EFL Pre-service Teachers' Online Reading Strategy Use and their Insight into Teaching Reading

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Abstract. The purpose of this study is to investigate the usage of online reading strategies among EFL pre-service teachers in the Education Program and their pedagogical practices in teaching online reading. A total of 107 participants from the English Education program in East Java were involved in this study. A mixed-method design was used as the research approach. For data collection, this present study used the Second Language Online Reading Strategy Inventory (SLORSI) closed-ended questionnaire and semi-structured interviews. Overall, 13 participants were involved in the interview session. Based on the statistical analysis of the questionnaire, it was found that EFL pre-service teachers showed a high level of usage of online reading strategies (*M= 3,71 – 4.14*). The most frequently used was the *Saving* strategy (*M= 4,14*). However, the interview results were inconsistent with the questionnaire; although the participants showed a high level of usage of online reading, they offered different perspectives on teaching online reading. The participants mentioned inadequate reading digital literacy and strategies for future reading classes. Therefore, this study suggests that EFL education programs must highlight the importance of providing explicit practice for pre-service teachers using online reading strategies and model the strategy for future students.

Keywords: Indonesian EFL pre-service teachers; online reading strategy; digital reading text; teaching online reading

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1. Introduction

The Internet provides digitally based material or information for our reading. As a result, reading activity has migrated from print to online/digital texts. Besides the changes in the medium of reading from paper text to screen text (Cho, 2014; Cho & Afflerbach, 2017; Coiro & Dobler, 2007; Dobler & Eagleton, 2015), there are several changes involved in switching to online reading, relating to reading habits and practices (Jang et al., 2020). For printed texts, the reader reads multiple forms of traditional texts, such as books and magazines, while during online reading, readers actively engage with reading digital texts such as websites, e-books, and text messages. The practice of scaffolding in reading has also changed, such that scaffolding must be supported by using technology to fit the needs of students in 21st-century learning (Arifani, 2020; Kucirkova et al., 2015). Another essential part of technology development in reading is the new literacy in online reading comprehension. Leu et al. (2012) mention that the usage of the Internet as a result of technological advancement offers new literacies during online reading comprehension; they are: 1) reading to notice significant concerns; 2) reading to locate information; 3) reading to critically assess information; 4) reading to synthesize online information; 5) reading and writing to exchange Internet knowledge.

There is little empirical evidence, particularly among adolescents, to support claims that printed and digital texts are distinctive media that necessitate different cognitive processes (Cho, 2014; Cho & Afflerbach, 2017). Commonly, traditional cognitive reading skills focus on strategic comprehension of a single text, ranging from literal to inferential comprehension (Cho, 2014). A traditional cognitive strategy is required for online reading but is insufficient; cognitive flexibility is also required for online reading (Coiro & Dobler, 2007). Cognitive flexibility requires readers to use past knowledge flexibly within the context of multiple texts from different sources/hypertexts available on the Internet (Cho & Afflerbach, 2017; Coiro & Dobler, 2007). Further, Cho (2014) claims that online reading is effective when readers efficiently navigate a range of digital sources and make informed judgments about what to read, how to sequence selections, and when and where to read further and access new sources or not. Thus, new types of strategic knowledge are required in the online reading process, including identifying, locating, analysing, and utilising informative material accessible on the Internet (Cho & Afflerbach, 2017; Coiro & Dobler, 2007). In addition, Gilbert (2017) investigated how English students (in an ESL environment) interpret and assess reading using digital literacy abilities. He implies that language learners use different reading strategies and practices while reading web material. Furthermore, Gilbert (2017) advises that digital literacy abilities should be developed alongside traditional literacy abilities in the target language, including in the area of reading.

Several previous studies have investigated reading strategies in the online environment (Cho, 2014; Chou, 2012; Coiro & Dobler, 2007; Hahnel et al., 2016; J. Park et al., 2014). These studies have led to many claims about how students use strategies when reading online, one of which is that the success and experience of students using online reading strategies depend on how their teacher scaffolds

the reading process (H. R. Park & Kim, 2017). However, previous researchers have not investigated in much detail how teachers experience online reading strategies, including pre-service teachers. As stated by Leu, Jr. et al. (2004), in line with the emergence of new literacy skill in internet integration in classroom learning, particularly in online reading literacy, it is crucial to study how teachers manage the learning experience, both in terms of the teacher's own experience in using online reading strategies and how teachers teach their students these strategies.

