs 1: The Profession of an Architect**

1. Favorite part of Digital Literacies and reasons:
   Communication (language)/ Information/ Collaboration/ (Re-) Design
2. Your perspectives on the level of digital literacies
3. Purposes of the use of technology in this unit
4. Devices you use for this unit
5. Your perspectives on software tools and applications commonly used in class
6. Your progress on reading fluency practice on page 14

**Lesson plan**

To develop and build Digital Literacies for reading fluency lesson plan and materials, there were three steps for Disciplinary Learning in which each action was learned separately. A Disciplinary Learning Framework of Castek and Manderio (2017) and the Digital Literacies Framework of Pegrum, Dudeney, and Hockly (2018) was adopted and applied to design the instructions and activities in line with the context of the students. The four main components of the Digital Literacies Framework included Communication (or Language), Information, Collaboration, and (Re-) Design.

Lesson plans were developed. Each lesson plan contained learning goals, objectives, language content, evaluation, and instructions and activities, all designed based on Digital Literacies and Disciplinary Learning Framework. The lesson also focused on Reading Fluency: rate and comprehension (APPENDIX E). Table 3.2. shows Scope and Sequence.

**Table 3.2 Scope and Sequence of Digital Literacies**

| Weel | Digital Literacies | Topics | Activities | Vocabulary |
|---|---|---|---|---|
| 1 | Components:<br>• Communication<br>  ○ Multimodal literacy<br>  ○ Print literacy<br>• Information<br>  ○ Search and information literacy<br>• Collaboration<br>  ○ Personal literacy (Security literacy)<br>  ○ Network literacy<br>• (Re-) Design<br>Critical (digital) literacy | Assess and Evaluate Information | • Ss watch YouTube<br>• Ss search for information on web search engine<br>• Ss used an online dictionary<br>• Ss manage to join Facebook to build the network<br>• Ss use their social network properly | construction, constraint, contractor, creativity, economy, humanity, structure, logic |

| Weel | Digital Literacies | Topics | Activities | Vocabulary |
|---|---|---|---|---|
| | | | Ss access and evaluation information for presentation whether it is reliable | |
| 2 | • Information<br>  ○ Search and information literacy<br>• Communication<br>Print literacy | What Is an Architect? Learn What Architects Do | • Ss learn the vocabulary given before reading a)<br>Ss read the article and check True or False for reading comprehension | authority, coordinate, element, fundamental, professional, schematic, occupant, license, regulation |
| | | What Are the Different Types of Architects? | Ss practice Reading Fluency, use Reading rate chart to record their speed reading | emphasis, essential, interpret |

*Step 1.4: Verify content validity for the effectiveness of the materials used in the research study by the experts*

Three experts evaluated the instructional plans to ensure construct and content validity. Three experts validated the Digital Literacies, including Reading Fluency Practices, to examine concepts, objectives, materials, worksheets, and teaching steps. The experts were asked to rate the quality of the instructional plans. The Item-Objective Congruence (IOC) Index was developed in the evaluation process. The Items scoring higher than 0.5 were accepted (APPENDIX G).

*Step 1.5: Pilot study*

To test the research questions' feasibility, a small study test research protocol, data collection instruments, sample recruitment strategies, and other research techniques in preparation for a more extensive study involved using an

example a proposed mechanism for the research study. There were two test items for the pilot study: 1) Online English Reading Fluency Test and 2) Lesson for Unit 1: Profession of an Architect.

1) Online English Reading Fluency Test

From this stage, a minimum of one English class consisting of 54 undergraduate students was recruited as a subject but not the actual participants for the research study. They were asked to do an Online Reading Fluency Test with 110 items at the end of the class for 20 minutes. The results revealed that the average score from the total of 110 items is 54 (N=54). Nineteen students passed the test, which means that they finished the test within 20 minutes. At the same time, the rest of the 35 students failed to answer the correct items.

2) Digital Literacies Instruction for Reading Fluency

Personal and Network literacy, social media part was removed from the lesson in Unit 1. The following instructions were meant to be a means for the instructor and students to communicate and inform others such as Facebook account, Facebook group, and QR code. Initially, it was meant for the students to join Facebook Group instead of using personal communication applications such as Line. However, since the pandemic of Covid-19 re-occurred, the university's policy for students in each course to contact a teacher was changed. As a part of Network literacy, this section was later added up in another part of the learning unit.



*Step 1.6: Revise the Digital Literacies on English Reading Fluency plans*

After retrieving information following a series of steps, the instructions received were analyzed and summarized to the intermediate draft. Any adjustment, development, explanation, specific plan, or revision was made for the next draft.

**Phase 2: Intervention of Digital Literacies**

The intervention of Digital Literacies consists of four main steps.

Week 0: Before the intervention period, this week was when all of the instruments used for this research study were distributed to the experts to verify the effectiveness. This process took place for two days to receive the feedback. Then, if there were any comments to adjust, this was the period of the process to revise the lesson plan and instructions. Then the pilot study was conducted as a small sample whether the process of research study ran according to the schedule. Last, if there were some changes to be made, the study was revised repeatedly.

*Step 2.1: Pretest*

All students were informed as a part of the research, which was approved by the authorities. An Online English Reading Fluency Test was distributed before implementing the Digital Literacies based on the Disciplinary Learning Framework.

*Step 2.2: During the intervention*

The students participated in Digital Literacies and English Reading Fluency Practices for ten weeks. The lessons were divided into three units: Profession of an Architect, Interior Design, and Urban Design and Landscape Architecture. At the end of each unit, Learning Logs were collected. On the last week of the intervention, students took an Online English Reading Fluency Test.



At the end of each unit, to gain an insight into students' uses of Digital Literacies on English reading fluency, students were encouraged to write and reflect on their thoughts in Learning Logs. The findings from students Learning Logs could reveal their views, opinions, comments, or suggestions according to the instructions and practice. There were some leading questions in the contents of Digital Literacies and Reading Fluency Practice.

*Step 2.3: Posttest*

All data from quantitative and qualitative sources were analyzed. Quantitative data from students' Online English Reading Fluency were analyzed and compared by using pair sample *t*-test on an Online Reading Fluency Pretest-Posttest. Qualitative data from students' Learning Logs were collected. Gathered information and prepared to report the results from the data collection and analysis.

*Step 2.4: Evaluate the effectiveness of the instruction*

To evaluate the instruction effectiveness, the pretest and posttest scores from Online English Reading Fluency Test were statistically analyzed by Mean scores, Standard Deviation (S.D.), and pair sample t-test to compare the differences. The data were used to determine whether Digital Literacies intervention on English Reading Fluency Framework could enhance undergraduate students reading fluency in rate and comprehension. Moreover, Learning Logs evaluated students' effectiveness in applying what they learn into their technological interpretation.

### 3.5 Data Collection

The Online English Reading Test was administered as a pretest to assess students' English Reading Fluency on reading rate and comprehension. Before the interventions, students received an overview of the course. The content of each unit and classroom practice were also explained. They participated in the Digital Literacies intervention with three units for ten weeks. At the end of each unit, students recorded their reading practice rate on the Reading Rate Chart. At the end of the intervention, the Online English Reading Test was administered as a posttest to compare the students' reading fluency results. In addition to the end of each unit, Learning Logs were distributed. Learning Logs were collected and used to analyze their Digital Literacies. Table 3.3 shows the summary of data collection.



**Table 3.3 Summary of Data Collection**

| | | |
|---|---|---|
| Before the intervention of English Reading Literacies Instruction on Reading Fluency using Digital Literacies Framework | • Explore the reading topics in architecture areas<br>• Study the concepts and related documents<br>• Design and create Digital Literacies instruction on reading fluency plans and materials<br>• Verify content validity for the effectiveness of the materials used in the research study by the experts<br>• Pilot study on Online English Reading Fluency Test and Sample of Unit 1<br>• Revise the Digital Literacies on Reading Fluency instruction plans | |
| | Week 1 | Course Introduction |

| | | |
|---|---|---|
| During the intervention of English Reading Literacies instruction on Reading Fluency using Digital Literacies Framework | Week 2-9 | • Administer the Online English Reading Fluency Test (Pretest)<br>• Conduction the Digital Literacies based on Disciplinary Learning Framework<br>• English Reading Fluency practices (Reading rate and comprehension)<br>• Learning Logs |
| After the intervention of English Reading Literacies instruction on Reading Fluency using Digital Literacies Framework | Week 10 | • Administer the Online English Reading Fluency Test<br>• Evaluate the effectiveness of the instruction<br>• Compare students' mean scores of pretest and posttest<br>• Identify the students' uses of Digital Literacies from Learning Logs |

### 3.6 Data Analysis

**Research Question 1: What are the effects of Digital Literacies on reading fluency?**

Research question 1 of the study dealt with the impact of Digital Literacies intervention on reading fluency: reading rate and reading comprehension. This study used an Online Reading Fluency Pretest and Posttest to measure the reading rate and reading comprehension. To acquire the data for the first research question. The pair sample *t*-test was used to compare a significant difference between the means of the findings, which may be related to certain features.

According to the study's hypothesis, the pretest and posttest scores of Online English Reading Fluency were expected to be higher than the pretest score at 0.05 statistically significant levels. The pretest and posttest scores showed the improvement of students' reading fluency. Mean scores, S.D., and Pair samples *t*-test were used. The data contained from the analysis showed a statistically significant improvement in the students' English reading fluency.

Follow by the chart analysis for Reading Fluency Practice from three chapters, and the independent variable would be placed on the Digital Literacies and the dependent variable on the reading fluency, reading rate, and comprehension.

**Research Question 2: What are the uses of undergraduate students' Digital Literacies?**

To acquire data for the second research question, students' Learning Logs were collected and analyzed using coding analysis to reveal students' uses of Digital Literacies and other themes that emerged. Also, as time allocation with the participants' total, the purposive sampling was used as a criterion to select students' learning logs from the second unit. Students with the highest and lowest Online English Reading Fluency posttest scores in the range of 10% were chosen to represent the whole group towards their views for Digital Literacies on English reading fluency instructions. Table 3.4 shows the summary of Research Questions, Research Instruments, and Data Analysis.

**Table 3.4 Summary of Research Procedures**

| Research Questions | Research Instruments | | Data analysis | |
|---|---|---|---|---|
| **Research Question 1:** What are the effects of Digital Literacies on undergraduate students' reading rate? | 1) Online Reading Fluency Test (Pretest-Posttest) | | Descriptive statistics<br><br>Pair samples t-test | N=60 |
| | 1.1) Rate | 20 minutes/ 110 items/ 2,000 words | | |
| | 1.2) Comprehension | 70% Comprehension | | |
| **Research Question 2:** What are the uses of undergraduate students' Digital Literacies? | 2) Reading Fluency Practice: Reading Rate Chart | | Charts<br><br>Descriptive statistics | N=60 Comparing data Unit 1 Unit 2 and Unit 3 |
| | 3) Learning logs | | Coding analysis | 10% of students with the highest and lowest scores on the posttest |

# CHAPTER
# IV RESULTS

This chapter reveals the findings of the data obtained from the intervention of Digital Literacies on undergraduate students' English reading fluency. The dependent variable of this research study was reading fluency in terms of rate and comprehension, while the independent variable of this research study was Digital Literacies. The quantitative data was obtained from Online English Fluency Tests (pretest and posttest) scores, while the quantitative data was received from students' Learning Logs were analyzed through the coding analysis. Students' Reading Fluency Practice: Rating Rate Chart should be the indicator to support the effects of Digital Literacies on English reading fluency. Both data sets were analyzed and presented in the framework of the two main research questions described below.

## 4.1 Results of Research Question 1

**Research Question 1: What are the effects of Digital Literacies on undergraduate students' reading fluency?**

4.1.1 What are the effects of Digital Literacies on undergraduate students' reading rate?

4.1.2 What are the effects of Digital Literacies on undergraduate students' reading comprehension



The study examined the effects of Digital Literacies on undergraduate students' reading fluency concerning reading rate and comprehension. The paired sample *t*-test was used to analyze the results of this research study in descriptive statistics whether the mean difference between two sets of information. According to the Cohen's d scale of magnitudes of a correlation (Cohen, 1988), the value of d was represented as follows:

d = 0.2 (a small effect)

d = 0.5 (a medium effect)

d = 0.8 (a large effect)

The teacher collected the results of students' English reading fluency in reading rate and reading comprehension from an online test generator called 'Flexiquiz.' The reports were downloaded in an excel file. All data and scores collected were reported in a summary file where individuals provided the view answers. The results also showed significant data, such as students' duration (20 minutes) and the number of correct points (110 test items).

**4.1.1 Reading Rate**

The pretest and posttest scores reveal that students made a significant improvement ($t$ (59) = 5.58, $p<0.05$) with a medium effect size of .71 (d = .71) on their reading rate after ten weeks of the intervention.

Table 4.1 shows students reading rates. Within the given 20 minutes for the test, the students' pretest mean scores on reading rate were 19.15 (1.20), while the post-test mean scores on reading rate were 17.33 (2.82). The results indicated that students spent less time given on the pretest and posttest from students' mean scores. Students made a significant improvement on their reading rate after the intervention of Digital Literacies on English reading fluency in terms of reading rate.

**Table 4.1 Reading Rate**

| Variable | M | SD | Min | Max | *t*-test | df | Sig. | d |
|---|---|---|---|---|---|---|---|---|
| Pre-test | 19.15 | 1.20 | 12.2 | 18.08 | 5.58 | 59 | .000 | .71 |
| Post-test | 17.33 | 2.82 | 8.4 | 17.23 | | | | |

*Note: N = 60*

**4.1.2 Reading Comprehension**

The second part focuses on the effects of Digital Literacies on undergraduate students' reading comprehension. The results from students' Online English Reading Fluency Test from the pretest and posttest scores reveal that students made a significant improvement (t (59) = t-3.11, $p<0.05$) with a small effect size of .40 (d = .40) on their reading comprehension after ten weeks of the intervention.

Table 4.2 shows students' reading comprehension. From 110 test items, the students' pretest mean scores on reading comprehension was 63.78 (17.03),

while the posttest means score on students' reading comprehension was 72.76 (14.71). The results indicated that the mean scores on students' reading comprehension increased. The students significantly improved reading comprehension after the intervention of Digital Literacies on English Reading Fluency in terms of Reading Comprehension. However, students' mean scores on the posttest were expected at 77 correct test items to reach 70% of reading comprehension

**Table 4.2 Reading Comprehension**

| Variable | M | SD | Min | Max | *t*-test | df | Sig. | d |
|---|---|---|---|---|---|---|---|---|
| Pre-test | 63.78 | 17.03 | 26 | 96 | *t*-3.11 | 59 | .003* | .40 |
| Post-test | 72.76 | 14.71 | 27 | 98 | | | | |

Note: N = 60

In addition, to calculate pretest and posttest overall mean scores, the test was discussed in two aspects of reading comprehension (lexical quality and prior knowledge and working memory). However, these two reading comprehension aspects were used to develop the English Fluency Test, but the data collection in these parts was not used as part of data analysis.



