



Diligent (Digital Literacy Agent) Nurturing English Future Teachers' Competence in the Digital Era

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Abstract. Digital literacy has been crucial aspect of the people life currently including education. However, previous studies have shown that English pre-service teachers' level of digital literacy is still alarming. Therefore, efforts are needed to improve the digital literacy skills among English pre-service teachers since they will be dealing with students from the alpha generation. The main focus of this research is on developing the DILIGENT (Digital Literacy Agent) learning model following the SIOP (Sheltered Instruction Observation Protocol) Model in the TELL course to improve students' digital literacy at the English Education Study Program, Universitas Suryakencana. Eight criteria in the SIOP model are employed to develop the DILIGENT model. Merging the digital literacy framework from JISC with the SIOP model, this research is expected to create future English teachers who are not only skillful in teaching but also in spreading good teaching practice to their colleagues.

Keywords: Digital Literacy · DILIGENT · SIOP

1 Introduction

Students must have sufficient digital literacy in facing the industrial revolution 4.0 marked by digital technology. Consequently, nowadays, literacy is not merely the ability to read, write, and count, but also digital literacy. By preparing millennial students in higher education with digital literacy, it is expected that they will be the nation's golden generation.

A map of digital literacy in Indonesia has been designed by researchers involving *Jaringan Peneliti Literasi Digital (Japelidi)* [1]. It observed the digital literacy movement's practitioners, kinds of activities, targets, and partners. Universities are the main subject (56, 14%), and then governments (14, 34%), communities (13, 52%), non-governmental organizations (5, 32%), schools (3, 68%), corporates (3, 68%), associations, and community organizations (2, 86%), and media (0, 4%) in digital literacy in Indonesia. Unfortunately, the activities in this movement only cover socialization and one-way lectures. MOOCs' digital literacy development learning and teaching process in universities can be a new medium in expanding digital literacy and strengthening the university's role as a promotor in the digital literacy movement in Indonesia.

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It is widely known that Indonesia nowadays is still struggling to face the challenge to increase its literacy level. The organization for Economic Cooperation and Development (OECD) published that Indonesia's position in the Program for International Student Assessment (PISA) survey in 2018 was low. PISA itself is an international assessment method as an indicator to measure Indonesian students on the global scope. Indonesia's rank for reading competence was 72 out of 77 countries [2].

The need for digital literacy for academic purposes is urgent, considering that there has been no digital literacy movement that leads explicitly to intellectual pursuits. Because accessing MOOCs can automatically acquire digital literacy abilities, the growth of MOOCs offers up a wide range of potential to be utilized as an open and enormous learning platform to create digital literacy for millennial generation students [3]. The learning skills of the millennial generation of students in the 21st century are still deficient in the components of creative collaborators and innovative designers [4]. Therefore, it is crucial to improve future English teacher students' digital literacy, and make them the agent of change who can share their digital literacy skills and knowledge with their surroundings.

1.1 Digital Literacy

Information and data literacy, communication and teamwork, digital content production, security, and problem-solving are the five of DigComp 2.0 digital competencies [5]. UNESCO developed a digital literacy concept referring to digital literacy released by the European Commission's Digital Competence Framework for Citizens (DigComp 2.0). According to UNESCO in 2018, digital literacy is the capacity to use digital technology to safely access, manage, comprehend, integrate, communicate, analyze, and generate information in order to pursue employment, decent employment, and entrepreneurship. It encompasses skills referred to variably as media literacy, information literacy, computer literacy, and ICT literacy.

JISC (Joint Information Systems Committee) in the UK has also issued a digital literacy framework used by digital leaders and workers responsible for developing digital capabilities in their organization's [6]. Students with various educational backgrounds can also use the JISC UK digital literacy framework. The JISC UK digital literacy framework is divided into six areas.

1. ICT Skills (Functional skills)
2. Information and media literacy (Critical Use)
3. Digital Creation, problem-solving, and innovation (Creative Production)
4. Communication, collaboration, and digital participation
5. Digital learning and development
6. Digital Identity and Health (Self-actualization)

1.2 Technology Enhanced Language Learning (TELL)

The teaching and acquisition of a second language, commonly known as L2, are strongly impacted by technology enhanced language learning (TELL). Computers are used as technological advancements to show multimedia as a supplement to language teacher

teaching methods in what is known as technology-enhanced language learning. It's crucial to remember that TELL is more of an approach that may be utilized in conjunction with other teaching strategies of choice to support instruction. [7].