In the Indonesian context, previous research contributing to knowledge on to pre-service teachers' online reading strategy was undertaken by Mudra (2018). He focuses on profiling pre-service teachers using online reading strategies at one of the universities in Indonesia. There were a few limitations of his study. First, the instrument used in the study was the Online Survey of Reading Strategies (OSORS), which adopted the Metacognitive Awareness of Reading Strategy Inventory (MARSI). However this instrument was believed to fail to address the distinctiveness and specific features of online reading, such as new cognitive strategies and social communication (Li, 2020). Second, Mudra (2018) did not investigate pre-service teachers' perspectives on digital reading literacy that impacted their pedagogy knowledge, in particular how to teach online reading in their future reading classes. As Larson (2013) states, educators must recognize digital reading literacy and assist students in determining which reading strategies to employ in their best interest. Further, the learning experiences of pre-service teachers when they are in education will have an impact on their readiness to become teachers (Hikida et al., 2019). It also impacts their perception of what kind of teacher they will become (Griffith, 2017), and their level of awareness of how to become a teacher and how to use specific teaching strategies in their future classrooms (Iwai, 2016; Zamora & Zamora, 2022).

Considering the limitations of previous studies, it is necessary to conduct extensive research on how EFL pre-service teachers use online reading strategies and how this knowledge might be used to teach online reading, since proficiency as a teacher in emerging literacies necessitates knowledge, abilities, and attitudes intimately related to the subject, context, and pedagogy (Larson, 2013; Tafazoli et al., 2020). Most teaching on how to use digital media in reading instruction is delivered in response to new and evolving technologies (Maden, 2018). Therefore, this present study aims to investigate:
1. What online reading strategies are used by EFL pre-service teachers in reading online texts.
2. EFL pre-service teachers' insights into teaching online reading strategies for their future reading classes.

2. Literature review
The primary purpose of this present study is to investigate how EFL pre-service teachers utilize online reading strategies and their insights into teaching online reading. In order to elucidate these ideas, we rely on two theoretical frameworks that are believed to provide the most acceptable perspectives for our investigation: online reading strategy and EFL pre-service teachers' reading

literacy and strategy. The two theoretical frameworks will be discussed in the following sub-section.

2.1 Online reading strategy

Reading strategies are contextual activities of human cognition aimed at achieving a particular reading objective in the broadest sense. Reading strategies are selected, structured, and implemented based on how readers engage with the materials and sources accessible in the task context. Consequently, a strategic reader would respond actively to the texts by retaining the fundamental and evolving objectives, and this responsiveness influences their reading strategy selection and coordination (Cho, 2014). Further, a comprehensive study evaluation on reading comprehension techniques was conducted by Song et al. (2020). They believe there is a significant link between students' reading competency and strategy utilization; English as a second language and English as a foreign language readers may learn to utilize higher-order thinking methods to increase their reading ability.

The availability of computers and the Internet is beneficial in the use of Computer Assisted Language Learning (CALL) in English teaching and learning. Such multimedia offer a wealth of materials, including: text, graphics, video, animation, computer data, online libraries, and e-journals. There is something of a relationship between online reading and electronic literacies, such that, readers who are online need to adopt literacy skills and regulate their reading purposes and patterns in diverse reading situations (H. R. Park & Kim, 2017). With the different characteristics and tasks inherent to online text, language learners experience new challenges where traditional reading strategies are not sufficient to help them read online text. One example is when entering keywords in a search engine; users will be presented with more than ten choices relevant to the keywords they entered, so they must be able to decide which text should be read first, second, and next (Cho & Afflerbach, 2017). This observation is also in line with research results by Gilbert (2017) showing that language learners use different reading strategies and practices while reading web material. As a result, online readers must learn new reading strategies in the face of new reading settings and challenges (Reiber-Kuijpers et al., 2021).

Recently, investigators have examined the use of online reading strategies among pre-service teachers. For example, Amer et al. (2010) investigated students' online reading strategies, which were limited only to differences in the use of strategies by students based on gender differences (male and female) and semester level (first and fourth semester) at a university in Oman. Moreover, Iwai (2016) examined pre-service teachers' use and understanding of metacognitive reading strategies at three levels of the teacher education program (initial, middle, and final). Meanwhile, Mudra (2018) only focuses on the profiles of pre-service teachers using an online reading strategy in one of the universities in Indonesia. Generally, these previous studies use existing instruments (Metacognitive Awareness of Reading Strategy Inventory (MARSI) or Online Survey of Reading Strategies (OSORS)) to investigate pre-service teachers' online reading strategies. However, Li (2020) argues that the weaknesses of OSORS includes that fact that it

only adapts items from MARSI by adding phrases online/online to the OSORS instrument. So, the instrument's validity is still in question, because eight items were taken from MARSI without any further explanation or validation. Therefore, the OSORS instrument does not fully capture the complex nature of online reading, which involves complications such as using both traditional print text and electronic literacy strategies (Li, 2020).