Overall, these results indicated that undergraduate students' reading fluency in reading rate and reading comprehension increased significantly. The intervention of Digital Literacies on students' English reading fluency showed a significant improvement in English reading rate and reading comprehension at the posttest after the ten weeks of the course).

### 4.2 Results of Research Question 2

**Research Question 2: What are the uses of undergraduate students' Digital Literacies?**

To answer the question of students' uses of Digital Literacies. Having the opportunity to practice reading through an online platform offered students to see their progress on reading fluency. Apart from understanding how students related

Digital Literacies to reading fluency, they reflected their reading abilities, such as reading strategies and styles developed during the class. As a result, students picked up what they practiced on Reading Fluency Practice: Rate Buildup Reading and reported in Learning Logs.

**4.2.1. Reading Fluency: Rate Buildup Reading**

Rate buildup reading affected a student's reading fluency since the students defined reading as a process that involves collecting as much information from the text as possible and reading the passages more than once reflected on how they interpreted information.

The less vocabulary size or lexical quality was reported as the obstacle in reading fluency. In addition, it was revealed from a student with the lowest scores on the posttest scores that vocabulary size impacted their ability to read and understand the reading passage. That also reflected on the reading rate to the main idea of the reading passage deeply. When a student repeated the process on the second and third cycle of timed-reading, the student tended to adjust the reading instead of focusing on the vocabulary that they did not know. As a result, the student could read faster and understand the whole concept of the reading rather than focus on the unfamiliar language.

*"On the first and second reading, I tried to read and collect the information as much as possible. Also, I am not that familiar with the vocabulary, so it made me read quite slow, and it took time to catch the concept of the article. But when I read it the third time because I had read it before, I started to read faster."*

(Student #L2: Unit 2: Interior Design)

Table 4.3 shows the summary of data collected on their Reading Fluency Practice. The data were then analyzed for the mean scores. The average words per minute (wpm) for reading in Unit 1 were 114, 147, and 176 words per minute, respectively. The average number of correct items from reading comprehension questions was three out of the total five. Students' reading fluency was at the average of Q2. It showed that students read faster than 200 words per minute with less than 70% comprehension. Students gradually increased English reading fluency with the less appropriate level of cognition overtime during the intervention.

**Table 4.3 Rate Buildup Reading: Reading Rate Chart**

| | Words per minute (wpm) | | | Number of correct items (5 questions) | Quadrant |
|---|---|---|---|---|---|
| | 1st | 2nd | 3rd | | |
| Unit 1 | 114 | 147 | 176 | 3 | Q2 |
| Unit 2 | 141 | 173 | 188 | 3 | Q3 |
| Unit 3 | 144 | 168 | 194 | 4 | Q4 |

*Note: N = 60*

However, some themes emerged concerning reading fluency, apart from the revealing in students' reading rate and reading comprehension. Students' Learning Logs' findings revealed that developing English reading fluency, reading strategy, and reading style played a significant role apart from searching online information that required students to read through and evaluate the sources they obtained.

**1) Reading Rate and Reading Comprehension**

For a student with a high level of reading fluency, making competition between the text made them feel involved and engaged. It was a part where they could keep track of how fast they were reading. Since the terms used to express how 'fast' they could read, such as 'speed,' the interpretation of the terms 'rate' and 'speed' gave the student a different perspective in reading the passage.

Reading speed at the appropriate rate had an impact on students' reading comprehension. The student had an opportunity to explore their reading ability which was reflected in their reading fluency. To improve reading comprehension, the critical term to grasp the whole meaning of the content must be practiced carefully. When the students reported that they could compete with time allocation to make an assumption even, they must read profoundly and throughout. It was reported that improving reading fluency required time to absorb information to make predictions precisely.

*"I like speed reading and answer the questions. This activity has made me see myself clearer on the point where I was not well-aware of reading. I could indeed read fast, but I made a wrong assumption, some items I did not read through the whole statement. This has shown me how I should improve my reading fluency…."*

(Student #H1: Unit 1: Profession of an Architect)

**2) Reading Style**

One of the findings that the student stated specifically apart from having a more comprehensive knowledge of vocabulary. Reading style to acquire the main structure of the passage and create an awareness of reading fluency. Skimming reading style was reported as one of the reading 'progress' to improve reading fluency. Reading 'style' and 'skill' were brought up to the topic to develop reading fluency. Having those two terms helped improve the student's central idea of the reading.

*"My reading progress slightly improved. The word choice of each paragraph is basic and not hard to read. But I think the skill that I need to improve on is skimming style reading that can grasp the main structure of the passage, which I didn't do well."*

(Student #H2: Unit 2 Interior Design)

**4.2.2 Digital Literacies**

Students' Learning Logs were analyzed to explain how students used Digital Literacies in terms of Communication, Information, Collaboration, and (Re-) Design on their reading fluency. Reading Fluency Practice: Reading Rate Chart was also the part where students could record their progress on their reading fluency. Students were encouraged to write their Learning Logs and were free to choose whether to record their reflections in Thai or English.

Coding analysis was used to define the data to index the text to establish a framework of thematic ideas (Gibbs, 2018). The results collected from students Learning Logs revealed the uses and effects of Digital Literacies in several aspects.

Before reporting the findings of Digital Literacies components, the Digital Literacies itself as a term was written in a student's Learning Log. It revealed that Digital Literacies was a part of successful online classes and was considered one

of the best choices for learning. The uses of four components in Digital Literacies such as Communication, Information, Collaboration, and (Re-) Design, allowed a student to acquire skills needed for learning in contexts.

*"Online classes make Digital Literacies a good choice for learning…."*

(Student #H3: Urban Design and Landscape Architecture)

To investigate the uses of Digital Literacies, a basic understanding of technological tools also needed to be addressed. Most students have personal computers, laptops, and tablets to support their learning environment. The findings from students' Learning Logs revealed the digital devices for their online learning platform.

*"In this online class, I use my personal computer along with my tablet for writing down answers from exercise..."*

(Student #L1: Profession of an Architect)

**1) Communication (Language)**

Communication or Language was the first part as the 'gate' to improvise students' contents in Digital Literacies. To stimulate students' language skills and background knowledge had a significant impact on students and the level of exposure to the content learning. They provided authentic learning content for students reflected on students' background knowledge of a particular area of education.



For a student with the lowest range scores on the posttest, it was reported that the student preferred Communication since the student could use online learning sources through multimedia, watching online clips, for example, which helped the student gain listening skills, comprehension, reading, and writing. Also, the use of the Communication component offered the student to improve essential skills needed for learning English.

*"I felt communication reflects the task that I have been learning because I have watched content I have never seen before, and it has helped me to practice English essential skills needed…."*

(Student #L1: Profession of an Architect)

In addition, the study revealed another aspect from another student that the Communication in Digital Literacies engaged in learning the English language. The findings also revealed that the use of multimedia involved memorizing graphics, such as watching online clips, which helped the student be more engaged in communication in English. They had a set of examples to generate ideas, especially getting more attention when communicating with friends over the concepts from the media offered.

*"I like communication because I get to practice the English language through memorizing graphics from watching the video…."*

(Student #L3: Urban Design and Landscape Architecture)

The findings also revealed having the opportunity to 'practice,' even though students were not yet required to work in pairs or share ideas in a group in the Communication part. The more students received sufficient and meaningful input, the more willing they were to expose themselves from their comfort zone.

**2) Information**

The use of Information to help the student access the target resources according to what they need impacted students' choices to choose the keywords to gain in-depth information.

Searching for information required a lot of reading to select an appropriate amount of data. Reading for details in Digital Literacies was seen as a selection of keeping the information updated in society. Students must be able to interpret the message conveyed to the audience.



*"We need to read and interprets a lot of information around the world to keep in pace with others in the society."*

(Student #L2: Urban Design and Landscape Architecture)

It was essential to deal with activities involving searching for information and interpreting data through reading since they played vital roles as primary factors in making references from sources. Using keywords helped make the searching faster for the student.

*"The purposes of using technology in this unit helped me develop skills in searching for information and/by using keywords…."*

(Student #L1: Profession of an Architect)

Online searching tools offered much potential in terms of time-saving in the limited time allocation. The advantages of using searching tools made convenient means of a platform for the information needed within a short time frame, depending on the circumstances. However, the student finally concluded that print-based/ paper-based texts offered the student's opportunity to acquire more in-depth sources. Exposure to reading sources traditionally encouraged students to read better and gain in-depth information through reading. Reading paper-based text allowed the student to interpret and evaluate the sources of learning in more meaningful.

*"Using search tools on the Internet has advantages in terms of time-saving and gaining information more broadly, and as secondary data….*

*...However, in my opinion, I prefer print-based text reading because you can read more in-depth information …."*

(Student #L1: Profession of an Architect)

**3) Collaboration**

The findings on the Collaboration revealed students' opinions from various perspectives. Most of the students with the highest and lowest scores agreed that Collaboration as a learning tool or as an activity task had offered the opportunity for them to work collaboratively in groups with friends. Students were more active in sharing, speak up, and exchange ideas.

A finding related to the Digital Literacies framework was revealed in this part, as a collaboration was gathering information and considered in ethical concerns. In students ' mindsets, giving references to credible sources was a primary task. They should evaluate the information before using the information they interpret for their personal use.

*"Reference of information is the prime factor of creditability. I've learned that everything we speak, write or share needed to have a primal source; otherwise, the data will easily be interpreted by oneself."*

(Student #L3: Urban Design and Landscape Architecture)

It did not matter whether online or onsite platforms allowed the students to exchange ideas with friends, as long as they could access the digital connection. Since the study was conducted in an online learning environment, online platforms allowed students to work in groups with friends played a significant role in

the Collaboration. It could not be denied that working in Collaboration required students to access digital tools that were convenient for students to brainstorm ideas. The use of an online platform or domain encouraged students to participate.

*"I like working in collaboration with friends. It seems to me like we still can exchange ideas, even if we are at different places/locations…."*

(Student #L2: Interior Design)

*"I have a greater preference for implementing an online domain for learning by collaboration and working in groups…."*

(Student #L3: Urban Design and Landscape Architecture)

**4) (Re-) Design**

(Re-) Design was a part where the student was encouraged to create the projects from personal and group interpretation. The student received sufficient time to use Communication, Information, and Collaboration by creating a sense of applying Digital Literacies in the activities.

The findings from a student's Learning Logs revealed that (Re-) Design was an enjoyable part of learning since the student had a chance to work in a group and create a presentation. Also, the activity provoked critical thinking skills in English and allowed the student to practice speaking skills and be more vital to the items used in digital platforms. Students watch an online clip about interior design, designing a room, they gathered ideas for creating their mini-presentation based on knowledge from Communication and Information



*"My favorite part is the Re-design part because it's delightful to work with friends. The assignment allows us to express our ideas outside of the boundaries…."*

(Student #H2: Interior Design)

In conclusion, most participants had a significant improvement in the posttest Online English Reading Fluency. The data were analyzed and presented in descriptive statistics. The means scores of the reading rate and comprehension had a significant improvement. Along with the intervention, Digital Literacies on English reading fluency instructions and activities were delivered to practice reading online. The findings from students' English Reading Fluency Practice revealed an improvement throughout the course. However, the results of reading comprehension needed to be

addressed. The posttest mean scores indicated that the students could not reach the goal expected for reading comprehension with 70%.

The findings also indicated the students' uses of Digital Literacies in all four components. Moreover, students' expression through Reading Fluency Practice was revealed apart from their reading fluency in rate and comprehension. The repeating reading activity was stated in students' Learning Logs. Also, the reading style to engage the potential in reading was revealed. Thus, the most challenging part for the students' lowest learning score was the vocabulary size to help them understand the main ideas or the sentences in the reading passages.

### 4.3 Chapter Summary

This section summarized the results of both research questions.

The first question aimed to examine the effects of Digital Literacies on undergraduate students' reading fluency. The dependent variable was English reading fluency in terms of reading rate and comprehension. The results indicated a significant improvement in both rate and comprehension. However, the mean scores of reaching the expected awareness were not achieved.

The second research question aimed to investigate the undergraduate students' uses of Digital Literacies. The independent variable was Digital Literacies. The results from students' Learning Logs revealed the usefulness of Digital Literacies in four components. Moreover, it showed the progress of students' reading fluency apart from improvement in rate and comprehension. The style, strategy, and skills to engage reading were reported Digital Literacies on reading fluency.

# CHAPTER V
# DISCUSSION AND CONCLUSION

The final chapter demonstrates the current study in five parts. The first part begins with a summary of the research findings. The second part devotes a discussion of the study. The third part shows the limitations of the study. The fourth part suggests pedagogical implications. The fifth part provides recommendations for future research.

## 5.1 Summary of the Research Findings

The primary purpose of this research study was to examine the effects of Digital Literacies on English reading fluency with undergraduate students. Materials were developed and used as instructions and activities. As well as to understand their uses of Digital Literacies. The participants of this research study were third-year students (N = 60) who participated in the English for Professional Presentation Course. They were from the Faculty of Architecture in a public university. The study's findings could be sum up into two significant aspects: The effect of Digital Literacies on reading fluency and the uses of Digital Literacies.

### 5.1.1 Reading Fluency

The findings on the dependent variable of reading fluency in terms of rate and comprehension were revealed. Students were able to complete the tests within the given time with the number of word counts from 110 True/ False test items consisting of 2,000 word counts with 20 minutes given time. The data obtained from the test scores showed that the overall posttest scores in Online English Reading Fluency Test were increased over time.

A piece of evidence to support the improvement was Reading Fluency Practices from learning units, and it showed the progress of their Reading Fluency. Students were expected to read at the rate of 200 words per minute with 70% comprehension.

However, to elaborate in the reading comprehension expected goal part, to acquire the expected at 70% of comprehension compared to the 110 test items,

students were expected to purchase the number of correct items at 77. The posttest mean scores reveal that it was at 72.76 correct items in the test. Another support of the summary was how students showed their reading fluency in their Learning Logs since the online classroom allowed them to expose the text in a digital file to print/ paper-based. The findings revealed that students' reading fluency progress when practicing reading. The vocabulary size, along with reading style, played a significant role in their reading.

**5.1.2 Digital Literacies**

The finding on the independent variable of the uses of Digital Literacies was revealed. Students had their digital devices as a tool forming, such as personal computers, laptops, tablets, or iPads. The uses or perceptions they had for Digital Literacies in four components were as follows:

**1) Communication (or Language)**

The uses of online multimedia platforms such as online video clips offered students the opportunity to memorize the content through the graphic. Students tended to be more interested in getting their attention. The communication part could be considered the gateway for students to generate what they perceived related to their language uses and background knowledge of the contents.