Until now, TELL is considered suitable for teaching that follows the principles of constructivism and second language acquisition theory. The focus of constructivism, both synchronous and asynchronous communication, allows social interaction, which is central to constructing meaning. It is not surprising that TELL has been cited as a medium for a constructivist approach in the language classroom. From the point of view of second language acquisition theory, social interaction using both modes of communication allows EFL learners to get comprehensible input [8].

1.3 Sheltered Instruction Observation Protocol (SIOP)

One model is considered appropriate for teaching certain content, such as ESP (English for Specific Purposes) of the several learning models that have often been used in learning English. This learning model, known as the Sheltered Instruction Observation Protocol (SIOP) Model, has improved English learners' language skills with different content and ages [9].

The SIOP model consists of eight elements. To ensure that students get the most out of the lessons, each component demands clarity and close attention to detail. The post-lesson evaluation procedure should involve reflection because this will help identify any changes that need to be made before the class meets again. Lesson Preparation, Background Building, Comprehensive Input, Strategies, Interaction, Practice & Application, Lesson Delivery, and Review & Assessment are among the eight SIOP components [10].

1.4 Previous Research

The SIOP development center's research findings demonstrate how SIOP has evolved into a paradigm for career advancement. There has been a variety of resources made accessible to educators as it has evolved. Echevarra et al. model 's for educators, which includes a full explanation of numerous themes including (a) teaching using technology, (b) fusing the SIOP model with the US Common Core Standards, and (c) chances for self-assessment, is a current example [11].

However, literacy in Indonesia is still not widely done. Another fact about efforts to improve digital literacy also collided with the fact that the availability of access to digital literacy training in Indonesia is indeed not evenly distributed [12], so the involvement of various parties is needed to facilitate this activity. So that the participation of all stakeholders in the context of developing digital literacy in schools must be increased. For instance, by developing digital literacy activities such as student work exhibits, setting up infrastructure and facilities to facilitate digital literacy, and facilitating the training of facilitators of digital literacy in school settings [13]. Currently, with the high demand for improving the quality of human resources in mastering digital technology, various digital literacy movements have been carried out by stakeholders in Indonesia focused on digital literacy for academic purposes (digital literacy for educational purposes).

In answering the demand for digital literacy research in the EFL context, the current study then focuses on two points:

1. The practice of digital literacy learning at TELL course following the SIOP Model.
2. Students' digital literacy in the TELL course following the SIOP Model.

2 Methodology

This study was carried out following descriptive research to portray the TELL practice by the lecturer that integrated digital literacy following the JISC framework with the SIOP model, and the response from the students who are pre-service English teachers. Descriptive study confirms the aims of the study a manner that is specifically designed to describe a phenomenon as it is, including the description, recording, analysis, and interpretation of the current nature of or practices of occurrences [14]. The focus of descriptive research is to prevail circumstances, things or people behave or act at a particular time, and it often depicts comparison or contrast of those phenomena. In this particular study, the processes investigated in this study was the teaching and learning process focused on implementing the JISC digital literacy framework integrated with SIOP protocol at TELL subject.

The current study established several considerations in choosing the locus of the research by portraying the effort in nurturing digital literacy among the pre-service English teachers through TELL subject with SIOP protocol. First, digital literacy has been a crucial qualification for pre-service English teachers. Therefore, this study will be carried out at institutions that provide education for pre-service English teachers. Secondly, regarding the object of this study, the lecturer and the pre-service English teacher taking the TELL course selected have the requisite features to implement it. Thus, the implementation of this study would be a considerable stimulus for people in general as well as for the pre-service English instructors on the site.

2.1 Participants

Participants in this study were a lecturer and 25 pre-service English teachers at an English Education Study Program at Universitas Suryakencana in Cianjur. Purposive sampling was applied to select the participants involved in this research. It is a sampling strategy to include people in the study on purpose while taking into account the provision of helpful information to create a thorough grasp of the problem under inquiry [15]. As this study focused on the implementation of digital literacy on TELL course, the lecturer was chosen based on her experience dealing with the course. Her 25 students taking the course were selected for their disposition to use digital literacy in their learning activities effectively.

2.2 Instruments

For triangulation, several data collection methods should be used to ensure the research design's internal validity. In this research, some instruments were used to collect the data, i.e., observation, questionnaire, and interview. The key tool for obtaining a clear picture of the actual occurrence of teaching-learning processes was video-taped classroom

observation. The purpose of the observation was to comprehend the culture, environment, or social phenomenon under study through the participant's standpoint [16].