The online reading strategy questionnaire used in this research is a new self-reporting instrument called Second Language Online Reading Strategies Inventory (SLORSI), developed by Li (2020). The instrument includes cognitive, metacognitive, and social aspects of online reading (Li, 2020). The three aspects of focus that are measured in the instrument used in this study will provide a complete picture of frequent strategy use in online reading. Moreover, in terms of cognitive strategy, it provides an overview of traditional and new cognitive strategies in online reading. Basically, in the online reading process, there is a collaborative process between traditional strategies (such as skimming, inferring, translating) and electronic literacy skills for reading (locating, synthesizing), which are also called new cognitive strategies (Leu et al., 2012; Leu et al., 2017; Li, 2020). In previous research in the Indonesian setting (Mudra, 2018), the investigation of online strategies by EFL pre-service teachers has not addressed electronic literacy skills, which is the unique area of online reading strategies. Electronic literacy skills affect the extent to which readers approach the online reading environment (H. R. Park & Kim, 2017; Song et al., 2020). Another major difference between the SLORSI and other online reading strategy questionnaires is that the SLORSI questionnaire is constructed based on three theoretical perspectives: constructively responsive reading, the Information Problem Solving (IPS) model, and new literacies of reading (Li, 2020). Thus, the information obtained from this questionnaire will comprehensively describe the strategies used by readers, especially in terms of the new cognitive and communication strategies needed for online reading. Furthermore, the results of this questionnaire can illustrate how readers perform new literacy practices in reading online/digital texts. For this reason, it is proper to investigate Indonesian EFL-preservice teachers using SLORSI.

2.2 EFL pre-service teachers' reading literacy and reading strategy

The New Literacies Perspective acknowledges that new literacies are ever-changing and that the link between literacy and technology is transactional (Larson, 2013). The transformational effects of technology on traditional definitions of reading and learning have an impact on the purpose, processes, medium, and act of reading (Brueck & Lenhart, 2015). So, students require new literacy skills to tap into the promise of emerging and changing technology effectively. However, once students utilize technology in new ways, students also alter the technology, resulting in further new literacies (Leu et al., 2017). Teachers are constantly challenged to modify their reading teaching in response to new and changing technology. Also, one of the impacts of the emergence of new literacy related to ICT development is the changing role of teachers in the classroom (Zamora & Zamora, 2022). In the literacy era, teachers are challenged to thoughtfully guide students' learning within information environments that are

richer and more complex than traditional print media, presenting richer and more complex learning opportunities for both themselves and their students (Leu, Jr. et al., 2004). Burke and Rowsell (2008) claim that educators or teachers should re-examine their beliefs about what it means to be literate in a technological world and how reading instruction should improve the complicated skills required to analyze digital texts critically. Digital Reading Literacy combines traditional book reading with knowledge available on the Internet, ICT, or in a digital reading setting (Chen, 2017). Students must recognize, select, and retrieve important messages related to their objectives due to the vast number and diversity of digital information resources. Since teachers must evaluate students' needs in various learning contexts and determine the best approach to assist them, they must be aware of the significance of, but also be competent in, electronic literacies and online reading (H. R. Park & Kim, 2017).

Teacher proficiency in emerging literacies necessitates knowledge, skills, and attitudes that are intricately linked to content, context, and pedagogy (Larson, 2013). Practical online training in new reading strategies not only assists readers in overcoming challenges in reading digital texts but also improves their performance in reading materials in an electronic medium (Li, 2020). Regrettably, not all teachers prioritize the teaching of nuances of online texts and online reading strategies (Laeli et al., 2020; Li, 2020). Also, instructors may assist their students in improving their online reading fluency and comprehension by recognizing the unique challenges of online reading and ensuring adequate strategy instruction and digital-reading practices (Brun-mercer, 2019). Therefore, strategic training should begin by empowering teachers to demonstrate a different approach, helping them to understand how to apply it and why it is essential for learners.

Previous research on digital and reading literacy for the pre-service teacher is limited to integrating digital literacy practice into teaching instruction (Botturi, 2019; Hoffman et al., 2019; Prasojo et al., 2018) and digital reading literacy practices (Brun-mercer, 2019; Larson, 2013). However, there has been little discussion among EFL researchers, including in Indonesia, on the strategy used by pre-service teachers for digital reading and how this is associated with pre-service teachers' knowledge of digital reading literacy activities in reading classes. As future teachers, pre-service teachers must understand not only how to learn but also how to teach or transfer knowledge to their students (Bembenutty et al., 2015); this must include the ability to set an example for their students on the use of the strategy (Perry et al., 2007) and develop new strategies that contribute to the achievement of an effective teaching-learning process (Zamora & Zamora, 2022). Therefore, investigating pre-service teachers' insight into teaching online reading strategy is essential so that their future students can become effective online readers and become digitally literate.