**2) Information**

Students used online searching platforms to gain information. Choosing the right keyword helped find the info online more accessible and faster. It was revealed from the quantitative data collection and analysis that Information required reading in basic. Reading was considered a primary factor in interpreting the data to search for suitable sources to match their needed contents. However, to gain in-depth information, paper-based text was preferable for a better process in reading.

**3) Collaboration**

Working and sharing ideas from what they found online was the use of Collaboration. Ethical concerns for the credibility of sources had been brought up in the results. Students were concerned and made aware of the originals, such as being careful to the authorities of information they found online for the projects. This part allowed students to work in groups with friends. They felt confident. Working in collaboration encouraged students to speak up in terms of sharing ideas with their

friends. They were willing to share what they found online in the activities provided. The use of knowledge in Communication played a part as a piece of backup information for students to do more research through what they were expected to share in the online classroom. Using keywords or searching for information such as search engines allowed students to make critical points of the reliability of sources they observed.

**4) (Re-) Design**

After going through the first three steps in Digital, Literacies, Communication, Information, and Collaboration. Students were expected to think in discipline and manage the new projects or presentations they created. Students were expected to use their critical ideas to evaluate the sources of information used as references for their projects. Students had the opportunity to interpret the sources they obtained. Students develop their academic research with digital tools by connecting to the field of study in a meaningful presentation.

## 5.2 Discussion

The results of the findings were concerned with the undergraduate students' Digital Literacies on English reading fluency. The discussion was divided into two main parts. The first part was the dependent variable which was English reading fluency in reading rate and comprehension. The second part was the independent variable which was the uses of Digital Literacies, and the components included Communication, Information. Collaboration, and (Re-) Design. The effects of those two variables should be addressed in this research discussion.

### 5.2.1 Reading Fluency

The study investigated the effects of Digital Literacies intervention of Reading Fluency in terms of the reading rate and reading comprehension. Anderson (2018) suggested that, for adult L2 readers who were studying in Higher Education, such as a college or university, 200 words per minute (wpm) with 70% comprehension was the expected level. As Anderson stated, to be a fluent reader, readers should read at an appropriate rate with adequate comprehension, depending on individual characteristics and the purpose of reading. Although, Grabe and Stoller (2020b) stated that for L1 fluent readers, the appropriate reading rate should be at 240

to 300 words per minute depending on the reading purpose. However, the significant issues for reading fluency based on Grabe (2010), in the role of the academic setting in university contexts, students' reading fluency could be explained through reasonable comprehension but limited fluency, as some students with a low level of reading fluency could read at 80-120 words per minute. The critical point was developing reading fluency materials for students to read with comprehension even if students read slowly should be demonstrated.

Understanding how language learners develop their reading fluency required us to explore the deep root of L1 reading. The point to understand the difference between reading in the first or second language should be made. According to Grabe (2014), those factors included awareness, motivation to read, amount of print exposure, types of text used, and cultural knowledge background. The last element in having deepened cultural knowledge played an essential part in this research study as the reading practices were similar to students' characteristics in the field of study. The more students felt they read in the contents they were interested in, the more students embraced the difficulties in their cultural assumptions.

**1) Reading Rate**

As adopted from Ma'rof's framework in 2014, the reading fluency test was developed based on lexical quality and background knowledge. However, data collection in a vocabulary test or evaluation of lexical access was not collected based on the framework. The time allocation and test items were adjusted for the appropriate and adequate comprehension, according to Anderson (2018). The results from the finding revealed a significant improvement in students reading fluency.



The goal of the reading rate was not to promote speed-reading but rather to address an appropriate rate willingly (Zwick, 2018). However, the findings from students' Learning Logs revealed that they struggled to balance reading rate and reading comprehension. This topic will be discussed on reading rate first since it was a part of students' reading fluency, yet little research had rarely paid attention to this factor. To check students' progress in reading fluency in terms of reading rate practice, for the reading practice part, Rate Buildup Reading (Anderson, 2018) helped students to focus on their silent reading fluency goal as the pattern repeated until the third cycle, after the end of reading cycle, students checked their comprehension.

However, according to Tortorelli (2019), readers should have had developed reading ability when they started reading at an early age to increase reading speed. The automaticity in word recognition should have come first and then the reading speed. Moreover, repeated reading appeared to encourage students on their reading strategies (Ari, 2015). Students' Reading Fluency Practices from three learning units revealed an increasing reading rate over ten weeks. Therefore, this practice could not be considered promising that they could perform well on their reading test, which required longer and more sophisticated reading than reading passages in preparation.

Online English Reading Fluency tests revealed a significant increase in the students' reading rate. Students were expected to complete the Online Reading Fluency Tests within a 20-minute time allocation. However, there was one characteristic that the reader should understand about the reading rate. Having the test administered in English apart from a native language must be considered further because the number of words read per minute would be different, depending on the learning contexts of each country. This also counted for silent reading fluency, making the words per minute counts increase or decrease. When students read with comprehension, their reading rate should be the leading indicator of their reading ability (Hiebert & Daniel, 2018).

**2) Reading Comprehension**



Reading comprehension seemed to be the most common part that was easily accessed and discussed through research studies. The discussion on reading comprehension would be divided into two parts. The first one would be the relationship between reading comprehension and Digital Literacies revealed from Learning Logs, and the second point would be the clarification on reading comprehension for a fluent reader on English Reading Fluency Tests.

First, students' Learning Log findings revealed that reading strategies played a crucial part in reading comprehension. One way to promote students' reading comprehension could be to recognize different reading practices beyond boundaries in web search engines such as Google or Wikipedia. Evaluating their sources from online information helped increase students applying new critical strategies in the target language (Gilbert, 2017). Knowledge of vocabulary size had an impact on

students' reading comprehension. As stated by scholars cited in Grabe and Stoller (2020b), an advanced L2 reading level requires an L2 recognition vocabulary level of above 10,000 words. However, the benchmark for L2 reading level of at least 2,000 frequent words has been debatable until now. It was acceptable that reading comprehension required skills and strategies, as the skills involved linguistic knowledge such as vocabulary or parts of speech. In contrast, strategies were seen as the upgraded version of reading ability that students used to control their level of reading (Grabe & Stoller, 2020b).

Second, the Online Reading Fluency pretest and posttest scores showed a significant number of improvements. However, most of the students failed to reach the expected 70% of reading comprehension. The total mean score was 73 correct items out of 110 items. Therefore, the condition of reading fluency in English could vary according to each student's exposure to the native English speaker. As the critical point could be supported by Altay and Altay (2021) revealed that there was no significant impact of online reading tasks and reading strategies on L2 learners' reading tests and scores. According to Neebe (2017), using example videos significantly affected students' analytical reading comprehension tests (Neebe, 2017). However, Jiang (2016) states that various background knowledge was a significant predictor of English reading comprehension. For example, Chinese and Japanese with L1 backgrounds were reported that prosody such as the rhythm, stress, and intonation of speech was a significant indicator for reading comprehension, but that was the findings from oral reading, not the silent one.



### 5.2.2 Digital Literacies and Disciplinary Learning

Undergraduate students' reflections on Digital Literacies intervention were collected to explain digital literacies for communication, information, collaboration, and redesign. Based on Pegrum, Dudeney, and Hockly (2018), technological developments played an essential role in cultural, social, and political products. Students were encouraged to think, reflect, and interpret their presentations. Digital literacy was a part of disciplinary literacy, and in turn, disciplinary literacy was a part of disciplinary learning. As literacies practices should not play a role directly as learning tasks but rather be mastered through instruments that helped shape individuals' expectations or goals to attain the concepts and real-world functions in

practice, the steps included on how to access and evaluate information, use and represent information, and produce and exchange information (Manderio & Castek, 2017).

Digital Literacies interventions were reported to have positive effects on students' L2 learning. What marked as a success was that online classes make Digital Literacies meaningful for education. As Shanahan and Shanahan (2008) suggested, learners had the potential and ability to develop their literacy skills to be more advanced to reach the disciplinary practice. In addition, cultural awareness played a significant role in creating a meaningful interpretation of Digital Literacies (Clark, 2020; Tour, 2019; Tucker-Raymond, 2016).

**1) Communication (Language)**

Communication played a significant role as it was the first part where students could become familiar with materials and instructions. This encouraged students with the lowest test scores to be exposed carefully to print or media. This part allowed students to investigate their English language knowledge, including vocabulary, grammar structures, and learning content. Moreover, having the experience associated with media also encouraged students to develop their listening, speaking, writing, and reading skills. The vast arrays of text technologies allowed students to have an opportunity to experience onscreen challenges (Nash, 2021).

Since multimodal literacies were a part of communication, making connections on multimodal relating signs and symbols shared a similar characteristic in that it helped engage in the content they learned (Lim & Toh, 2020). According to Neebe (2017), there was a significant impact on multimedia worked examples provided explicitly modal to students' reading habit, primarily through think-alouds. A point to make here was watching videos increased students' attention to detail, deepened students' analytical skills, reached the level of the focus point, and encouraged students to come across challenging tasks in the real world.

**2) Information**

Information had an impact on students with the highest test scores, as searching for information online encouraged students to interpret and use critical thinking to evaluate different sources of information. Students were encouraged to use their reading skills and strategies to make questions and compare sources online.

Although students nowadays have easy access to information, some students still prefer to lead through print-based text as it helped them get more precise and accurate information. One way to create students' online reading strategies was to promote broader searching areas beyond Google and Wikipedia (Gilbert, 2017).

However, some students struggled on digital platforms (Votobel, Voorhees & Gokcora, 2021), with the number of results in search engines, keywords, and evaluation progress of digital media text for relevance and reliability. The challenges came with creating texts that elevate students' practical engagement and comprehension of the technologies involved (Cobb, 2018). The role of assigning the tasks in multimodality that affect when students wanted the appropriate amount of reading information online should be discussed for a solid argument.

**3) Collaboration**

Collaboration was the most preferred part for students because they could effectively use data obtained from their classmates. Students were able to interact with friends through an online classroom environment. According to Students played a part in making the awareness for online sources and effectively using information from the individual to intercultural aspects concerning the ethical domain, including personal to participatory digital tools to shape and project the identity needed concerning defining sources of references. Exchanging and expressing ideas were the vital elements according to the tasks given during the instructions based on ethics.



Also, students could develop their reading style with the awareness of reading abilities. As students had an opportunity to participate in group work and adopt the same approach from Information, Google and YouTube were used to share a common interest in collaboration, including sharing ideas through online sources to connect with other classrooms worldwide (Clark, 2020).

**4) (Re-) Design**

By interpreting information through Communication, Information, and Collaboration, students were expected to develop new meanings of academic research using technological tools. As it was reported from a student that this part helped to provoke their ideas. (Re-) The design part was declared as similar to Collaboration. Only the Collaboration was the part where students worked on the task given. But

‘redesign’ allowed students to create new projects of their content. Students made a connection to their field of study as meaningful presentations. According to Nash (2021), online reading comprehension was offered to be culturally situated when students conduct digital inquiry projects. Creating projects was seen as a part of a new interpretation in the previous components. For example, Tucker-Raymond et al. (2016), engineering students created their projects by posting instructions through an online platform, including making and giving feedback. Like Architect students, the skills obtained in completing tasks concerning their field of study offered the engagement.

In terms of language improvement, digital literacies made students more confident in interpreting and producing appropriate meaning in a new language across different contexts. When students engaged in authentic materials sources, there were many new creations that students presented through prior practice, such as designing a web page, searching for information from a web engine, or creating an online profile (Tour, 2019). The main focus was how they use their abilities to develop new meanings through interpretation through Communication, Information, and Collaboration. Students become critical thinkers to engage in meaningful academic research with technologies in the discipline.

**5.3 Limitations of the Study**



Often studies wish to understand undergraduate students’ Digital Literacies on reading fluency but only conduct a study with 60 participants in a particular school of Architecture. They were considering that the population of undergraduate students has been around 25,700 people (Topuniversities.com, 2021). To reconsider the sample size of the participants with the people of the study that could represent Thailand Education systems should be resurrected for further research. Many academic studies have used student sampling, and there are many advantages of this. Nevertheless, purely student sampling could also be highly limiting if the survey population comprises students with varied profiles.

## 5.4 Pedagogical Implications

The findings from the present study provide pedagogical implications in two topics. 5.4.1. the dependent variable is reading fluency in terms of reading rate and reading comprehension. 5.4.2. Digital Literacies as the independent variable to promote students' reading fluency.

### 5.4.1 Reading fluency as the Dependent Variable

The findings of this research study reveal pedagogical implications on the dependent variable, reading fluency in terms of reading rate and reading comprehension. To encourage students to be fluent readers, the interpretation in what areas reading fluency should be addressed. Reading rate should be reconsidered as a part in the parallel with reading comprehension. Reading rate at 200 words per minute with 70% of comprehension should be widely accepted and set as the primary criterion for undergraduate students in language courses. The findings from the study reveal that vocabulary size has a significant impact on students' reading comprehension. The more memory of vocabulary size benefits students to understand the text better, but the reading rate appears to keep students practice to address the appropriate reading rate. Developing the proper reading materials and test items should be based on the knowledge expected from the field of the study in students' academic learning environment; moreover, there are more choices in teaching and learning reading than the digital ones. Reading fluency practice on the digital platform should positively perceive using digital text to promote reading fluency.



### 5.4.2 Digital Literacies as the Independent Variable to Promote Students' Reading Fluency

Choosing the right digital tools for language learning and teaching should be considered to promote students' reading fluency. Digital Literacies should be a part of disciplinary learning that students should evaluate to produce information. The four components are Digital Literacies; Communication, Information, Collaboration, and (Re-) Design. These four components should come in a package of Digital Literacies for disciplinary learning. Materials and instructions should be included as a guideline for instructors to manage the lesson plan effectively. What makes the implications more challenging is finding the reading strategies to match each Digital Literacies component. With access through online sources, reading

passages with the appropriate level of students reading fluency should be explored. Students' readiness in comprehending the Digital Literacies component should be delivered and distributed to each learner for the best results in promoting 21st-century skills.

## 5.5 Recommendations for Future Research

There are two recommendations for further studies, particularly, Digital Literacies as an intervention and reading fluency concerning rate and comprehension.

### 5.5.1 Digital Literacies

Future research should be conducted using this study's Digital Literacies set of components as a domain set of skills that English language learners should acquire. Each element from the four parts should be addressed through quantitative data analysis such as a questionnaire. Digital Literacies survey items on students Digital Literacies should be based on the proposed framework of Pegrum, Dudeney, and Hockly's (2018). The effects of Digital Literacies should be related to the discipline to achieve the English reading fluency in rate and comprehension. Future research studies might observe how learning in the domain helps students become effective readers and digital users by using Digital Literacies for English reading fluency.

