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Résumé de l'article

Scores of studies have established that when learning online, students must be equipped with different sets of strategies and skills than in a physical classroom setting (Anderson, 2003; Broadbent & Poon, 2015; Coiro, 2007; Leu et al., 2007; Michinov, Brunot, Le Bohec, Juhel, & Delaval, 2011; Salmon, 2013). The present study, by virtue of exploring foreign language learners' online reading experience, aimed to identify the reading strategies that learners would use when engaged in online reading activities in the target foreign languages. Thirty-two foreign language learners whose native language was English participated in the study. The Online Survey of Reading Strategies (OSORS) designed by Anderson (2003) was administered to investigate the following four research questions: (1) What are the strategies that language learners would or would not use when reading online in foreign languages? (2) Would foreign language learners use some of the online reading strategies more frequently than other strategies? (3) Would different levels of foreign language proficiencies influence language learners' use of the strategies? (4) What could foreign language teachers do in their instruction to help students acquire and broaden their repertoire of online reading strategies? Data analysis demonstrated the most and least frequently used strategies of the foreign language learners and uncovered a significant difference in the frequency of use among the strategies. However, there was no significant difference found between the use of online reading strategies and learners' foreign language proficiencies. Implications and suggestions for future research and practice were proposed accordingly.

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Reading Online in Foreign Languages: A Study of Strategy Use

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Abstract

Scores of studies have established that when learning online, students must be equipped with different sets of strategies and skills than in a physical classroom setting (Anderson, 2003; Broadbent & Poon, 2015; Coiro, 2007; Leu et al., 2007; Michinov, Brunot, Le Bohec, Juhel, & Delaval, 2011; Salmon, 2013). The present study, by virtue of exploring foreign language learners' online reading experience, aimed to identify the reading strategies that learners would use when engaged in online reading activities in the target foreign languages. Thirty-two foreign language learners whose native language was English participated in the study. The Online Survey of Reading Strategies (OSORS) designed by Anderson (2003) was administered to investigate the following four research questions: (1) What are the strategies that language learners would or would not use when reading online in foreign languages? (2) Would foreign language learners use some of the online reading strategies more frequently than other strategies? (3) Would different levels of foreign language proficiencies influence language learners' use of the strategies? (4) What could foreign language teachers do in their instruction to help students acquire and broaden their repertoire of online reading strategies? Data analysis demonstrated the most and least frequently used strategies of the foreign language learners and uncovered a significant difference in the frequency of use among the strategies. However, there was no significant difference found between the use of online reading strategies and learners' foreign language proficiencies. Implications and suggestions for future research and practice were proposed accordingly.

Keywords: online reading, online reading strategies, reading strategy instruction, foreign language learning

Introduction

Students nowadays spend a great deal of time reading, searching, and communicating on the Internet either for academic purposes or personal pleasure. In online environments, with proper instruction, students learning foreign languages can increase their exposure to authentic materials as well as sharpen their linguistic abilities anytime, anywhere they want. The online world provides an unparalleled opportunity for foreign language learners to experiment with a transformative learning experience beyond the four walls of a classroom. However, previous research (Anderson, 2003; Broadbent & Poon, 2015; Coiro, 2007; Leu et al., 2007; Michinov, Brunot, Le Bohec, Juhel, & Delaval, 2011; Salmon, 2013) has also cautioned that when learning in the online environment, students must be equipped with strategies and skills which would play a pivotal role in determining their learning effectiveness and outcomes. Encouragingly, as studies indicated, many of the learning strategies and skills, through explicit instruction, can be effectively taught to students to enhance their online learning experience. For instance, in Bannert, Hildebrand, and Mengelkamp's (2009) study, compared to those who received no instruction in learning strategies, college students who were coached in the important skills of setting goals, making plans, judging information, monitoring, self-evaluating, etc. were more aware of strategic learning and thereby performed significantly better in their learning outcomes.