3. Research method

The third section is concerned with the methodology used for this study. This section is divided into four sub-sections, they are: research design, participants and settings, instruments, and data collection and data analysis.

3.1 Research design

This present study applies a mixed-method approach, with an explanatory sequential design. This design was used to explore further the results or a specific aspect of the findings (Merriam & Tisdell, 2016). The current study first relies on quantitative data collection (the questionnaire), followed by qualitative collection (semi-structured interviews). The quantitative data revealed which strategies EFL pre-service teachers typically apply while reading online/digital texts. And the qualitative interviews gave insight into online reading strategy, specifically how these ideas manifested themselves in their pedagogy.

3.2 Participants and settings

This study involved 107 male and female English pre-service teachers (in the sixth and eighth semesters). They are university students at 13 separate state and private English Education programs in East Java province, Indonesia (Table 1). The participants' ages ranged between 20 and22. The study programs for all participants involved in the research are accredited by the Indonesian National Accreditation Body. The participants involved in interviews had completed both their reading series program and a full micro-teaching program.

This study was conducted in early 2022 (from January to March 2022). At that time, the COVID-19 pandemic situation in East Java Province was still classified as unsafe, so this research was conducted online through a synchronous activity (virtual conference) and asynchronous activities (Google Form). Researchers coordinated and recruited participants through online chat communication. Finally, from January to March, the required data were confirmed as having reached saturation, so data retrieval was declared complete.

Table 1: Pre-service teachers' profiles

Gender	30 male & 77 females
Average age	21 years old
Semester	6th semester (64 std) & 8th semester (43 std)
Province	East Java
Questionnaire participants	107
Interview participants	13 students

3.3 Instruments and data collection

There were two different instruments used to collect data in this study: questionnaire and interview. The two instruments will be discussed in the following sub-section.

3.3.1 Developing questionnaire
The questionnaire was developed based on a self-reporting instrument for Second Language online Reading Strategies (SLORSI) developed by Li (2020). The researcher did not make any changes or modifications to the questionnaire items in SLORSI since Li (2020) had already checked the questionnaire items statistically using the Confirmatory Factor Analysis (CFA) to validate them. Further, theoretically, all the items included all the aspects that satisfy the new literacy in digital reading. The total items included in the questionnaire were 29, divided into four major sections. The first section was focused on traditional cognitive strategies, which included inferring strategy (3 items), skimming strategy (3 items), and translating strategy (3 items). The second section was about new cognitive strategies, which included locating strategy (3 items), synthesizing strategy (4 items), saving strategy (4 items), and navigating strategy (3 items). The third section examined the evaluating strategy (3 items), and the fourth was communicative strategy (3 items). For each section of the questionnaire, a five-point Likert scale was used.

3.3.2 Developing the interviews
The interview items focused on participants' perspectives on online reading literacy for future students in their classes, what online reading strategies they will use to teach digital reading text in their future reading classes, and whether they have specific reading digital text practices in their university class. The interview items were modified from the SLORSI questionnaire (Li, 2020) and the questions guide was inspired by Iwai (2016). Semi-structured interviews were conducted with 13 participants that were selected based on their university representativeness. The interviews were conducted one on one via an online virtual conference. The participants' voices and videos were recorded once they had given their authorisation.

3.4 Data analysis
The quantitative data were analyzed to follow the frequency of usage strategy by determining the Mean (M) and Standard Deviation (SD). The mean scores for each item and each strategy subscale obtained from the questionnaire were identified on three levels based on Oxford's language learning strategy usage (Li, 2020): high (mean of 3.5 or above), medium (mean of 2.5 to 3.4) and low (2.4 or lower). The lower the mean value of the items and strategy subscale, the less frequently the strategy was used by the EFL pre-service teachers. In contrast, the higher the mean value of the items and strategy subscale, the more frequent the strategies used by the EFL pre-service teachers. Finally, each strategy subscale's results were statistically compared to the data evaluated using SPSS 20.

Meanwhile, the qualitative data from the semi-structured interviews were analyzed based on the step proposed by Creswell (2012). The analysis was composed of: organizing the data, coding the data, coding to build descriptions and themes, reporting the findings, interpreting the findings, and validating the findings' accuracy. The results of the semi-structured interview were used to determine the EFL pre-service teachers' insights into teaching reading digital literacy and online reading strategy for future students.

4.Findings

The findings of this study will be reported based on two main problems: pre-service teachers' use of online reading strategies and pre-service teachers' insights into teaching online reading strategies. The following sub-sections will discuss the results of this study in detail.

4.1 Online reading strategies used by EFL pre-service teachers

There are four dimensions of online reading strategies investigated in this study: traditional cognitive strategies, new cognitive strategies, evaluation strategies, and communication strategies. The findings will be presented based on an analysis of the frequency of the use of strategy items in each subscale for each dimension. Then, after all the strategy items have been reported, the findings in this study will indicate the results of the comparison between the subscales in each dimension to find on which strategy is most often used for online reading by EFL pre-service teachers.