### 5.5.2 Reading Fluency; Rate and Comprehension



The findings of this study indicated that reading fluency concerning reading rate and reading comprehension. There should be an evaluation or classification of students' level of reading fluency. The potential for conducting online evaluation forms or assessments should be developed to reach the highest potential in students' capabilities. Reading skills and strategies should be completed for the best possible achievement. Future research studies should be conducted over a long period to confirm its effects on improving students' reading skills and strategies. In addition, the research studies should extend to investigate a broader sample of students in other majors to ensure the effectiveness of English reading fluency practices.

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# APPENDICES

# APPENDIX A

## Online English Reading Fluency Test

### Reading Fluency Test - Pretest

**READING FLUENCY PRETEST PROTOCOL**

Total time = 10 minutes

**Directions:**

This is a reading test to show how fast you can read and understand English sentences.

There are 110 items = 2,000 words

On the next page, you will see **110 sentences**.

***Some of them are true, and some are not***.

You will have to decide if each sentence is **true** or **false**.

Choose **T** on the multiple-choice if you think it is **true.**

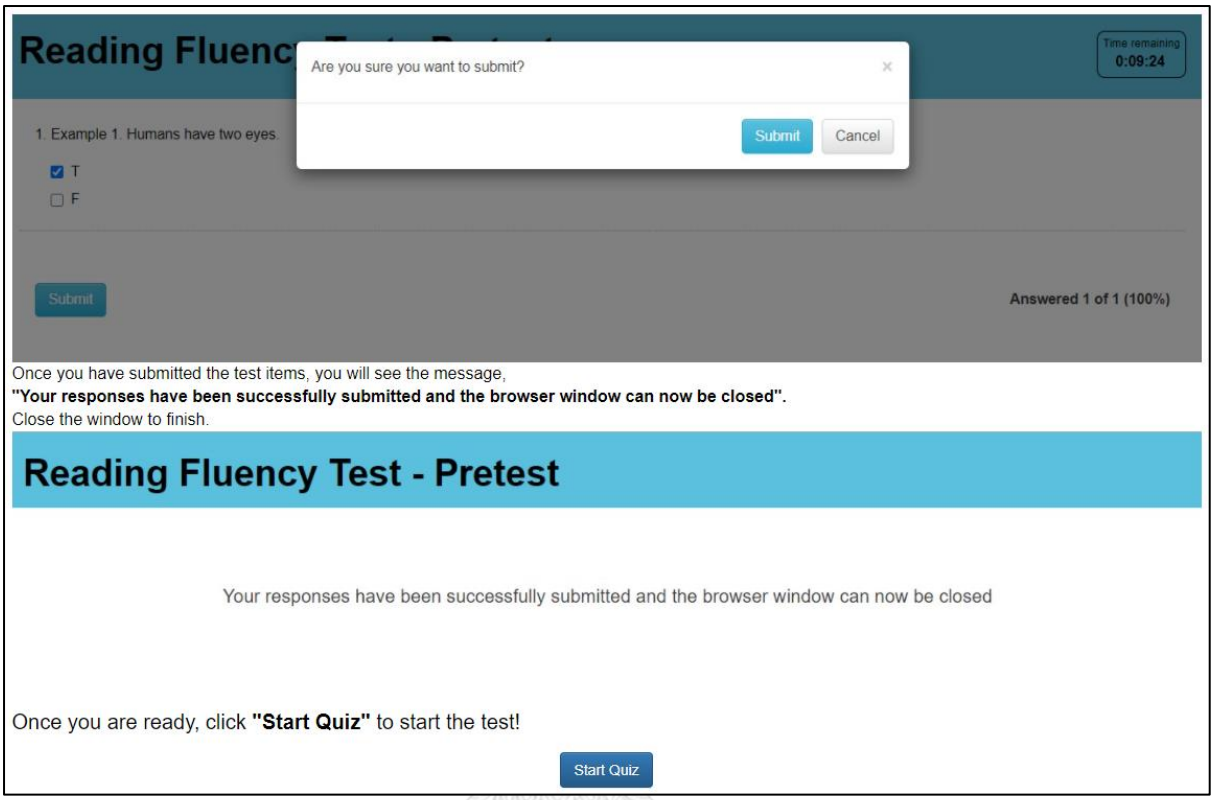
Choose **F** on the multiple-choice if you think it is **false**

***For example:***

1. Example 1. Humans have two eyes.

- [x] T
- [ ] F

After finishing all the 110 items, click **"Submit".**
You will see the box with the question,
**"Are you sure you want to submit?"**
To confirm to submit all answers, click **"Submit"**
If you still have more time,
you can recheck your answers by clicking **"Cancel"**




Once you have submitted the test items, you will see the message,
**"Your responses have been successfully submitted and the browser window can now be closed".**
Close the window to finish.

**Item 1-55: Lexical quality: word reading efficiency and vocabulary knowledge**

**Criteria: Definition & Meaning, Synonyms, & Antonyms, Language Function**

| | |
|---|---|
| 1. | If a person has the **authority**, it means he or she is having the right to give orders. |
| 2. | A similar word of **aesthetic** is unattractive which means that not pleasing or appealing to look at. |
| 3. | When someone finally **achieves** an ambition, he or she reaches an aim after a lot of work and effort. |
| 4. | Employees should not be fully **acquainted** or known or recognized with workplace safety and emergency procedures. |
| 5. | If you are **available**, you are not able to be used or possibly to get some actions during that period. |
| 6. | **Cohesive** is a similar word to solid, when firm and stable in shape; not liquid or fluid. |
| 7. | Happiness is something you postpone for the future. It is something you **design** for the past. |
| 8. | A **dimension** is a measurable extent of some kind, such as length, breadth, depth, or height. |
| 9. | **Distribute** means giving something out to each of several or groups so that people receive information or contribution. |
| 10. | When someone plans to **expand** their business, it means that person wants a decrease in size, number, or range. |
| 11. | The **inclination** is a slope line on the graph, or a tendency to an aspect, state, character, or action. |
| 12. | If you feel extremely strong or intense, the desire for revenge can be **overpowering**. You have to forgive and forget. |
| 13. | The **principle** means a fiction on which action or behavior is based and rooted in someone's mind with no discipline. |
| 14. | The **project** involved the whole of the university sometimes it represents in an assignment, campaign, and task. |
| 15. | In a pandemic crisis like this, you should **splurge** your savings as much as you can. |
| 16. | It is important to **select** and dedicate a software package that suits your desires and ignore the requirements. |
| 17. | **Visual** refers to having to do with sight or seeing: a picture, piece of film, or display used to illustrate something. |
| 18. | If something is in the center of interest or activity, it means that the object is **unfocused**. |
| 19. | Her personality is not like the others, which makes her so **unique** and very outstanding. |
| 20. | If the building is under **construction**, it is not a part of the development of the building or structure. |
| 21. | **Constraint** means no limitation or restriction which makes it possible to do anything so you won't put pressure on it. |

22. A **contractor** is a person or company that undertakes a contract to perform a service or do a job.
23. If you want to work independently in your personal space, you need to **coordinate** with your team members.
24. The use of the imagination or original ideas in the production of an artistic work is called **creativity**.
25. The careful use of resources is the definition of the **economy**; the production and consumption of goods and services.
26. An **element** is a compound of the whole part, especially one that is essential or characteristic.
27. He wanted to stress the introduction part of his presentation, so he make an **emphasis** on it.
28. Papers and pencils are not an **essential** part of your basic drawings; they are unnecessary; extremely unimportant.
29. It is unnecessary to make **fundamental** changes if we want to treat our environment better.
30. In the name of **humanity,** I ask the government to reappraise this issue, the sense of being a human race.
31. You might avoid interpreting your work if you wanted to make it clear because different people **interpret** events differently.
32. Being a **professional** in your area means you engage in a specified activity in your field.
33. A **structure** is an arrangement of and relations between the parts or elements of something complex.
34. A descriptive layout printed in the text is called a **schematic**, it cannot represent the diagram.
35. To accommodate its growing **occupant**, the shell must enlarge in such a way as to preserve its original form.
36. He was arrested for driving without a **license** because he doesn't have a prohibition form and authority to drive.
37. Only scientists can use **logic** to prove their arguments that deal with the processes used in sound thinking and reasoning.
38. A rule of law that controls or directs people's actions is **regulation** such as students wear a uniform to school.
39. To **accommodate** means to hide and hinder a physical space from someone to stay permanently.
40. If you **compound** two elements together, it is also called a mixture; Salt is a compound of sodium and chlorine.
41. The vote will **enable** and give a means of power to the Prime Minister to push through tough policies.
42. The hotel is a comfortable and well-run **establishment**. We will schedule the place for demolition soon.
43. They live on an **estate**, the property they bought last year near Chao Phraya River.
44. The **expertise** is a person who has only basic knowledge and skills in their field, especially technical matters.

45. A **community** means a particular area where an individual of people lives, there are no connections between people and services.
46. A **framework** is a structure that supports something built on it and it provides a framework for future research.
47. When you refuse to sort the problems, that means you want to **resolve** the issues.
48. The **scope**: the extent of the area or subject matter that something deals with or to which it is relevant.
49. Vary means to give a variety or to be different such as Funeral customs vary with different religions.
50. 'Layout, blueprint, composition, drawing, map, method, idea, and pattern', these words are not having a similar meaning to **design**.
51. Aesthetical artwork pieces are concerning or characterized by an appreciation of beauty or good taste.
52. The opposite word of a **schematic** is symbolic. It cannot be represented in the schematic diagram.
53. The antonym of the word **interpret** are 'explain, describe, depict, illustrate, improvise, and picture.'
54. New techniques were introduced with **varying** degrees of success; the difference in size, amount, degree, or nature.
55. Customers will be unimpressed by the **expertise** of our highly trained employees.

**Item 56-110: Cognitive load factors: prior knowledge and working memory**

**UNIT1:**

56. Buildings are a fundamental part of the human experience; we live, work, and spend our leisure time inside these structures.
57. Engineers are the only one that generally plays a key role in their construction, they work with architect separately.
58. Architects evaluate the structures based on how effectively the customers, clients, or occupants to serve very specific purposes.
59. Architects are not required to be trained in mathematics such as geometry, algebra, and trigonometry.
60. 'Craftspeople' is a person who is skilled in a particular craft (used as a neutral alternative) which refers to architects.
61. Incorporate mechanical, electrical, plumbing, and other details into the designs are not the responsibility of an architect.
62. An architect is a skilled professional in the knowledge of building and construction with thinking and reasoning skills.
63. Protect the health, safety, and welfare of their buildings' future occupants is the responsibility of the estate owner.
64. There are several different "architect jobs" under the architect umbrella such as Landscape Architect, Interior Design Architect, Urban Design Architect.

65. The creation of new buildings is not a complicated process at all; the building is not complex and systematic.
66. For larger-scale projects, technical architects are essential. They are systems logistics specialists that design, implement, and maintain IT systems for business clients.
67. Buildings have a wide range of different functions. When you design the building, make sure that it is a malfunction.
68. Landscape architects design attractive and functional outdoor spaces like parks, gardens, playgrounds, residential areas, college campuses, and public spaces.
69. Interior designers consider the needs of the clients as they make interior spaces functional, safe, and beautiful for building.
70. As 21st-century urban planning, places increasing emphasis on green spaces; land that is covered with grass, trees, shrubs, or vegetation.
71. Negotiation and leadership ability are not included as skills that an architect needs because they are hard to obtain.
72. Design architect also explains the meaning of information, words, or actions to meet a client's needs.
73. The surrounding environment is unnecessary for architects to concern about making buildings that are friendly to the environment.

**UNIT2:**

74. Professional interior designers require focused schooling and f formal training such as a degree in the field and formal qualification exams.
75. If you have many focal points in a living space, it will start to feel powering and focused.
76. You don't have to stick with only one design because there are plenty of decorating styles to choose from.
77. If you ignore paying attention to subtle contrasts and spaces, you will create rooms that feel complete and balanced.
78. Each room should have a focal point: an interesting or beautiful piece of objects such as a piece of art.
79. To achieve balance in every room, you do not need to distribute the visual weight of your furniture and accents.
80. Creating 'cohesive' and 'aesthetical' are part of the important elements in interior design and styles.
81. To push up furniture against the wall—can make a room bigger and it can make the area in the middle feel cavernous.
82. Interior lighting process: lighting is important in designing a room because it can change the mood of a room.
83. Windows are not included in a factor of lighting because there are fewer different ways to increase natural light in a home.

84. Accent pieces such as hang artwork or display photos are a great way to make a room feel more personalized.
85. Try to design your room to look like the professional photos you see online or in interior design classes.
86. Keep your furniture at least a few inches away from the walls to give your room an airier feeling.
87. A basic principle in interior design always decorates your home as a showroom such as appliances, cars, or furniture.
88. You can fill in the gaps in the space with your accent items and DIY home decorating.
89. It is very important to try to design a room to feel stiff and flat no matter you have enough or limited spaces.
90. When designing a house, make sure to factor lighting into your budget. It gives your home personality, provides ambiance, and serves a functional purpose.
91. Keep the furniture away from the wall to open up a dark or small space which will make the room bigger.

**UNIT3:**

92. Landscape Architecture is a profession that is often unknown or misunderstood as gardening by many.
93. The involvement of landscape architects can be seen only in small towns and was used to suggest that someone has old-fashioned ideas.
94. There is a wide range of expertise, skills, and talents in landscape architects such as creativity and imagination, and good verbal and written communication.
95. Landscape architecture creates a design and style between the buildings.
96. The architectural design includes outdoor and indoor environments; sometimes they have to blend indoor and outdoor living spaces.
97. Landscape architects never let their ideas go beyond design creating frameworks and policies. They do not adjust their task to fit in reality.
98. Elements of art, environment, architecture, engineering, and sociology are included in landscape architecture.
99. Urban design is concerned with only a small number in a variety of places such as rooms in a house.
100. Landscape architects are involved in the designing of broad spaces.
101. The urban design will result in new places or rediscovered parts of existing towns and cities.
102. Urban design is the design of towns and cities, streets, and spaces.
103. The city center is located in a suburban area; a mixed-use existing either as part of a city or within commuting distance of a city.

104. Urban designers are typically architects, town planners, or landscape architects.
105. Grassy fields or areas of land is covered in the grass on the edge of a village are not included in landscape architecture.
106. Good frameworks and processes are an important part to facilitate successful development.
107. The urban design will be less likely to bring benefits to investors, developers, and the wider society.
108. Urban design ranges from the set of policies and processes to the design of buildings and spaces themselves.
109. Urban design defines when and a place should be improved, or remain unchanged, mostly the ideas are framed with a conservative.
110. Urban design is also concerned with the areas around the local bus or train stations since these are one of the public spaces.