Data that is hardly obtained through an interview can be observed, resulting in a comprehensive understanding of the activity or behavior and its elements under investigation [17]. As a result of combining questionnaires and interviews to obtain replies from students, a broad pattern of responses to the questions was produced.

2.3 Procedures

Observation, questionnaires, and interviews were used to collect the data. Additionally, information was gathered directly from the locals and environment of the study site. The classroom observation functioned to determine the aspects to be kept in the form of a checklist. The observation checklist follows the SIOP Protocol to determine the lecturer's effort in infusing digital literacy in her TELL classroom. The interview was utilized to expose the student's response to the implementation of digital literacy integration in the TELL course.

2.4 Data Analysis

Qualitative data analysis is completed primarily by using the data collected from observation, and interviews. Qualitative data analysis consists of three main stages: data reduction, data display, and data conclusion [18]. Therefore, after collecting the data through observation, open-ended questionnaires, and interviews, the data was reduced, displayed, and concluded based on the JISC digital literacy framework and SIOP Protocol.

3 Findings and Discussions

As mentioned earlier, this study aims to implement the DILIGENT (Digital Literacy Agent) learning model following the SIOP (Sheltered Instruction Observation Protocol) Model [19] in the TELL course to foster students' digital literacy in English Education Study Program. Some instruments were used to find the research data, including observation, questionnaire, and interviews.

3.1 Implementing the DILIGENT (Digital Literacy Agent) Learning Model

The observation was conducted several times. The researcher followed the SIOP (Sheltered Instruction Observation Protocol) model in observing the classroom activities. It highlighted eight points. Lesson Preparation, Background Building, Comprehensive Input, Strategies, Interaction, Practice & Application, Lesson Delivery, and Review & Assessment are among the eight SIOP components [6].

Before the classroom observation, the researcher looked closely at the course outline designed by the lecturer, and whether it suits the Digital Literacy framework from JISC. The course outline has met some of the JISC frameworks for digital literacy. It covers materials about ICT Skills (Functional skills), Information and media literacy (Critical

Use), Digital Creation, problem-solving, innovation (Creative Production), Communication, collaboration, digital participation, Digital learning and development, and Digital Identity and Health (Self-actualization) [20].

Based on the observation results following the SIOP model, it was discovered that the lecturer had applied several points of the SIOP model in her TELL course. As explained earlier, there are eight components to be closely examined in the classroom by using the SIOP Model. The eight SIOP components include Lesson Preparation, building background, comprehensive input, strategies, interaction, practice & application, lesson delivery, and review & assessment [6].

From the previous explanation about the course outline for the TELL course, the lecturer followed the first component of the SIOP Model, the Lesson Preparation. The course outline showed complete detail, including the course identity, aims, outcomes, assessment, and teaching materials and activities for each meeting.

The course outline mentions that the TELL course aims to equip the students as pre-service English teachers with the practical foundation of the affordances of technology to promote the English language teaching and learning process. By having this course, they are expected to be digitally literate and techno-wise English educators who can design EFL teaching and learning activities and integrate supportive technologies to improve the quality of English instruction. Further, it is also stated in the course outline that TELL has several intended learning outcomes, such as 1) improving digital literacies to promote English language instructions; 2) designing engaging activities for teaching and learning English; 3) critically examining technology affordances for promoting their teaching and learning practices, and 4) share knowledge and skills related technology integration into English language instructions.

Regarding the other SIOP model of building background knowledge and comprehensible input, the course adopted flipped learning format (50% online, 50% face-to-face meeting). The online course was intended to give students background knowledge of digital literacy before they do some tasks in an offline meeting. The teaching and learning process was supported using different technologies, mainly Canvas and other collaborative and conferencing tools. Students were required to actively participate in discussions and presentations (both online and offline). In addition, a technology learning journal and reflection report were due from the students. The lecturer applied scaffolding strategies for the strategies and interaction by designing the lesson in bite-size. However, since it is an EFL classroom, the lecturer often used English as the classroom language instead of the L1 language. In delivering the lesson, the lecturer mixed the strategies of individual and group tasks. While for review and assessment, the lecturer gave two kinds of inspection: summative and formative. For the formative evaluation, the students participated in the discussions and presentations planned for each session. They completed a journal and a reflection report, as the summative assessment involved a final product in the form of a webinar series.