4.1.1 Dimensions of traditional cognitive strategy

Based on data (Table 2), all the strategic items on the subscale in the dimension of traditional cognitive strategy were rated highly (M = 3.50 above). Although all the strategy items in each subscale achieved high scores, there is a significant difference in the mean scores for each item within the subscale. From the three strategy items in inferring, the most frequently used strategy is "I check if my guesses about the online text are right or wrong" (M=3.82). This means that, when considering meanings of the text that are not clearly expressed, the participants prefer to verify if their general predictions regarding the web material are correct or incorrect, rather than focusing on unfamiliar words or phrases. This is in line with the score for strategy items in skimming, relating to determining the core concept or links between ideas at a glance. Participants mostly agreed with the sentence "I scroll up and down in an online text to find relationships among ideas in it." (M=4.12), rather than reading the first sentence of each paragraph of the entire text. And when they have a comprehension problem, they prefer to look to the meaning of difficult words in their native language, rather than looking for equivalent words in the target language (English) through search engines or online dictionaries. This can be seen from the mean score for the subscale translating strategy items, where the item with the highest mean was "I translate difficult sentences into my native language to deal with comprehension failures" (M=4.29). Therefore, we can conclude that the strategy item in the traditional cognitive strategy dimension most commonly used is translating (M=3.99, SD=0.733).

Table 2. The mean, standard deviation (SD), and level of dimension results for the traditional cognitive strategy

Dimension	Subscale	Items	Mean (M)	SD	Level
Dimension Traditional Cognitive Strategy	**Inferring**	"I check if my guesses about the online text are right or wrong."	**3.82**	0.70	High
		"When I read online, I try to guess what the content is going to be next."	**3.79**	0.79	High
		"When I read online, I guess the meaning of unknown words or phrases."	3.79	0.82	High
	Skimming	"While reading online, I read the first sentence of each paragraph for a quick overview."	3.85	0.81	High
		"I take an overall view of an online text to see what it is about at the beginning stage."	3.66	0.70	High
		"I scroll up and down in an online text to find relationships among ideas in it."	4.12	0.65	High
	Translating	" I translate difficult sentences into my native language to deal with comprehension failures."	4.29	0.64	High
		"I look for the native language equivalents of terms in an online specialized dictionary."	3.77	0.73	High
		"I look for the native language equivalents of key words online by using search engines."	3.93	0.72	High

4.1.2 Dimensions of new cognitive strategy

In the new cognitive strategy dimension, based on Table 3, all items in each subscale are at a high level, which means that participants in this study widely use all the strategy items. There are four subscales in the new cognitive strategy dimension: locating, synthesizing, saving, and navigating. Based on Table 3, in each subscale, among locating, participants often use the strategy "I use my background knowledge about the topic to locate target information," (M=3.96). This means that, to search and identify the location of the information needed, the participant most commonly used their additional information about the topic

rather than the information about the website or information from the printed text. Furthermore, in the category synthesizing, the most widely used strategy is for the items "I click on a hyperlink when it is important for my understanding of the current online text," (M=3.95) and "I check to see whether new information fits my reading purpose" (M=3.95). So, the participants mostly combine different sources and examine whether the content is appropriate to their reading need. Meanwhile, in the subscale saving, the strategy item that is most widely used is "I save the link when I feel an online text is important," (M=4.50). It can be concluded that the participants most commonly save information they find without additional notes or highlight information about the topic. Moreover, for the navigating subscale, the most widely used strategy item is "I remind myself of my reading purposes before clicking on a link," (M = 3.93). This means that the participants control and manage their act of scrolling through a website while reading. However, within the subscale in the dimension of new cognitive strategy, the highest mean score is for the saving strategy.

Table. 3 The mean, standard deviation (SD), and level of dimension results for the new cognitive strategy

Dimension	Subscale	Items	Mean (M)	SD	Level
Dimension New Cognitive Strategy	**Locating**	"I use my background knowledge about the topic to locate target information. "	3.96	0.64	High
		"I use my knowledge of informational website structures to locate target information."	3.79	0.71	High
		"I use prior knowledge of printed informational text structures to locate target information. "	3.80	0.68	High
	Synthesizing	"I contrast information from various pages to sort out those that mostly serve my reading purposes."	3.76	0.76	High
		"I click on a hyperlink when it is important for my understanding of the current online text."	3.95	0.68	High
		"I check to see whether new information fits my reading purpose. "	3.95	0.60	High
		"I check whether information on a new webpage fits my understanding of the text. "	3.85	0.55	High