# APPENDIX B

## Reading Fluency Practice

## Reading Rate Chart: Rate Build-up

**c) Use this graph to record the Reading Fluency Practice passage process at the end of the chapter. Find the intersection of your reading rate and your comprehension score. Write the number of reviews reading on the chart. Your goal is to place in Quadrant 4. Circle the total number of reading comprehension.**

| | Quadrant 2 | | | | Quadrant 4 |
|---|---|---|---|---|---|
| >200 | | | | | |
| 200 | | | | | |
| 185 | | | | | |
| 170 | | | | | |
| 155 | | | | | |
| 140 | | | | | |
| 125 | | | | | |
| 110 | | | | | |
| 95 | | | | | |
| 80 | | | | | |
| 65 | | | | | |
| 50 | | | | | |
| | Quadrant 1 | | | | Quadrant 3 |
| Circle the number of corrections | 1 (20%) | 2 (40%) | 3 (60%) | 4 (80%) | 5 (100%) |

**>Greater than ending words with 5 = go up**
**<Less ending words with 5 = go down**

| | |
|---|---|
| Q1 | You are reading *slower* than 200 wpm with *less* than 70% comprehension |
| Q2 | You are reading *faster* than 200 wpm with *less* than 70% comprehension |
| Q3 | You are reading *slower* than 200 wpm with *greater* than 70% comprehension |
| Q4 | You are reading *faster* than 200 wpm with *greater* than 70% comprehension |

# APPENDIX C

## Learning Logs

## Learning Logs 1: The Profession of an Architect

1. Favorite part of Digital Literacies and reasons:
   Communication (language)/ Information/ Collaboration/ (Re-) Design
2. Your perspectives on the level of digital literacies
3. Purposes of the use of technology in this unit
4. Devices you use for this unit
5. Your perspectives on software tools and applications commonly used in class
6. Your progress on Reading Fluency Practice on page 14

# APPENDIX D

## Sample of Learning Unit

## Scope and Sequence

## Unit1: The Profession of an Architect

| Week | Digital literacies | Activities | Topic | Vocabulary |
|---|---|---|---|---|
| 1 | Components:<br>• Communication<br>  ○ Multimodal literacy<br>  ○ Print literacy<br>• Information<br>  ○ Search and information literacy<br>• Collaboration<br>  ○ Personal literacy (Security literacy)<br>  ○ Network literacy<br>• (Re-) Design<br>  ○ Critical (digital) literacy | • Ss watch YouTube<br>• Ss search for information on web search engine<br>• Ss used an online dictionary<br>• Ss manage to join Facebook to build the network<br>• Ss use their social network properly<br>• Ss access and evaluation information for presentation whether it is reliable | Assess and Evaluate Information | construction, constraint, contractor, creativity, economy, humanity, structure, logic |
| **2** | • Information<br>  ○ Search and information literacy<br>• Communication<br>  ○ Print literacy | • Ss learn the vocabulary given before reading a)<br>• Ss read the article and check TRUE or FALSE for reading comprehension<br>• Ss practice Reading Fluency, use Reading rate chart to record their speed reading | What Is an Architect? Learn What Architects Do?<br><br>What Are the Different Types of Architects? | authority, coordinate, element, fundamental, professional, schematic, occupant, license, regulation emphasis, essential, interpret |

# Unit 1:
# The Profession of an Architect

[1]

**STEP 1:**
**Access and Evaluate Information**

- Search for information from web engines, locate quality resources, make sense of data and evidence represented in digital models and simulations
- Discuss texts and concepts found online
- Evaluate the information and reflect whether the information located fulfills the intended purpose



- List some of the web engines you usually use as a source to search for information?
- What kind of information do you usually search for regarding your learning areas?
- What are some criteria that help you evaluate online sources to meet your needs?

# Communication: Multimodal literacy

**1) Watch the video on YouTube.**

'Frank Gehry Teaches Design and Architecture | Official Trailer | MasterClass.'


[2]

**2) After watching, repeat the video, but this time, listen along and fill in the blank. Match the vocabulary with the picture provided. Check the answers and the meaning of each word with your friends.**

**humanities logic economies constraints creativity**

"I have always felt if you know what you are going to do in advance, then you won't do it. Your 1) _____ starts with whether you're curious or not.

…Most of our cities are built with just faceless glass, only for 2) _____ and not for 3) _____.

…But within all those 4) _____, I have 15% of freedom to make my art.

…But you've got to find your own voice. Create the 5) _____ for it as you go. Stretch it into another place…"

humanity ●

● Picture 1


[3]

logic ●

● Picture 2


[4]

economy ●

● Picture 3


[5]

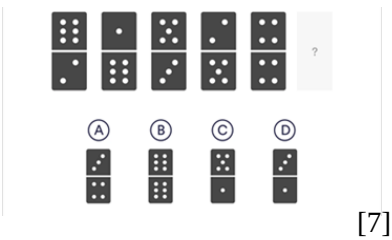
constraint ●

● Picture 4


[6]

creativity ●

● Picture 5




[7]

## Information: Search and Information literacy

**3) Let's search for more information about Frank Gehry.**
**Give at least one source of information on your references.**

| Frank Gehry | | |
|---|---|---|
| Background | Architecture styles | Famous designs |
| | | |
| Reference: | Reference: | Reference: |

# Collaboration: Personal literacy

**4) Given three examples of the famous architecture of the world. Search for information from any platform of web search engine and complete the chart.**

| Name | Type | Location | Architect: Design and construction | Reference: Source of information |
|---|---|---|---|---|
| *Example:* King Power Mahanakhon | Residential, retail, hotel, a public observatory | Bang Rak, Bangkok, Thailand | Architecture firm: Ole Scheeren<br>Developer: Pace Development<br>Structural engineer: Arup Group | • Wikipedia<br>• Google<br>• kingpowermahanakhon.co.th |
|  [8] | | | | |
| Petronas Towers | | | | |
| Vessel | | | | |
| Sagrada Família | | | | |

# (Re-) Design: Critical (digital) literacy

**5) In a 20-minute preparation. Search for a famous person in your area of study or famous architect or architecture from a web search engine in your group. Discuss the source and reasons why your members are interested in this person or design. Fill out the form provided and share it with your classmates for 3-5 minutes.**

| (Name of the person or architecture here)<br>_____ | | |
|---|---|---|
| General Information | | |
| | | |
| | | |

Picture:

| |
|---|
| |



| References: Sources of information |
|---|
| 1) |
| 2) |
| 3) |

# Information: Search literacy

## Vocabulary

**6) Fill in the blank with appropriate answers.**

| | | | |
|---|---|---|---|
| **fundamental** (adj.) | **professional** (adj.) | **authority** (n.) | **contractor** (n.) |
| **structure** (n.) | **schematic** (adj.) | **occupants** (n.) | **licensed** (v.) |
| **regulations** (n.) | **element** (n.) | **construction** (n.) | **coordinate** (v.) |

1. The organization that is the governing _____ of a political unit.
2. _____ occupations include medicine and the law and teaching.
3. The previous _____ of this apartment were an American couple.
4. Safety _____ are being ignored by the company in the drive to increase profits.
5. Voluntary organizations will need to _____ their efforts to help the homeless.
6. We'll need to employ a building _____ to do the work.
7. Some understanding of grammar is _____ to learning a language.
8. The company has a complex organizational _____.
9. User participation is a basic _____ in our design process.
10. The new drug has not yet been _____ in the US.
11. _____ began this year and will take approximately 18 months.
12. A _____ outline showing the main form and features of something, usually in the form of a drawing, in a way that helps people to understand it.

# Communication: Print literacy

## Reading

**a) Reading 1: Read the passage and answer the following questions.**

# What Is an Architect? Learn What Architects Do

Buildings are a **fundamental** part of the human experience. We live, work, shop, learn, worship, seek care, and spend our leisure time inside these **structures**—and we evaluate them based on how effectively they serve their specific purposes.

In every case, the design of modern buildings is the work of *(50 words)* essential craftspeople: architects.

An architect is a skilled **professional** who plans and designs buildings and *(65 words)* generally plays a key role in their **construction**. Architects are highly trained in the art *(80 words)* and science of building design. Since they bear responsibility for the safety of their buildings' *(95 comments)* occupants, architects must be professionally **licensed**.

Architects design buildings, but their job description involves responsibility *(110 words)* for much and more than just the design's artistic elements. Architects also:

- Communicate effectively with *(125 words)* clients to create buildings that satisfy the clients' needs
- Budget, **coordinate**, and oversee projects
- Translate *(140 words)* their ideas into **schematic** design drawings and documents
- Incorporate mechanical, electrical, plumbing, and other details *(155 words)* into the designs
- Satisfy building code and zoning **regulations**
- Secure project approval and permits from *(170 words)* regulatory **authorities**
- Prepare construction documents with detailed structural and material information
- Work with **contractors** during *(185 words)* a building's construction phase
- Protect the health, safety, and welfare of their buildings' future occupants *(200 words)*

[9]

**a1) Check TRUE or FALSE. Correct the incorrect statement.**

| | Statement | TRUE | FALSE |
|---|---|---|---|
| **1** | We evaluate buildings based on how efficiently they serve their specific purposes. | | |
| **2** | Architects are highly trained in the mathematics and science of building design. | | |
| **3** | Architects design buildings, but their job description involves less responsibility than we thought, just the essential design elements. | | |
| **4** | Architects permit regulatory authorities to secure project approval. | | |
| **5** | Architects prepare graphic design with detailed structural and material information. | | |

**b) Reading 2: Reading Fluency Practice**

**Instructions:**

1) You need three different colors of your highlighters.

2) You have 60 seconds to read the article on the next page as much as you can.

3) After 60 seconds, or if you finish reading before 60 seconds, mark your timestamp on the passage where you have ended.

4) On your second cycle, you will have to proceed with numbers 2) and 3) until you finish the third cycle.

5) After the end of the reading cycle. Answer the following questions without looking back at the passage (the answers will be given later).

6) Then, count the words you read on each cycle, write down numbers 1,2,3 in the Reading Rate Chart: Rate Build-up for reading each time, and circle the number of the correction in reading comprehension.

# What Are the Different Types of Architects?

There are several different "architect jobs" under the architect umbrella, and these specialized roles include:

**Design Architect:** Design architects most correspond to the popular notion of an architect. They're responsible for conceiving a project's overall design. They **interpret** a client's needs, analyze the building site and surrounding environment, consider the *(50 words)* budget, and create a structure within these parameters.

**Technical Architect:** Technical architects are responsible for *(65 words)* the fine details of a building's planning, ensuring that it can successfully be built and *(80 words)* that it will function. For larger-scale projects, like office buildings, technical architects are usually **essential**. *(95 words)*

**Project Manager:** The creation of new buildings is a complex endeavor. Project managers require a *(110 words)* deep knowledge of the architectural process to communicate with all parties, problem-solve, and lead.

**Interior** *(125 words)* **Designer:** Interior designers determine the arrangement of non-bearing walls and doors, select materials and finishes, *(140 words)* place power outlets, design lighting, and even choose furniture—all while considering the needs of *(155 words)* the client and building codes.

**Landscape Architect:** Landscape architects design outdoor spaces like parks and *(170 words)* gardens, as well as certain structures within them. They require additional skills like stormwater management, *(185 words)* planting design, and sustainability planning. As 21st-century urban planning places increasing **emphasis** on green spaces.

*(200 words)*

[10]

**b1) Match the vocabulary with the correct meaning**

| | | |
|---|---|---|
| **interpret** (v.) | o | o particular importance, value, or prominence given to something. |
| **essential** (n./adj.) | o | o explain the meaning of (information, words, or actions). |
| **emphasis** (n.) | o | o necessary; extremely important. |

**b2) Choose the correct answer.**

1 What is the possible alternative for **interpret** (line 5)?
- a) mystify
- b) clarify
- c) distort
- d) obscure

2 These are the alternatives of **essential** (line 10) ***EXCEPT***?
- a) crucial
- b) fundamental
- c) principle
- d) auxiliary

3 What does **emphasis** (line 21) refer to…
- a) a demanding on the natural environment areas
- b) a requiring on management skills
- c) an increase of sustainability development
- d) a need for more landscape architectures

4 Which type of architecture demands plenty of leadership skills?
- a) Design Architect
- b) Technical Architect
- c) Interior Designer
- d) Project Manager

5 What is the role of a **Design Architect**?
- a) to ensure that the building will function right
- b) to analyze the building construction, including controlling the budget
- c) to design an outdoor space to meet the clients' needs
- d) to arrange the indoor space and parties

# Reading Rate Chart: Rate Build-up

**c) Use this graph to record the Reading Fluency Practice passage process at the end of the chapter. Find the intersection of your reading rate and your comprehension score. Write the number of reviews reading on the chart. Your goal is to place in Quadrant 4. Circle the total number of reading comprehension.**

| | Quadrant 2 | | | | Quadrant 4 |
|---|---|---|---|---|---|
| >200 | | | | | |
| 200 | | | | | |
| 185 | | | | | |
| 170 | | | | | |
| 155 | | | | | |
| 140 | | | | | |
| 125 | | | | | |
| 110 | | | | | |
| 95 | | | | | |
| 80 | | | | | |
| 65 | | | | | |
| 50 | | | | | |
| | Quadrant 1 | | | | Quadrant 3 |
| Circle the number of corrections | 1 (20%) | 2 (40%) | 3 (60%) | 4 (80%) | 5 (100%) |

**>Greater than ending words with 5 = go up**

**<Less ending words with 5 = go down**

| | |
|---|---|
| **Q1** | You are reading *slower* than 200 wpm with *less* than 70% comprehension |
| **Q2** | You are reading *faster* than 200 wpm with *less* than 70% comprehension |
| **Q3** | You are reading *slower* than 200 wpm with *greater* than 70% comprehension |
| **Q4** | You are reading *faster* than 200 wpm with *greater* than 70% comprehension |

# Learning Logs 1: The Profession of an Architect

1. Favorite part of Digital Literacies and reasons: Communication (language)/ Information/ Collaboration/ (Re-) Design
2. Your perspectives on the level of digital literacies
3. Purposes of the use of technology in this unit
4. Devices you use for this unit
5. Your perspectives on software tools and applications commonly used in class
6. Your progress on Reading Fluency Practice on page 14

# Glossary

**authority (noun)**

the right, power, or ability to give orders, make decisions, or demand or compel obedience.
*synonyms:* command, control, mastery, power

**constraint (noun)**

something that compels, confines, or restrains.

**construction (noun)**

the job or business of constructing, especially buildings, roads, or other large structures.
*synonyms:* building

**contractor (noun)**

one who agrees by contract to do specified work or to supply goods at a certain price.

**coordinate (co-ordinate) (transitive verb)**

to order or organize according to a common goal.
*synonyms:* adapt, adjust, combine, match, unite

**creativity (noun)**

the capability of inventing or producing original or imaginative work.