However, even with the empirical evidence supporting the importance and teachability of learning strategies and skills, to date, little research has been conducted to discover what strategies and skills that foreign language learners are able to use or need to develop while engaged in online learning activities. Attempting to fill the research gap, this study set out to investigate what kinds of reading strategies that learners are capable of using when reading online materials in foreign languages. Are they able to make plans before they read? Will they monitor their reading? Are they able to reflect and evaluate their online reading experiences in foreign languages? With the findings, the study aimed to help foreign language teachers know more about what reading strategies and skills that learners tend to use more often and what they would otherwise use less frequently when reading foreign language materials in the online environment. Here in the study, online reading was not delineated to any particular kinds of reading materials or for any specific reading goals or purposes. It was broadly defined as online activities including but not limited to reading, searching, and communicating on the Internet.

Research Questions

The following four research questions were constructed to bring the above-described problem into a scientific investigation and systematic analysis:

1. What are the strategies that language learners would or would not use when reading online materials in foreign languages?

2. Would foreign language learners use some of the online reading strategies more frequently than other strategies?

3. Would different levels of foreign language proficiencies influence language learners' use of the strategies?

4. What could foreign language teachers do in their instruction to help students acquire and broaden their repertoire of online reading strategies?

Online Reading

With the rapid advances of technology, the way people read and receive information in the past few decades has drastically changed. From traditional paper-based printouts to recent digital media, the ability and proficiency in online reading have become a more and more prominent skill with which citizens of the 21st century must be equipped (Anderson, 2003; Bernard, Fernandex, & Hull, 2002; Ciampa, 2012; Coiro, 2011a; Coscarelli & Coiro, 2015; Henry, Castek, O'Byrne, & Zawilinski, 2012; O'Hara & Sellen, 1997; Tseng, 2010). These skills, such as locating information, comprehending, synthesizing, and evaluating the rich and virtually infinite resources available online, determine how efficiently one can adapt and respond to the world in this digital era.

Changes bring challenges. Due to the different layouts, text fonts, and hyperlinks embedded in the online reading environment, studies have shown that reading paper-printed books could otherwise be easier for readers to obtain information than reading online materials (O'Hara & Sellen, 1997). Therefore, while we are progressively entering a digital age when information explodes and Internet accessibility enhances, helping students capture the new literacy skills and strategies to cope with the novel challenges presented in the online reading environment becomes an increasingly urgent and prominent goal for teachers (Arnold, 2009).

Online Reading Strategies

Skilled readers, when reading, as scholars (Bouvet & Close, 2011; Forrest-Pressley & Waller, 1984; Huang, Chern, & Lin, 2009; Park & Kim, 2011; Poole, 2008) identified, are not merely able to decode and comprehend the linguistic features of a reading passage. More importantly, they possess some knowledge about certain reading skills and strategies and are able to take control of them to facilitate their reading tasks. In other words, skilled readers exercise strategies to monitor and modify their reading experience and thereby increase their level of comprehension when involved in a reading activity. Specifically, according to Brown (1980), the strategies that skilled readers are able to perform include: (1) clarifying the purposes of reading, (2) identifying the important aspects of the message, (3) allocating attention to relevant information, (4) monitoring activities to determine if comprehension is occurring, (5) engaging in review and self-testing, (6) taking corrective measures if necessary, and (7) recovering from disruptions and distractions. In different situations, as Brown further stressed, skilled readers evaluate and select the most appropriate strategies for their particular reading goals and purposes.

In contrast, as research evidence also suggested (Bouvet & Close, 2011; Garner, 1987; Paris & Myers, 1981; Poole, 2008), poor readers maintain less knowledge of and control over these above-mentioned strategies. What is worse, oftentimes, poor readers may even uphold incorrect concepts about what reading strategies are, and they do not distinguish good strategies from poor strategies. That is, when

reading, poor readers may consider self-questioning, a positively labeled strategy, a negative one, and regard watching TV while reading, an apparently negative reading habit, a positive strategy.

Although a great deal has been established about how readers read traditional texts, when it comes to reading digital materials in the online world, however, much less has been explored, identified, and documented about how readers use skills and strategies to cope with electronically presented information (Coiro & Dobler, 2007). In spite of their shared similarities, the non-linear or multi-linear nature of digital materials bestows online readers with sheerer "challenges associated with cognitive overload, disorientation, distraction, and frustration" (Coiro & Dobler, 2007, p. 220) compared to traditional print texts (Kymes, 2005). When reading in an online context, it requires readers to take a more active role to flexibly apply strategies and skills to construct understanding and make sense out of their reading tasks. Such greater complexities entailed in online reading thus further lead scholars to ponder whether the gap in reading performance between skilled and poor readers may increase and exacerbate as a result of the more and more prevalent adoption and wide diffusion of technologies in our schools (Leu, 2002).