	Saving	"I save the link when I feel an online text is important. "	4.50	0.73	High
		"When I feel an online text is important, I save it together with my notes. "	4.10	0.76	High
		"When I feel an online text is important, I save it with highlighted information in it. "	4.07	0.77	High
		"I save pages bearing similar information in an internet bookmark folder for future reviewing."	3.89	0.78	High
	Navigating	"I consciously control my reading path by clicking on suitable links. "	3.79	0.65	High
		"Before I start reading a new website, I glance over the website's main menu. "	3.66	0.79	High
		"I remind myself of my reading purposes before clicking on a link."	3.93	0.70	High

4.1.3 Dimensions for evaluating strategy

For the subscale evaluating for the dimension for evaluating strategy, based on the item strategies in Table 4, all strategy items are at the high level (M= 3.50 above), but the highest score of Mean was in response to the statement "I look for multiple online texts on the same topic" with M=3.93 and SD=0.70. This means that participants tend to find and analyze a similar idea to find information for a particular topic rather than text that contains various different aspects of the topic.

Table. 4 The mean, standard deviation (SD), and level of dimension results for the new evaluating strategy

Dimension	Subscale	Items	Mean (M)	SD	Level
Dimension Evaluating Strategy	Evaluating	"When reading on line, I look for sites that cover both sides of an issue. "	3.75	0.67	High
		"I look for multiple online texts on the same topic. "	3.93	0.70	High
		"I critically analyse and evaluate the information presented in an online text."	3.74	0.65	High

4.1.4 Dimensions for communication strategy

Based on Table 5, in the communicative subscale in the dimension for communicative strategy, participants show variations in the use of this strategy. There are two levels in this subscale, namely high and medium and the item most commonly used by the participants is "I collaborated with others online to gain a deeper understanding of a text" with M= 4.01 and SD = 0.79. In understanding the text, participants more often collaborate with others to find a deeper understanding of the information they get through the online text. However, unlike the level results for the strategy items, one of the items in the communication subscale resulted in a medium level score, "I communicate with other readers by leaving comments in message areas," (M=3,28; SD=0,87). This means that participants in this study tend not to communicate with other users to any great extent, if they do not know each other, while understanding the information in a digital text. Of course, this result contrasts with the other two strategy items in the subscale for communication. So, from the inconsistency of these results, it can be concluded that participants in this study prefer to communicate and collaborate with other users who are still in the same community they know, such as close friends or classmates.

Table. 5 The mean, standard deviation (SD), and level of dimension results for the new evaluating strategy

Dimension	Subscale	Items	Mean (M)	SD	Level
Dimension Communicative strategy	**Communication**	"I collaborate with others online to gain a deeper understanding of a text. "	4.01	0.79	High
		"I communicate with other readers by leaving comments in message areas. "	3.28	0.87	Medium
		"I discuss my comprehension problems on online social media (e.g. Facebook, WhatsApp, WeChat, etc.). "	3.83	0.95	High

4.1.5 Subscale strategy across dimensions

This study also analyses each subscale across dimensions through the mean, standard deviation score, and level. In Table 6, it can be seen that all the subscales resulted in high scores (M= 3.50 above). However, even though all the subscales are at a high level, there is a slight difference in their mean scores. The highest mean loss was in the saving subscale (M=4.14 and SD= 0.793). This means that the saving subscale strategy in the new cognitive strategy was more frequently used than the other subscale strategies across dimensions. This means that participants

in this study use electronic technology to preserve significant or comparable online text material. Moreover, the lowest subscale strategy is communication, which implies that online readers communicate, discuss, and participate with others to address their reading challenges using network services.

Table. 6 The mean, standard deviation (SD), and level subscale results for the various dimensions

Dimension	Subscale	Mean (M)	SD	Level
Dimension Traditional Cognitive strategy	Inferring	3.80	0.769	High
	Skimming	3.88	0.746	High
	Translating	3.99	0.733	High
Dimension New Cognitive strategy	Locating	3.85	0.680	High
	Synthesizing	3.88	0.656	High
	Saving	4.14	0.793	High
	Navigating	3.80	0.724	High
Dimension Evaluating Strategy	Evaluating	3.80	0.677	High
Dimension Communicative strategy	Communication	3.71	0.923	High

4.2 EFL pre-service teachers' insights into digital reading literacy and strategy
The data to answer the second research question were taken from the interview results. Thirteen participants were invited to the interview session. The results of the interviews are reported below.