**economy (economies) (noun)**

the careful management of wealth, resources, and means of production.
*synonyms:* husbandry

**element (noun)**

1. a part of any whole.
   *synonyms:* component, constituent, ingredient
2. a fundamental principle of something.
   *synonyms:* basic, fundamental, principle

**emphasis (noun)**

special importance that one attaches to something or wishes to communicate to others.
*synonyms:* importance, significance, stress, weight



**essential (adjective)**

fundamental; necessary; indispensable.
*synonyms:* basic, fundamental, indispensable, necessary, vital

**fundamental (adjective)**

serving as a foundation; basic; central.
*synonyms:* basic, central, elementary, foundational, primary, underlying

**humanity (humanities) (noun)**

the race of human beings; mankind.
*synonyms:* race, species, womankind

**interpret (transitive verb)**

to determine or explain the meaning of.
*synonyms:* clarify, elucidate, explain

**license (verb)**

to give the official permission from an authority.
*synonyms:* permit, allow, authorize

**logic (noun)**

1. reasoning, or the study of reasoning.
2. the process of sound reasoning.

**occupant (occupants) (noun)**

one, or a group, that occupies a place or position.
*synonyms:* denizen, householder, resident, settler, tenant

**professional (adjective)**

having or showing competence in the manner of a professional.

**regulation (regulations) (noun)**

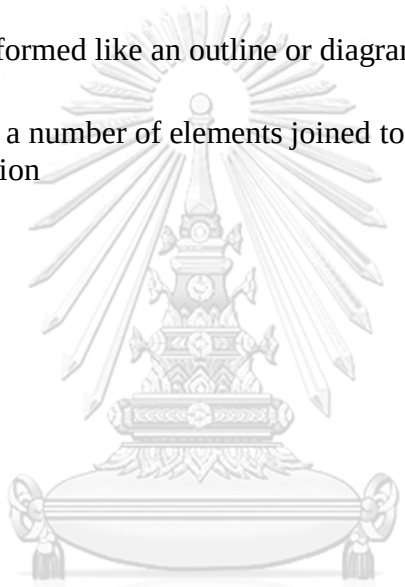
a principle, rule, or law designed to regulate behavior or conduct.
*synonyms: law*, principle, rule

**schematic (adjective)**

of, pertaining to, or formed like an outline or diagram.

**structure (noun)**

a thing consisting of a number of elements joined together in a certain way.
*synonyms:* construction



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| | |
|---|---|
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| [2] | Frank Gehry Teaches Design and Architecture \| Official Trailer \| MasterClass (2020) *https://www.youtube.com/watch?v=AQe3nUy0gMk* |
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| [5] | https://www.hackney-labour.org.uk/historic-moment-as-hackneys-black-lives-matter-motion-passed-by-hackney-council/ |
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| [7] | https://5factum.com/quiz/brainstorming-puzzles-that-will-test-your-brain/ |
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| Reading 1 | MasterClass staff (2020). What Is an Architect? Learn What Architects Do. *https://www.masterclass.com/articles/what-is-an-architect-learn-what-architects-do#what-does-an-architect-do* |
| [10] | |
| Reading 2 | MasterClass staff (2020). What Are the Different Types of Architects? *https://www.masterclass.com/articles/what-is-an-architect-learn-what-architects-do#what-does-an-architect-do* |
| Glossary | Oxford University Press (2021) https://www.oxfordlearnersdictionaries.com/ |

# APPENDIX E

## Lesson Plan

## Unit1: The Profession of an Architect

**1) Learning goals:**

Students will be able to access and evaluate online information

Students will be able to practice reading fluency at 200 words per minute (wpn) with 70% comprehension

**2) Objectives:**

| Digital literacies | | Objectives | Materials |
|---|---|---|---|
| **Communication** | Multimodal literacy | Students will be able to interpret texts in multiple media, using images, sounds, and video | • Youtube:<br><br>'Frank Gehry Teaches Design and Architecture \| Official Trailer \| MasterClass' |
| **Information** | Search and information literacy | Students will be able to make effective use of search engines and services<br><br>Students will be able to evaluate documents for assessing their credibility | • Web search engine<br>• Online dictionary |
| **Collaboration** | Personal literacy (Security literacy) | Students will be able to use digital tools to shape and project a desired online identity | • Data privacy policy<br>• Credits, Copyright |

| | | | |
|---|---|---|---|
| **(Re-) Design** | Critical (digital) literacy | Students will be able to evaluate information and data, critique the material underpinnings of our online environment, and engage with academic research into new technologies | • Connectivity: WIFI (or 3G/4G/5G)<br>• Facebook group<br>• Web search engine<br>• Mobile devices: mobile phone/ tablet/ laptop<br>• Online presentation software/ platform<br>• Graphic design software/ platform<br>• Note-taking software/ platform |

**3) Language content:**

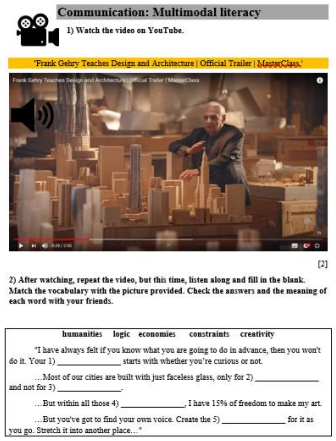
- Vocabulary Architect as a profession
- Reading skill: Reading rate at 200 wpm (word per minute)
  70% of Reading comprehension

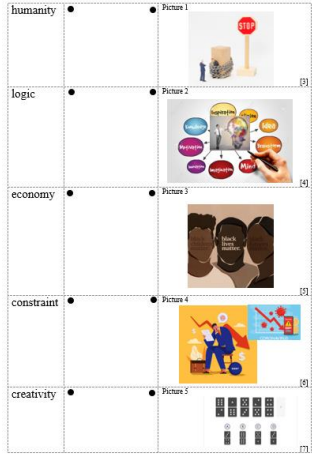
**4) Evaluation:**

- Students will be assessed by cooperating attention while they are learning and participating during class activities.
- Students will be evaluated from their reading fluency pretest/posttest.
- Students will be assessed by completing class assignments, online reading practices/ rate build-up/ and learning logs.
- Students will be assessed by giving a presentation based on the objectives of digital literacies instructions.
-

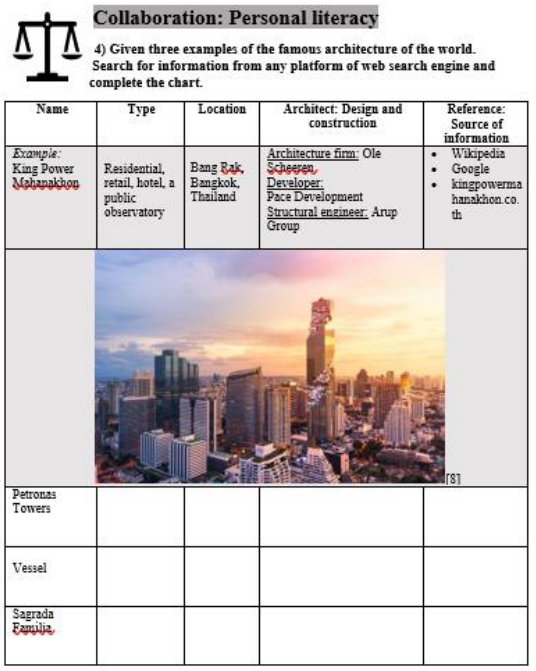
| Digital literacies: | Activities | Instructions | Materials |
|---|---|---|---|
| | T introduces the lesson to Ss | **STEP 1: Access and Evaluate Information**<br>• Search for information | • Digital or print learning Unit 1: The Profession of an Architect |

| | | | |
|---|---|---|---|
| | | from web engines, locate quality resources, make sense of data and evidence represented in digital models and simulations<br>• Discuss texts and concepts found online<br><br>Evaluate the information and reflect whether the information located fulfills the intended purpose<br><br>• List some of the web engines you usually use as a source to search for information?<br><br>• What kind of information do you usually search for regarding your learning areas?<br><br>• What are some criteria that help you evaluate online sources to meet your needs? | **Unit 1:**<br>**The Profession of an Architect**<br>[1]<br>  <br>**STEP 1:**<br>**Access and Evaluate Information**<br>• Search for information from web engines, locate quality resources, make sense of data and evidence represented in digital models and simulations<br>• Discuss texts and concepts found online<br>• Evaluate the information and reflect whether the information located fulfills the intended purpose<br>• List some of the web engines you usually use as a source to search for information?<br>• What kind of information do you usually search for regarding your learning areas?<br>• What are some criteria that help you evaluate online sources to meet your needs? |
| **Components:** Communication<br><br>**Areas:** | T plays the video on YouTube:<br><br>'Frank Gehry Teaches Design and Architecture \| Official Trailer \| | 1) Watch the video on YouTube: '**Frank Gehry Teaches Design and Architecture \| Official Trailer \| MasterClass**' | • Connectivity: WIFI (or 3G/4G/5G)<br>• YouTube; video sharing platform |

| | | | |
|---|---|---|---|
| Multimodal literacy | MasterClass' | | |
| **Components:**<br>Communication<br><br>**Areas:**<br>Multimodal literacy | T plays the video again in the second round, but this time, Ss listen along and fill the missing words in the blanks.:<br><br>*constraints, creativity, economies, humanities, logic*<br><br>Ss match the vocabulary with the picture provided.<br><br>Ss check the answers and the meaning of each word with their friends<br><br>T shows the answer; the whole class discusses the meaning of each word in context. | 2) After watching, repeat the video, but this time, listen along and fill in the blank. Match the vocabulary with the picture provided. Check the answers and the meaning of each word with your friends.<br><br>**Vocabulary:**<br><br>*constraints, creativity, economies, humanities, logic* | • Connectivity: WIFI (or 3G/4G/5G)<br>• VDO clip on YouTube<br><br>  <br>Communication: Multimodal literacy<br>1) Watch the video on YouTube.<br>'Frank Gehry Teaches Design and Architecture | Official Trailer | MasterClass.'<br>[2]<br>2) After watching, repeat the video, but this time, listen along and fill in the blank. Match the vocabulary with the picture provided. Check the answers and the meaning of each word with your friends.<br>humanities logic economies constraints creativity<br>"I have always felt if you know what you are going to do in advance, then you won't do it. Your 1) _____ starts with whether you're curious or not.<br>…Most of our cities are built with just faceless glass, only for 2) _____ and not for 3) _____.<br>…But within all those 4) _____, I have 15% of freedom to make my art.<br>…But you've got to find your own voice. Create the 5) _____ for it as you go. Stretch it into another place…" |
| **Components:**<br>Communication | | | • Connectivity: WIFI (or 3G/4G/5G)<br>• Mobile devices: mobile phone/ tablet/ laptop |

| | | | |
|---|---|---|---|
| **Areas:** Multimodal literacy<br><br>**Components:** Information<br><br>**Areas:** Search and Information literacy | | | • Online dictionary<br>  |
| **Components:** Information<br><br>**Areas:** Search and Information literacy | After receive information, Ss shape the ideas of the content.<br><br>In a group of 2-3 people. T asks Ss to search for more information about Frank Gehry:<br><br>○ Background<br>○ Architecture style<br>○ Famous designs | 3) Let's search for more information about Frank Gehry. Give at least one source of information on your references. | • Connectivity: WIFI (or 3G/4G/5G)<br><br>• Mobile devices: mobile phone/ tablet/ laptop<br>• Web search engine |

| | | | |
|---|---|---|---|
| | T reminds Ss to give the sources of information they have been searching.<br><br>Provide at least one reference for each component in the table. | | **Information: Search and Information literacy**<br>3) Let's search for more information about Frank Gehry.<br>Give at least one source of information on your references.<br>**Frank Gehry**<br>Background / Architecture styles / Famous designs<br>Reference: / Reference: / Reference: |
| **Components:** Collaboration<br><br>**Areas:** Personal literacy | To search for more information according to the example.<br><br>Ss give three examples of the famous architecture of the world provided.<br><br>Search for information from any platform of web search engine and complete the chart. | 4) Given three examples of the famous architecture of the world. Search for information from any platform of web search engine and complete the chart. | • Connectivity: WIFI (or 3G/4G/5G)<br>• Web search engine<br>• Mobile devices: mobile phone/ tablet/ laptop<br>• Giving credits to the access of websites found on web search engine platform |
| **Components:** Collaboration | T asks Ss for the examples of:<br>○ online presentation platform; | 5) Group activity: Students work in a group, find one more famous architectural place including | • Connectivity: WIFI (or 3G/4G/5G)<br>• Mobile devices: mobile phone/ tablet/ |

<table>
<tr>
<td>Areas:<br><br>Personal literacy</td>
<td>PowerPoint Presentation,<br>○ graphic design platform; Canva, or<br>○ note-taking platform; Goodnotes<br><br>T asks Ss for the devices they would like to work on:<br><br>○ Computer laptop<br>○ Mobile devices; Tablet or smartphone<br><br>Ss work in a group of 3-5 people,<br><br>give Ss 10 minutes to find the information listed and design on either or all three platforms.<br><br>○ After finish searching for information, Ss post their products on the Facebook group.<br>○ T and Ss watch the product's design together. T and Ss can also give feedback or comment.</td>
<td>Name, Type, Location, Architect: Design and construction, and at least one Reference: the source of information.<br><br>Use any online presentation program to develop and communicate data or media through a slide or a blank space provided. Share the findings in the Facebook group created.</td>
<td>laptop<br>• Facebook group<br>• Web search engine<br>• Mobile devices: mobile phone/ tablet/ laptop<br>• Online presentation software/ platform<br>• Graphic design software/ platform<br>• Note-taking software/ platform<br><br> 
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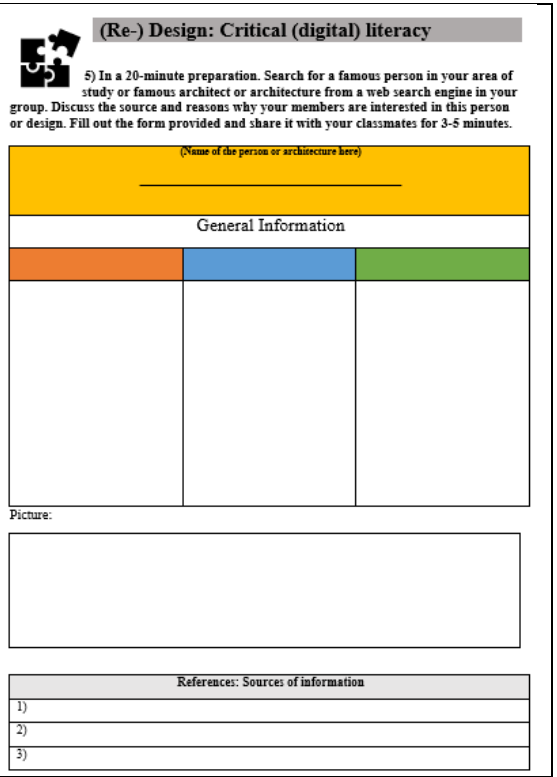
| | | | |
|---|---|---|---|
| | **Note:**<br><br>• This activity tends to generate Ss to work in a group activity to search for information and accredit to the sources they make as a reference.<br>• For Ss who do not access the digital text, they could also use the handwritten or drawing. | | |
| **Components:** (Re-) Design<br><br>**Areas:** Critical literacy | Ss work in a group of 5-6 people.<br><br>Each S must have their role for the task in their group.<br><br>T asks Ss to search for a famous architect or architecture based on a group's web search engine.<br><br>Discuss the source and reason why the members are interested in the person or design. | Given 20-minute preparation. 6) In a group of 5-6 people. Search for a famous person in your area of study or a famous architect or architecture based on a web search engine in your group. Discuss the source and reasons why your members are interested in this person or design. Fill out the form provided and share it with your classmates for 3-5 minutes. | • Connectivity: WIFI (or 3G/4G/5G)<br>• Facebook group<br>• Web search engine<br>• Mobile devices: mobile phone/ tablet/ laptop<br>• Online presentation software/ platform<br>• Graphic design software/ platform<br>• Note-taking software/ platform |