Instruction of Online Reading Strategies

As pinpointed in the literature (Brandl, 2002; Bannert & Mengelkamp, 2008; Kymes, 2005), online reading requires readers to possess and demonstrate literacy skills novel from those demanded in traditional paper-based reading. How to analyze and teach those strategies and skills has thus become an instructional challenge for language educators. As scholars suggested, to prompt students' acquisition and use of online reading strategies, teachers must explicitly model and scaffold the strategies as they are being taught and implemented.

Kymes (2005), for instance, proposed think-alouds as an instructional technique that can facilitate teachers' demonstration of expert thinking patterns for students to reciprocate. The think-aloud activities will benefit students by helping them realize that "reading is a meaning-making process which involves the use of strategies and is a skill that can be developed through sharing with others and individual self-reflection" (Kymes, 2005, p. 496). When implementing think-alouds, teachers first make their cognitive processes of strategy use obvious and explicit to students by voicing their thoughts during their own performance of online reading. Then, students reciprocate what has just been demonstrated based on their observations and their attempts at strategy implementation. In the think-aloud process, teachers shed light on the elusive secrets that successful online readers possess while students are able to watch, listen, and learn about the behaviors and cognitive processing leading to online reading comprehension (Lin & Yu, 2013).

However, as scholars (Dreyer & Nel, 2003) otherwise cautioned, research has shown that language teachers in the past 20 years have designated a rather scarce amount of time in the classroom for reading instruction. They seldom incorporate systematic instruction or training for students to gain a repertoire of strategies they need in order to manage and perform online reading tasks. Students, as a consequence, have rarely been empowered with the strategies and skills necessary for successful online reading, let alone how to judiciously exercise them when engaging in online reading.

To foster language teachers' awareness and proficiency in coaching online reading strategies, professional development is instrumental (Coiro, 2011b; Hsieh & Dwyer, 2009; Hua & Lai, 2010; Huang, 2013; Kymes, 2005; Lai, 2009; Snow, 2002; Tan & Lai, 2009). Teachers must first be given opportunities to develop their own skills for technology-enhanced reading before they can confidently provide students with the instruction of strategies to effectively process and learn from online reading materials. As Kinzer and Leander (2003) argued, although pedagogy should be placed ahead of technology, it is the well-informed and technologically adept teachers who can use technology as an effective instructional tool to meet the needs of learners in the 21st century.

Methodology

The following sections focus on the explanation and description of the methodological approach adopted for data collection and analysis for this study. Four major topics will be discussed in order: instrument, participants, procedure, and data analysis.

Instrument

In the study, to gauge foreign language learners' use of strategies in online reading, a questionnaire survey was administered. As McMillan (2004) addressed, questionnaires are the measurement most widely used in educational research. The development and use of an effective questionnaire can assess participants' perceptions, attitudes, beliefs, values, and many other traits to depict an overall trend of a phenomenon or provide a general explanation to a question under investigation. Therefore, the current study adopted questionnaire survey as the methodology to investigate what strategies foreign language learners would use when engaging in online reading activities.

The questionnaire employed was the Online Survey of Reading Strategies (OSORS) which was revised by Anderson (2003) from the Survey of Reading Strategies (SORS) questionnaire originally designed by Mokhtari and Sheorey (2001). There are totally 38 items in the OSORS, presented in the form of Likert Scale. After reading each of the item statements, participants had to check one of the five choices which applied to their online reading experience the most. The choices ranged from "Never or almost never" to "Always or almost always." As Anderson (2003) indicated, the overall reliability of OSORS shown by the Cronbach alpha is .92, which justifies the questionnaire as a reliable instrument for the investigation of foreign language learners' use of strategies when engaged in online reading.