3.2 Students' Digital Literacy at TELL Course Following the SIOP Model

The researcher used a questionnaire about the students' digital literacy to answer this question. The questionnaire followed the JISC framework. The JISC UK digital literacy framework is divided into six areas, including ICT Skills (Functional skills), Information

Table 1. The pre-service English teacher digital literacy [20]

No.	Category	Percentage
1.	ICT Skills (Functional skills)	47%
2.	Information and media literacy (Critical Use)	58%
3.	Digital Creation, problem solving, and innovation (Creative Production)	53%
4.	Communication, collaboration, and digital participation	71%
5.	Digital learning and development	58%
6.	Digital Identity and Health (Self-actualization)	55%

and media literacy (Critical Use), Digital Creation, problem-solving, and innovation (Creative Production), Communication, collaboration and digital participation, Digital learning and development, Digital Identity and Health (Self-actualization) [6]. The result shows some interesting facts about the students' digital literacy.

As shown in Table 1, the pre-service English teachers' digital literacy has average levels of digital literacy of the JISC framework. For ICT skills, on average, they reached 47% correct answers to total indicators. These ICT skills covered the button skills or the ability to use ICT-based devices, applications, software, and services. While for Information and media literacy (Critical Use), the respondents hit 58%. This category focuses on the capacity to find, evaluate, manage, curate, organize and share digital information. In digital creation, problem-solving, and innovation (Creative Production), and the capability to design and create new digital artifacts and materials such as digital writing, digital imaging, digital audio and video, digital code, apps and interfaces, and web pages was achieved by 53% of respondents. They achieved 71% in the category of digital engagement, communication, and collaboration. They acknowledged using digital platforms and spaces like social media, online video and audio, and text-based forums to effectively communicate. The percentage of pre-service teachers who demonstrated the ability to recognize and use digital learning resources as well as participate in and benefit from digital learning opportunities was 58%. Finally, the response rate for digital identity and health was 55% (Self-actualization). They could take care of tasks like creating and projecting a favorable digital identity or identities and managing digital reputation (personal or organizational) across numerous platforms.

From Table 1, it is confirmed that the respondents hit the highest level of communication, collaboration, and digital participation skills in digital literacy. They are fully competent in the use of digital media and spaces such as text-based forums, online video and audio, and social media. The respondents who were part of the Z generation indeed have greater exposure to digital media and spaces. They were born, grow and live in the digital environment daily. No wonder they are so keen on communicating using digital media.

The digital skill that reached the lowest is the basic ICT skills; on average, they got 47% correct answers to total indicators. These ICT skills covered the button skills or the ability to use ICT-based devices, applications, software, and services. This fact is predictable, since the respondents are pre-service teachers. They might have no great

skill in recognizing or assembling the hardware. They are not required to deal with ICT problems and failures, as well as design and implement ICT solutions, because they are more concerned with ICT users than developers.

The interview result also enhances these findings with the lecturer. She mentioned that some students find it difficult to operate some technology because they don't have prior knowledge about it, such as Powtoon. Even though they can use it, their willingness to explore a relatively complex technology is still lacking, and they tend to complain a lot about the difficulty of the technology system. And at a certain point, they stopped exploring the technology and did nothing to understand it.

However, implementing the DILIGENT model in nurturing the pre-service digital literacy among the English language teachers somehow showcases the students' digital literacy footprints. As shown at their mid-test, when the lecturer required them to create a video of their understanding of the teaching material on the use of digital media in education, they could accomplish it and had no problem delivering their assignment in LMS.

During the classroom activities, the respondents showed high interest in sharing their understanding of many digital literacy topics. They were confident with their new knowledge and skills related to digital media practice in English teaching. Their confidence and interest in learning and sharing new things about the practice of digital media in English teaching gave a hint to their future role as a model for their surroundings or as an agent of the digital literacy movement in their working environment.

4 Conclusion

This study scrutinized the effort to nurture digital literacy among pre-service teachers in a private university. It combined the SIOP model and JISC digital literacy framework called DILIGENT in its implementation. This research showed that the SIOP model could be integrated with JISC digital literacy framework to teach pre-service language teachers in TELL subjects. The respondents who were the lecturer and pre-service English students could adapt to the SIOP model's digital literacy teaching. The lecturer showed ample knowledge in optimizing the SIOP model to be implemented in the TELL course, as her students also understand more than enough about JISC digital literacy framework. In sum, DILIGENT allowed pre-service teachers to nurture their digital literacy to be practiced later in the classroom and share their immense knowledge and skills on digital literacy with their surroundings.

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