| | | | |
|---|---|---|---|
| | Design the form provided:<br><br>○ The topic (name of a person or an architecture)<br>○ There are three empty boxes for 'General Information,' Ss discuss what components they would like to put in a group.<br>○ Find the graphic in a picture or a motion video.<br>○ Give at least three sources of information that Ss use as a reference | |  <br>**(Re-) Design: Critical (digital) literacy**<br>**5) In a 20-minute preparation. Search for a famous person in your area of study or famous architect or architecture from a web search engine in your group. Discuss the source and reasons why your members are interested in this person or design. Fill out the form provided and share it with your classmates for 3-5 minutes.**<br>(Name of the person or architecture here)<br>General Information<br>Picture:<br>References: Sources of information<br>1)<br>2)<br>3) |
| **Components:** Information<br><br>**Areas:** Search literacy | T asks Ss to fill in the blank with an appropriate answer, and they could use an online dictionary as a tool to help them find the meaning and content of each word: | 7) Fill in the blank with appropriate answers.<br><br>**Vocabulary:**<br><br>*authority, construction, contractor, coordinate, element, emphasis, essential, fundamental,* | • Connectivity: wifi (or 3G/4G/5G)<br>• Online dictionary |

| | | | |
|---|---|---|---|
| | *authority, construction, contractor, coordinate, element, emphasis, essential, fundamental, interpret, professional, structure, schematic, occupants, license, logic, regulations* | *interpret, professional, structure, schematic, occupants, license, logic, regulations* |  <br>**Information: Search literacy**<br>**Vocabulary**<br>**6) Fill in the blank with appropriate answers.**<br>**fundamental** (adj.) / **professional** (adj.) / **authority** (n.) / **contractor** (n.)<br>**structure** (n.) / **schematic** (adj.) / **occupants** (n.) / **licensed** (v.)<br>**regulations** (n.) / **element** (n.) / **construction** (n.) / **coordinate** (v.)<br>1. The organization that is the governing _____ of a political unit.<br>2. _____ occupations include medicine and the law and teaching.<br>3. The previous _____ of this apartment were an American couple.<br>4. Safety _____ are being ignored by the company in the drive to increase profits.<br>5. Voluntary organizations will need to _____ their efforts to help the homeless.<br>6. We'll need to employ a building _____ to do the work.<br>7. Some understanding of grammar is _____ to learning a language.<br>8. The company has a complex organizational _____.<br>9. User participation is a basic _____ in our design process.<br>10. The new drug has not yet been _____ in the US.<br>11. _____ began this year and will take approximately 18 months.<br>12. A _____ outline showing the main form and features of something, usually in the form of a drawing, in a way that helps people to understand it. |

| | | | |
|---|---|---|---|
| **Components:**<br><br>Communication:<br><br>**Areas:**<br><br>Print literacy | This warm-up activity is to give Ss be familiar with the reading context.<br><br>Read the article **"What Is an Architect? Learn What Architects Do."**<br><br>T read to Ss as an audio, T stresses on the vocabulary in **bolds.**<br><br>After finish reading, T and Ss discuss the article and evaluate the source of the item. | **Reading:**<br><br>a) Reading 1: Read the passage and answer the following questions:<br><br>**What Is an Architect? Learn What Architects Do** | **Communication: Print literacy**<br>**Reading**<br>**a) Reading 1: Read the passage and answer the following questions.**<br>**What Is an Architect? Learn What Architects Do**<br>Buildings are a **fundamental** part of the human experience. We live, work, shop, learn, worship, seek care, and spend our leisure time inside these **structures**—and we evaluate them based on how effectively they serve their specific purposes. In every case, the design of modern buildings is the work of *(50 words)* essential craftspeople: architects.<br>An architect is a skilled **professional** who plans and designs buildings and *(65 words)* generally plays a key role in their **construction**. Architects are highly trained in the art *(80 words)* and science of building design. Since they bear responsibility for the safety of their buildings' *(95 comments)* occupants, architects must be professionally **licensed**.<br>  <br>Architects design buildings, but their job description involves responsibility *(110 words)* for much and more than just the design's artistic elements. Architects also:<br>• Communicate effectively with *(125 words)* clients to create buildings that satisfy the clients' needs<br>• Budget, **coordinate**, and oversee projects<br>• Translate *(140 words)* their ideas into **schematic** design drawings and documents<br>• Incorporate mechanical, electrical, plumbing, and other details *(155 words)* into the designs<br>• Satisfy building code and zoning **regulations**<br>• Secure project approval and permits from *(170 words)* regulatory **authorities**<br>• Prepare construction documents with detailed structural and material information<br>• Work with **contractors** during *(185 words)* a building's construction phase<br>• Protect the health, safety, and welfare of their buildings' future occupants *(200 words)*<br>[9] |

<table>
<tr>
<td>Components:<br><br>Communication:<br><br>Areas:<br><br>Print literacy</td>
<td>T and Ss check TRUE or FALSE and correct the incorrect statement.</td>
<td>a1) Check TRUE or FALSE. Correct the incorrect statement.</td>
<td>a1) Check TRUE or FALSE. Correct the incorrect statement.
<table>
<tr><th></th><th>Statement</th><th>TRUE</th><th>FALSE</th></tr>
<tr><td>1</td><td>We evaluate buildings based on how efficiently they serve their specific purposes.</td><td></td><td></td></tr>
<tr><td>2</td><td>Architects are highly trained in the mathematics and science of building design.</td><td></td><td></td></tr>
<tr><td>3</td><td>Architects design buildings, but their job description involves less responsibility than we thought, just the essential design elements.</td><td></td><td></td></tr>
<tr><td>4</td><td>Architects permit regulatory authorities to secure project approval.</td><td></td><td></td></tr>
<tr><td>5</td><td>Architects prepare graphic design with detailed structural and material information.</td><td></td><td></td></tr>
</table></td>
</tr>
<tr>
<td>Components:<br><br>Communication:<br><br>Areas:<br><br>Print literacy</td>
<td>This is the article for Reading Fluency practice.<br><br>T read the instructions to Ss, and there are six steps to follow<br><br>1) Ss need three different colors of highlighters<br><br>2) This activity needs a stopwatch. Ss will have 60 seconds to read the article on the next page as much as they can.</td>
<td>b) Reading 2: Reading Fluency Practice:<br><br>What Are the Different Types of Architects?<br><br>Instructions:<br><br>1) You need three different colors of your highlighters.</td>
<td>• Stopwatch<br>• Highlighters (3 colors)<br><br>b) Reading 2: Reading Fluency Practice<br>Instructions:<br>1) You need three different colors of your highlighters.<br>2) You have 60 seconds to read the article on the next page as much as you can.<br>3) After 60 seconds, or if you finish reading before 60 seconds, mark your timestamp on the passage where you have ended.<br>4) On your second cycle, you will have to proceed with the process on numbers 2) and 3) until you finish the third cycle.<br>5) After the end of the reading cycle. Answer the following questions without looking back at the passage (the answers will be given later on).<br>6) Then, count the words you read on each cycle and write down numbers 1,2,3 in the Reading Rate Chart: Rate Build-up for reading each time and circle the number of the correction in reading comprehension.</td>
</tr>
</table>

| | | | |
|---|---|---|---|
| | 3) After 60 seconds, when the time's up or any Ss finish reading early, Ss will have to mark the sentence's end as a timestamp with the 1st highlighter.<br><br>The process is the same as instructions 3). 4) Ss prepare to read in the second round. After 60 seconds, when the time's up or any Ss finish reading early, Ss will have to mark the sentence's end as a timestamp with the 2nd highlighter. Ss repeat the process after this, Ss mark the sentence's back as a timestamp with the 3rd highlighter.<br><br>5) After the end of the reading cycle. Ss answer the following questions and statements on instruction b1) and b2) **without looking back at the passage**.<br><br>T shows the correct answers to Ss. | 2) You have 60 seconds to read the article on the next page as much as you can.<br><br>3) After 60 seconds, or if you finish reading before 60 seconds, mark your timestamp on the passage where you have ended.<br><br>4) On your second cycle, you will have to proceed with numbers 2) and 3) until you finish the third cycle.<br><br>5) After the end of the reading cycle. Answer the following questions without looking back at the passage (the answers will be given later).<br><br>6) Then, count the words you read on each cycle, write down numbers 1,2,3 in the Reading Rate | **Reading Rate Chart: Rate Build-up**<br>**c) Use this graph to record the Reading Fluency Practice passage process at the end of the chapter. Find the intersection of your reading rate and your comprehension score. Write the number of reviews reading on the chart. Your goal is to place in Quadrant 4. Circle the total number AS of reading comprehension.**<br><br>**Quadrant 2** / **Quadrant 4**<br>**>200**<br>**200**<br>**185**<br>**170**<br>**155**<br>**140**<br>**125**<br>**110**<br>**95**<br>**80**<br>**65**<br>**50**<br>**Quadrant 1** / **Quadrant 3**<br>**Circle the number of corrections**: **1 (20%)** · **2 (40%)** · **3 (60%)** · **4 (80%)** · **5 (100%)**<br>**>Greater than ending words with 5 = go up**<br>**<Less ending words with 5 = go down**<br><br>**Q1** You are reading ***slower*** than 200 wpm with ***less*** than 70% comprehension<br>**Q2** You are reading ***faster*** than 200 wpm with ***less*** than 70% comprehension<br>**Q3** You are reading ***slower*** than 200 wpm with ***greater*** than 70% comprehension<br>**Q4** You are reading ***faster*** than 200 wpm with ***greater*** than 70% comprehension |

| | | | |
|---|---|---|---|
| | Ss count how much they can answer correctly.<br><br>6) Ss count the words they have read on each cycle and write down numbers 1,2,3 in the **Reading Rate Chart: Rate Build-up** for reading each time and circle the number of the correction in reading comprehension. | Chart: Rate Build-up for reading each time, and circle the number of corrections in reading comprehension. | **What Are the Different Types of Architects?**<br>  [10]<br>There are several different "architect jobs" under the architect umbrella, and these specialized roles include:<br><br>**Design Architect**: Design architects most correspond to the popular notion of an architect. They're responsible for conceiving a project's overall design. They **interpret** a client's needs, analyze the building site and surrounding environment, consider the *(50 words)* budget, and create a structure within these parameters.<br><br>**Technical Architect**: Technical architects are responsible for *(65 words)* the fine details of a building's planning, ensuring that it can successfully be built and *(80 words)* that it will function. For larger-scale projects, like office buildings, technical architects are usually **essential**. *(95 words)*<br><br>**Project Manager**: The creation of new buildings is a complex endeavor. Project managers require a *(110 words)* deep knowledge of the architectural process to communicate with all parties, problem-solve, and lead.<br><br>**Interior** *(125 words)* **Designer**: Interior designers determine the arrangement of non-bearing walls and doors, select materials and finishes, *(140 words)* place power outlets, design lighting, and even choose furniture—all while considering the needs of *(155 words)* the client and building codes.<br><br>**Landscape Architect**: Landscape architects design outdoor spaces like parks and *(170 words)* gardens, as well as certain structures within them. They require additional skills like stormwater management, *(185 words)* planting design, and sustainability planning. As 21st-century urban planning, places increasing **emphasis** on green spaces.<br><br>*(200 words)* |
| **Components:**<br><br>Communication:<br><br>**Areas:** | Let Ss practice on this part after Reading Rate Build-up. | b1) Match the vocabulary with the correct meaning<br><br>**Vocabulary:** | **b1) Match the vocabulary with the correct meaning**<br>**interpret** (v.) o o particular importance, value, or prominence given to something.<br>**essential** (n./adj.) o o explain the meaning of (information, words, or actions).<br>**emphasis** (n.) o o necessary; extremely important. |

| | | | |
|---|---|---|---|
| Print literacy | | *emphasis, essential, interpret* | |
| **Components:**<br><br>Communication:<br><br>**Areas:**<br><br>Print literacy | Let Ss practice on this part after Reading Rate Build-up.<br><br>T provides the answers in b1) and b2) | b2) Choose the correct answer. | **b2) Choose the correct answer.**<br>1 What is the possible alternative for **interpret** (line 5)?<br>a) mystify<br>b) clarify<br>c) distort<br>d) obscure<br><br>2 These are the alternatives of **essential** (line 10) ***EXCEPT***?<br>a) crucial<br>b) fundamental<br>c) principle<br>d) auxiliary<br><br>3 What does **emphasis** (line 21) refer to…<br>a) a demanding on the natural environment areas<br>b) a requiring on management skills<br>c) an increase of sustainability development<br>d) a need for more landscape architectures<br><br>4 Which type of architecture demands plenty of leadership skills?<br>a) Design Architect<br>b) Technical Architect<br>c) Interior Designer<br>d) Project Manager<br><br>5 What is the role of a **Design Architect**?<br>a) to ensure that the building will function right<br>b) to analyze the building construction, including controlling the budget<br>c) to design an outdoor space to meet the clients' needs<br>d) to arrange the indoor space and parties |