Participants

The participants of this study were recruited through convenience sampling. Students majoring in programs of foreign languages and cultural studies, which included the Departments of East Asian Languages, Germanic Languages, Slavic Languages, as well as Spanish and Portuguese Languages at a private research-led university in the Northeast United States were contacted and invited to join the study via e-mail. In total, 32 participants whose first language was indicated as English contributed to the data gathered for the analysis of this study. Among them, 22 were male (68.8%), and 10 were female (31.2%).

Their ages ranged from 18 to 51 with a mean of 29.66. As for their language background, in addition to English as the common first language among the 32 participants, they indicated Japanese, German, Chinese, French, Russian, Spanish, Hindi, Norwegian, etc. as the foreign languages they were learning and able to speak. Generally, they spent 4.40 hours per week engaging in reading online materials in the foreign languages, and on average, they have learned or used their foreign languages for 6.42 years. Furthermore, the majority of the participants (46.9%) self-evaluated their foreign language proficiency at the advanced level, while 28.1% at the intermediate level and 25.0% at the near native or native level. None of them identified themselves as beginning foreign language learners or who just barely knew the foreign languages. Table 1 illustrates the demographic breakdown of the 32 participants.

Table 1

Participant Demographics

Gender	
Male	22 (68.8%)
Female	10 (31.2%)
Age	
Mean	29.66
Std. Deviation	8.182
Range	18 ~ 51
Hours per week spent on online reading in foreign languages	
Mean	4.40
Std. Deviation	3.121
Range	1 ~ 12
Years of learning or using foreign languages	
Mean	6.42
Std. Deviation	4.696
Range	1 ~ 19
Foreign language proficiency	
Intermediate level	9 (28.1%)
Advanced level	15 (46.9%)
Near native or native level	8 (25.0%)
Foreign languages	
Japanese	7 (21.9%)
German	5 (15.6%)
Chinese	4 (12.5%)
French	3 (9.4%)
Russian	3 (9.4%)
Spanish	3 (9.4%)
Hindi	1 (3.2%)
Norwegian	1 (3.2%)
Other	5 (15.6%)

Procedure

To facilitate the implementation of the questionnaire survey, first of all, the OSORS was converted into an electronic version and uploaded to *Qualtrics*. Subsequently, a link to the online OSORS survey was sent via email to the study participants. Prior to filling out the OSORS survey, participants were first led to the online informed consent on which they were required to type their names as a proof of their reading of the

consent form and verify their voluntary participation. It was suggested on the consent form that it would take approximately 15 minutes to finish the 38 questions in the survey; however, as the *Qualtrics* system showed, most of the participants took only 5 to 7 minutes to accomplish the task.

Data Analysis

Data analysis was conducted by using SPSS. First, the data gathered on *Qualtrics* were converted to the SPSS format, and once all the data were transferred, descriptive statistical procedures were enacted to generate the findings of the study, which included the demographics of the participants and the means as well as standard deviations of each of the 38 OSORS question items. Next, paired-samples T-test and one-way ANOVA were administered. For paired-samples T-test, comparisons were made between the top and bottom ten most frequently and least frequently used strategies for all participants as a whole group. Subsequently, to compare the variations in the frequencies of strategy use among different language proficiency groups, one-way ANOVA was implemented.

Results

In addition to the above-presented demographics of the participants, the data analysis proceeded to explore the strategies that foreign language learners used when reading online materials in foreign languages. As the findings revealed, the participants of the study when reading online in foreign languages were able to demonstrate not only higher-order cognitive abilities in locating resources, evaluating reading materials, and making decisions, but also other skills which are more directly related to the linguistic decoding and processing of the online reading materials, such as adjusting their reading speed. Table 2 summarizes the top 10 reading strategies among the total 38 items in OSORS that participants of the study were capable of practicing.