4.2.1 EFL pre-service perspective on online reading literacy
The first item from the interview was about EFL pre-service teachers defining online reading literacy practices. Based on the responses in the interview sessions, most EFL pre-service teachers define online reading literacy practices as an activity to improve their reading understanding through internet media specifically. They also said that online reading is an activity to obtain and understand messages or information in text written via the Internet:

> "*In online reading to find information, I will teach the students how to search information. I will ask them to write related keywords based on the topic they find in the google browser.*" **(Pre-service Teacher 5)**

"Online reading practices including the process of reading or understanding the meaning of text in digital format or online." **(Pre-service Teacher 7)**

"Online reading literacy practices is an activity that is involved in the process of obtaining information or messages conveyed by the author to the reader through internet media." **(Pre-service Teacher 13)**

However, some respondents say that online reading is the process of reading text in the form of soft file sprit pdf, and epub., making it easy for readers to read anywhere without carrying a printed book.

"online reading is a kind of reading which is in format electronic. By online reading, we can read anything what we want and where we want only with our gadget, not only that, online reading no need confused to find words and pages, we can easily by typing the words or pages on the search." **(Pre-service Teacher 3)**

From the responses in this study, it can be implied that EFL pre-service teachers have different knowledge about online reading activities. Some of them already understand that online reading is an activity to promote reading literacy digitally through the media. However, some still say that online reading is just a non-printed text reading activity.

4.2.2. Locating, saving, and evaluating as the strategy for teaching online reading
The second focus of the interviews was asking the pre-service teachers how they will teach online reading with their future reading classes. The interview result indicated that, firstly, the EFL pre-service teachers are likely to tend to teach their future students how to search the Internet using background knowledge of the topic (locating). Further, they explain that in searching the information on the Internet, they will suggest that students type keywords related to topics on their target information.

"In online reading to find information, I will teach the students how to search information. I will ask them to write related keywords based on the topic they find in the google browser." **(Pre-service Teacher 5)**

The strategy mentioned below was about saving information deemed appropriate to the topic of information (saving). Specifically, the participants explained that they will teach students to save the information obtained into a specific folder on their laptops or cell phones.

"after the students find the information, I will teach them how to save, if it is in the form of pdf/word it should be downloaded, and save it in their folder, but if it is kind of website, I will ask them to copy all the information, and save it into word file." **(Pre-service Teacher 8)**

The last strategy discussed based on the interviews was searching for information from various websites, hyperlinks, or texts on the Internet on the same topic (evaluating). The EFL pre-service teachers explained that students must find resources to collect more information about the topic.

> *"Another important strategy to teach online reading is to find more information about the topics from different websites or links, that is appearing on the search page when they are searching for information."*
> **(Pre-service Teacher 13)**

4.2.3 EFL pre-service teachers need specific interventions to teach online reading
The last issue in the interview sessions related to whether the participants knew of explicit or specific subjects to teach online reading to their future students. Based on the interviews, the students mentioned that they had not been given specific or direct interventions about teaching online reading; they claimed that they had personal experience of searching for information from the Internet in writing class, and some other classes that they had to present a theory. Commonly, they were asked to find a reference source for their presentation material. However, they did not receive training on teaching online reading according to digital literacy needs for their future reading classes.

> *"So far, I have never received any special material that discusses how to teach reading when students have to read online (looking for information on the Internet). Yes, usually, when the TEFL course is related to reading learning in class, the lecturer only focuses on several learning strategies that we can use for reading learning, such as the KNWL strategy, etc."*
> **(Pre-service Teacher 4)**

5. Discussion

Based on the findings in this study, it is understood that the participants used a high level of different strategies. In other words, participants tend to use all the strategies described in the questionnaire frequently. These conditions could be due to the characteristics of the participants. The participants in this study were generally 20–21 years old and thus digital natives (Prensky, 2001). Digital natives already have basic computer skills in using Internet media for information retrieval since they have been familiar with using technology for the whole of their lives. Hahnel et al. (2016) state that if readers already have basic computer skills, it profoundly influences the digital reading process. Further, the findings of this study also confirm a report by Alieto et al. (2020). In their report, pre-service teachers aged between 18 and 25 show a positive attitude toward reading digital text since they have a strong understanding of technology and digital resources. Therefore, it is reasonable that all participants in this study scored highly for all item strategies.

Additionally, the four strategy dimension results show that the highest mean score was for new cognitive strategies (M = 3.9); the highest subscale in this category was the saving strategy. This result is in line with the claim of Dobler and Eagleton (2015), who stated that the Internet or web texts provide various information that can be obtained and organized more efficiently, thus making online readers more likely to save and sort the information they feel necessary or relevant to the topic they are looking for. Furthermore, in the traditional cognitive strategy dimension, the translation subscale has the highest mean value among the other subscales (M=3,99), meaning that online readers more often use the help of their mother tongue to understand the information contained in the texts they read. This finding is in line with Song et al. (2020), who found that bilingual online

resources are used in applying the comprehension strategy when reading online, including dictionaries that online readers often use. Overall, from the questionnaire results in this research, a combination of traditional and new cognitive strategies most commonly used by participants included translating and saving.