<table>
<tr>
<td>Components:<br><br>Communication:<br><br>Areas:<br><br>Print literacy</td>
<td>
<ul>
<li>T lets the Ss use this graph to record the Reading Fluency Practice passage process at the end of the chapter.</li>
<li>Ss find the intersection of their reading rate and comprehension score.</li>
<li>Ss rite the number of reviews reading on the chart.</li>
<li>Ss goal is to place in Quadrant 4.</li>
<li>Ss circle the total number of reading comprehension.</li>
</ul>
Note:
<ul>
<li>Count the words >Greater than ending words with 5 = go up</li>
<li>Count the words <Less ending words with 5 = go down</li>
</ul>
</td>
<td>Reading Rate Chart: Rate Build-up:<br><br>c) Use this graph to record the Reading Fluency Practice passage process at the end of the chapter. Find the intersection of your reading rate and your comprehension score. Write the number of reviews reading on the chart. Your goal is to place in Quadrant 4. Circle the total number of reading comprehension</td>
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c) Use this graph to record the Reading Fluency Practice passage process at the end of the chapter. Find the intersection of your reading rate and your comprehension score. Write the number of reviews reading on the chart. Your goal is to place in Quadrant 4. Circle the total number AS of reading comprehension.
<table>
<tr><td></td><td>Quadrant 2</td><td></td><td></td><td></td><td>Quadrant 4</td></tr>
<tr><td>>200</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>200</td><td></td><td></td><td></td><td></td><td></td></tr>
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<tr><td></td><td>Quadrant 1</td><td></td><td></td><td></td><td>Quadrant 3</td></tr>
<tr><td>Circle the number of corrections</td><td>1 (20%)</td><td>2 (40%)</td><td>3 (60%)</td><td>4 (80%)</td><td>5 (100%)</td></tr>
</table>
>Greater than ending words with 5 = go up<br>
<Less ending words with 5 = go down
<table>
<tr><td>Q1</td><td>You are reading slower than 200 wpm with less than 70% comprehension</td></tr>
<tr><td>Q2</td><td>You are reading faster than 200 wpm with less than 70% comprehension</td></tr>
<tr><td>Q3</td><td>You are reading slower than 200 wpm with greater than 70% comprehension</td></tr>
<tr><td>Q4</td><td>You are reading faster than 200 wpm with greater than 70% comprehension</td></tr>
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</td>
</tr>
<tr>
<td>-</td>
<td>T shows the Ss glossary at the end of the chapter, reminds them to go through the glossary at the end of the chapter.</td>
<td>Glossary<br><br>Students record responses to learning through Learning Logs:</td>
<td></td>
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</table>

| | | | |
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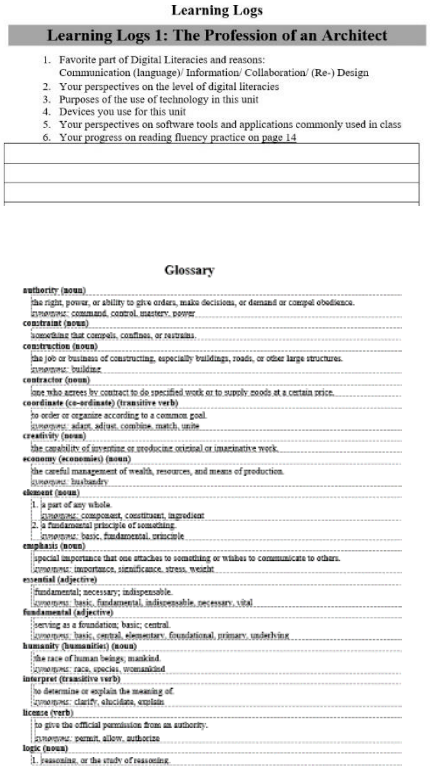
| | T asks Ss to record their learning logs at the end of the class to reflect what they have learned based on four components in Digital Literacies (They could write in their native language).<br><br>Some leading questions are in the Instructor's Manual.<br><br>*Multimodal literacy:*<br><br>*Search and information literacy:*<br><br>*Personal (security) literacy:*<br><br>*Critical literacy:* | 1.Favorite part of Digital Literacies and reasons:<br><br>Communication (language)/ Information/ Collaboration/ (Re-) Design<br><br>2.Your perspectives on level of digital literacies<br><br>3.Purposes of the use of technology in this unit<br><br>4. Devices you use for this unit<br><br>5. Your perspectives on software tools and application commonly used in class<br><br>6. Your progress on Reading Fluency Practice on page 14 |  <br>**Learning Logs**<br>**Learning Logs 1: The Profession of an Architect**<br>1. Favorite part of Digital Literacies and reasons: Communication (language)/ Information/ Collaboration/ (Re-) Design<br>2. Your perspectives on the level of digital literacies<br>3. Purposes of the use of technology in this unit<br>4. Devices you use for this unit<br>5. Your perspectives on software tools and applications commonly used in class<br>6. Your progress on reading fluency practice on page 14<br>**Glossary**<br>**authority (noun)** the right, power, or ability to give orders, make decisions, or demand or compel obedience. *synonyms:* command, control, mastery, power<br>**constraint (noun)** something that compels, confines, or restrains.<br>**construction (noun)** the job or business of constructing, especially buildings, roads, or other large structures. *synonyms:* building<br>**contractor (noun)** one who agrees by contract to do specified work or to supply goods at a certain price.<br>**coordinate (co-ordinate) (transitive verb)** to order or organize according to a common goal. *synonyms:* adapt, adjust, combine, match, unite<br>**creativity (noun)** the capability of inventing or producing original or imaginative work.<br>**economy (economies) (noun)** the careful management of wealth, resources, and means of production. *synonyms:* husbandry<br>**element (noun)** 1. a part of any whole. *synonyms:* component, constituent, ingredient<br>2. a fundamental principle of something. *synonyms:* basic, fundamental, principle<br>**emphasis (noun)** special importance that one attaches to something or wishes to communicate to others. *synonyms:* importance, significance, stress, weight<br>**essential (adjective)** fundamental; necessary; indispensable. *synonyms:* basic, fundamental, indispensable, necessary, vital<br>**fundamental (adjective)** serving as a foundation; basic; central. *synonyms:* basic, central, elementary, foundational, primary, underlying<br>**humanity (humanities) (noun)** the race of human beings; mankind. *synonyms:* race, species, womankind<br>**interpret (transitive verb)** to determine or explain the meaning of. *synonyms:* clarify, elucidate, explain<br>**license (verb)** to give the official permission from an authority. *synonyms:* permit, allow, authorize<br>**logic (noun)** 1. reasoning, or the study of reasoning. |

# APPENDIX F

## Online Reading Fluency Test Evaluation Form

Please click on the small box (☐) under -1, 0, or +1 whether you agree, disagree, or are unsure with each statement below. If you want to change your answer, click on the box again. For the information you give -1, please explain why in the comments/suggestions.

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

| Assessment Issues | A | B | C | IOC Mean Score | Meaning |
|---|---|---|---|---|---|
| **Objectives** | | | | | |
| 1. The objectives of the test items are clear and concise. | -1 | +1 | +1 | 0.5 | Reserved |
| 2. The objectives test items are relevant to the Reading Fluency Framework and consistent with the concept of the lesson. | +1 | +1 | +1 | 1 | Reserved |
| 3. The objectives test items are consistent with the concept of the lesson before the implementation (Pretest) | +1 | +1 | +1 | 1 | Reserved |
| 4. The objectives test items are consistent with the concept of the lesson before the implementation (Posttest) | +1 | +1 | +1 | 1 | Reserved |
| ***Comment/suggestions:*** *Expert A: According to my understanding, the objectives of any tests are aiming to make the students understand why they have to take the tests and what they will get after it. Yet, there is no such statement in both the Pretest and Posttest.* | | | | | |
| **Reading Fluency: Reading Rate** | | | | | |
| 5. The time allocation for the test is appropriate for the students (110 items/ 2,000 words/ 10 minutes) according to the Reading Fluency Framework. | +1 | +1 | +1 | 1 | Reserved |
| 6. Reading fluency rate is appropriate for the test and to student's level. | +1 | +1 | 0 | 0.67 | Reserved |
| ***Comment/suggestions:*** *Expert C: What is the level of the students?* | | | | | |
| **Reading Fluency: Reading Comprehension** | | | | | |
| 7. Test items 1-55 is appropriate for Lexical quality: word reading efficiency and vocabulary knowledge (Definition & Meaning/ Synonyms, & Antonyms/ Language Function) | +1 | +1 | +1 | 1 | Reserved |
| 8. Test items 56-110 is appropriate for Cognitive load factors: prior knowledge and working memory | +1 | +1 | +1 | 1 | Reserved |

| | | | | | |
|---|---|---|---|---|---|
| (Based on learning units 1-3) | | | | | |
| 9) Reading fluency rates is appropriate for the test and to the student's level. | +1 | +1 | 0 | 0.67 | Reserved |
| ***Comment/suggestions:***<br>*Expert C: What is the level of the students?* | | | | | |

# APPENDIX G

## Lesson Plan Evaluation Form

Please click on the small box (☐) under -1, 0, or +1 whether you agree, disagree, or are unsure with each statement below. If you want to change your answer, click on the box again. For the information you give -1, please explain 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

| Assessment Issues | A | B | C | IOC Mean Score | Meaning |
|---|---|---|---|---|---|
| **Learning Goals and Objectives** | | | | | |
| 1. The objectives are clear and concise. | 0 | +1 | +1 | 0.67 | Reserved |
| 2. The objectives are relevant and consistent with the concept of the lesson. | +1 | +1 | 0 | 0.67 | Reserved |
| **Language Content** | | | | | |
| 3. Vocabulary is appropriate for the lesson and to student's level. | +1 | +1 | +1 | 1 | Reserved |
| 4. Reading fluency passages and practices is appropriate for the lesson and to student's level. | +1 | +1 | +1 | 1 | Reserved |
| **Evaluation** | | | | | |
| 5. The evaluation processes are clear and concise. | +1 | +1 | +1 | 1 | Reserved |
| 6. The evaluation processes are relevant and consistent with the concept of the lesson. | +1 | +1 | +1 | 1 | Reserved |
| **Activities** | | | | | |
| 7. The steps of teaching and activities are practical to students. | +1 | +1 | +1 | 1 | Reserved |
| 8. The steps of teaching are straightforward and practical. | 0 | +1 | +1 | 0.67 | Reserved |
| **Instructions** | | | | | |
| 9. The steps of instructions are clear to students. | +1 | +1 | +1 | 1 | Reserved |
| 10. The steps of teaching are straightforward and practical. | +1 | +1 | +1 | 1 | Reserved |
| **Digital Literacies** | | | | | |
| 11. The steps of teaching digital literacies are in the appropriate sequence. | +1 | +1 | +1 | 1 | Reserved |
| 12. The steps of teaching digital literacies are straightforward and practical. | +1 | +1 | +1 | 1 | Reserved |
| **Communication (Language)** | | | | | |
| 13. The steps of teaching engage students to understand and create a variety of written texts. | +1 | +1 | +1 | 1 | Reserved |
| 14. The teaching steps encourage students to interpret texts in multiple media, using images, | +1 | +1 | +1 | 1 | Reserved |

| | | | | | |
|---|---|---|---|---|---|
| sounds, and video. | | | | | |
| **Information** | | | | | |
| 15. The Steps of teaching help students to make effective use of search engines and services. | +1 | +1 | +1 | 1 | Reserved |
| 16. The steps of teaching encourage students to evaluate documents to assess their credibility. | +1 | +1 | 0 | 0.67 | Reserved |
| **Collaboration** | | | | | |
| 17. The teaching steps allow students to use digital tools to shape and project a desired online identity. | 0 | +1 | +1 | 0.67 | Reserved |
| 18. The Steps of teaching help students connect with the relevant networks to communicate with and inform others. | +1 | +1 | +1 | 1 | Reserved |
| **(Re-) Design** | | | | | |
| 19. The steps of teaching encourage students to evaluate information and data online. | +1 | +1 | 0 | 0.67 | Reserved |
| 20. The steps of teaching encourage students to critique the material underpinnings. | +1 | +1 | 0 | 0.67 | Reserved |
| 21. The steps of teaching encourage students to engage with academic research into new technologies. | +1 | +1 | +1 | 1 | Reserved |

# APPENDIX H

## Reading Instruction Evaluation Form

Please click on the small box (☐) under -1, 0, or +1 whether you agree, disagree, or are unsure with each statement below. If you want to change your answer, click on the box again. For the information you give -1, please explain why in the comments/suggestions.

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

| Assessment Issues | A | B | C | IOC Mean Score | Meaning |
|---|---|---|---|---|---|
| **Disciplinary Learning** | | | | | |
| 1. The steps of teaching help students to access and evaluate information:<br>● Search for information from web engine<br>● Locate quality resources<br>● Make sense of data and evidence represented in digital models<br>● Discuss text and concepts found online<br>● Evaluate the information and reflect whether the information located fulfills the intended purposes | 0 | +1 | +1 | 0.67 | Reserved |
| **Digital Literacies Instruction** | | | | | |
| 2. The steps of teaching are in the appropriate sequence. | +1 | +1 | +1 | 1 | Reserved |
| 3. The steps of teaching are straightforward and practical. | +1 | +1 | +1 | 1 | Reserved |
| **Communication (Language)** | | | | | |
| 4. The steps of teaching engage students to understand and create a variety of written texts | +1 | +1 | +1 | 1 | Reserved |
| 5. The teaching steps encourage students to interpret texts in multiple media, using images, sounds, and video. | +1 | +1 | +1 | 1 | Reserved |
| **Information** | | | | | |
| 6. The Steps of teaching help students to make effective use of search engines and services. | +1 | +1 | +1 | 1 | Reserved |
| 7. The steps of teaching encourage students to evaluate documents to assess their credibility. | 0 | +1 | +1 | 0.67 | Reserved |
| **Collaboration** | | | | | |
| 8. The teaching steps allow students to use digital tools to shape and project a desired online identity. | +1 | +1 | +1 | 1 | Reserved |
| 9. The Steps of teaching help students connect with the relevant networks to communicate with | +1 | +1 | +1 | 1 | Reserved |

| | | | | | |
|---|---|---|---|---|---|
| and inform others. | | | | | |
| **(Re-) Design** | | | | | |
| 10. The steps of teaching encourage students to evaluate information and data online. | +1 | +1 | 0 | 0.67 | Reserved |
| 11. The steps of teaching encourage students to critique the material underpinnings. | +1 | +1 | 0 | 0.67 | Reserved |
| 12. The steps of teaching encourage students to engage with academic research into new technologies. | +1 | +1 | +1 | 1 | Reserved |
| **Reading Rate Chart: Rate Build-up** | | | | | |
| 13. The Reading Rate Chart: Rate Build-up format is suitable for students to practice and record their reading fluency practices | +1 | +1 | 0 | 0.67 | Reserved |
| **Language Content** | | | | | |
| 14. Vocabulary is appropriate for the lesson and to the student's level. | +1 | +1 | 0 | 0.67 | Reserved |
| 15. Reading fluency passages and practices is appropriate for the lesson and to the student's level. | +1 | +1 | 0 | 0.67 | Reserved |
| **Learning Logs** | | | | | |
| 16. Topics in learning logs cover all components in digital literacies that students need to reflect. | +1 | +1 | 0 | 0.67 | Reserved |
| 17. The questions in the learning logs are suitable and appropriate for students. | +1 | +1 | 0 | 0.67 | Reserved |

# VITA

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|---|---|
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