Another essential point from the findings related to the use of a communicative strategy to read online. The item in the communicative subscale shows that the participants did not take collaborative communication to broader users on the Internet within the text/web. Indeed, online communication is a crucial aspect of online reading practices (Leu et al., 2012),. Since communication involves readers in collaborative efforts to discuss, share and negotiate to improve reading performance and comprehension (Orosco & O'Connor, 2014). The study also highlights an essential social element unique to online reading: communicative techniques. Thus, online readers of a second language apply new information and communication technologies to discuss, and share to collaboratively co-construct meanings of texts. In this sense, online reading is no more an isolated activity but rather involves the collaborative efforts of online readers to address reading difficulties (Kiili et al., 2012). Such interactive and dialogic procedures assist online readers in increasing their cognitive awareness of learning (Liu et al., 2014). It is critical to assist people with new literacy using online reading and comprehension, which includes the capability to interact over the Internet to gain more information, collaborate on information, or convey the information you have learned.

Nevertheless, the findings of this study on online reading strategies used by EFL pre-service teachers also provide an overview of how online readers approach online reading for their learning (Song et al., 2020). The results of this study indicate that Indonesian EFL pre-service teachers were high users of the online reading strategy inventory (made up of traditional cognitive strategies, new cognitive strategies, evaluation strategies, and communicative strategies). The findings on these strategies were in contrast with the research results of Mudra (2018) and Iwai (2016) which showed that EFL pre-service teachers were medium users of online reading strategies.

In addition, the results of the interviews concerning pre-service teachers' insights into teaching online reading were inconsistent with the results about using online reading strategies from the questionnaire. First, their understanding of digital reading literacy practices demonstrated that most participants regard literacy practices as the ability to search for information within the text on the web or hyperlinks. In contrast, literacy practices in online/digital texts not only focus on the ability to seek information. Literacy practices include analyzing the information within the text on the web/hyperlinks, evaluating the credibility of the information sources critically, and synthesizing all the information found from the texts within various sources (Brun-mercer, 2019; Leu et al., 2011; Leu et al., 2012). Further, in addition to the four skills, literacy practice in online reading also includes the ability to communicate and collaborate with other online users while reading online (Kiili et al., 2018; Li, 2020).

Second, the interview results show that pre-service teachers did not comprehensively understand what strategies they would use with their future students when reading online. They only stated that three strategies would be given: locating, saving, and evaluating. Of course, this result contrasts with the statement of Song et al. (2020), Li (2020) and Reiber-Kuijpers et al. (2021), who found that with regard to online strategy, there is collaboration in the use of a printed text strategy (traditional strategy) and online text (new cognitive strategy) as well as a communication strategy. Moreover, participants stated that they had not been given an explicit program on how to teach online reading with appropriate strategies for online reading for their future reading classes. Laksani (2019) states that providing direct interventions on developing technology for English teaching is essential. Teachers must be trained to teach online reading using an appropriate strategy (Brun-mercer, 2019; Larson, 2013) so they can model it for their students (Perry et al., 2007).

This study supports the claim that teachers must evaluate students' needs in various learning contexts and determine the best approach to assist them. Teachers must be aware of the significance of, and be competent in, electronic literacies and online reading strategies (H. R. Park & Kim, 2017). Additionally, such teaching strategy training should begin during teacher education programs (Ndebele & Legg-Jack, 2022; Mohammadi et al., 2020). Therefore, it is essential to provide EFL pre-service teachers with information on acceptable practices for online reading strategies to respond to digital literacy practices for their future students in reading classes.

6. Conclusion
This present study reveals that EFL pre-service teachers use most of the various strategies for online reading: cognitive strategies (traditional and new), metacognitive strategy (evaluation), and social strategy (communication). The findings on the most frequently used online reading strategy adopted by EFL pre-service teachers in this study indicate that teachers and pre-service teachers need training on potential digital reading strategies in their teaching with more precise objectives. However, the online reading strategy experience does not imply their pedagogical practice as future teachers. During their undergraduate degrees, EFL pre-service teachers' programs must highlight the importance of digital reading literacy training and online reading strategy practices, particularly in Indonesia. In addition, educators should obtain training on how to use online reading strategy and literacy in pre-service teachers' professional lives. In this regard, the language curriculum should provide the fundamentals of digital reading, train excellent digital readers and teach how to integrate digital media into reading education in response to new and emerging technology. The limitation of this study is that it has not investigated the challenges faced by pre-service teachers in terms of the practical aspects of online reading and how low and high proficiency readers differ in using the online reading strategy inventory. So, future researchers could usefully investigate this issue further in this field.

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