Table 2

Most Frequently Used Strategies by Language Learners for Online Reading in Foreign Languages

Online Reading Strategies	Never or almost never	Only Occasionally	Sometimes	Usually	Always or almost always	Mean*	Std. Deviation
I use context clues to help me better understand what I am reading online.	3.1%	3.1%	6.3%	40.6%	46.9%	4.25	.950

Online Reading Strategies	Never or almost never	Only Occasionally	Sometimes	Usually	Always or almost always	Mean*	Std. Deviation
When reading online, I decide what to read closely and what to ignore.	0.0%	3.1%	12.5%	46.9%	37.5%	4.19	.780
I adjust my reading speed according to what I am reading online.	0.0%	6.3%	6.3%	56.3%	31.3%	4.13	.793
I can distinguish between fact and opinion in online texts.	3.1%	0.0%	9.4%	56.3%	31.3%	4.13	.833
I think about what I know to help me understand what I read online.	0.0%	12.5%	15.6%	37.5%	34.4%	3.94	1.014
I use reference materials (e.g. an online dictionary) to help me understand what I read online.	0.0%	9.4%	28.1%	31.3%	31.3%	3.84	.987
I critically evaluate the online text before choosing to use information I read online.	9.4%	6.3%	25.0%	18.8%	40.6%	3.75	1.320
When online text becomes difficult, I pay closer attention to what I am reading.	0.0%	9.4%	28.1%	43.8%	18.8%	3.72	.888

I scan the online text to get a basic idea of whether it will serve my purpose before choosing to read it.	9.4%	12.5%	12.5%	31.3%	34.4%	3.69	1.330
I try to get back on track when I lose concentration.	3.1%	0.0%	37.5%	50.0%	9.4%	3.63	.793

*Never or almost never=1, Only occasionally=2, Sometimes=3, Usually=4, Always or almost always=5

On the other hand, as also shown in the findings, there were some reading skills that the participants of the study less frequently exercised in their online reading tasks. For instance, when reading online in foreign languages, the participants were less likely to take notes to enhance understanding, read aloud when having difficulties, or ask themselves questions to check for the main points of the reading material. They were also not accustomed to expanding their reading strategies from verbal to visual in picturing the information they received from the online reading text. Nor would they be actively engaged in social learning opportunities to enhance their online reading performance, such as online chatting with either native or non-native speakers of foreign languages. Table 3 lists the 10 strategies in the OSORS that language learners would use the least in terms of frequencies when reading online materials in their target foreign languages.

Table 3

Least Frequently Used Strategies by Language Learners for Online Reading in Foreign Languages

Online Reading Strategies	Never or almost never	Only Occasionally	Sometimes	Usually	Always or almost always	Mean*	Std. Deviation
I use typographical features like bold face and italics to identify key information.	28.1%	15.6%	25.0%	25.0%	6.3%	2.66	1.310
I go back and forth in the online text to find relationships among ideas in it.	25.0%	18.8%	31.3%	18.8%	6.3%	2.63	1.238

When reading online, I translate from foreign languages into my native language.	25.0%	31.3%	28.1%	12.5%	3.1%	2.38	1.100
I try to picture or visualize information to help remember what I read online.	31.3%	31.3%	25.0%	3.1%	9.4%	2.28	1.224
When online text becomes difficult, I read aloud to help me understand what I read.	34.4%	28.1%	21.9%	9.4%	6.3%	2.25	1.218
I ask myself questions I like to have answered in the online text.	31.3%	28.1%	28.1%	12.5%	0.0%	2.22	1.039
Online Reading Strategies	**Never or almost never**	**Only Occasionally**	**Sometimes**	**Usually**	**Always or almost always**	**Mean***	**Std. Deviation**
I take notes while reading online to help me understand what I read.	40.6%	25.0%	21.9%	12.5%	0.0%	2.06	1.076
I participate in live chat with native speakers of my second/foreign language.	59.4%	15.6%	18.8%	3.1%	3.1%	1.75	1.078
I print out a hard copy of the online text then underline or circle information to help me	56.3%	21.9%	18.8%	0.0%	3.1%	1.72	.991

remember it.

I participate in live chat with other learners of my second/foreign language.	75.0%	12.5%	6.3%	6.3%	0.0%	1.44	.878

*Never or almost never=1, Only occasionally=2, Sometimes=3, Usually=4, Always or almost always=5

After the analysis of the means and standard deviations of each of the items in the OSORS, paired-samples T-test and one-way ANOVA were implemented to further explore if foreign language learners used online reading strategies differently, and if there were differences in the strategy use among learners of different foreign language proficiencies. As shown in Table 4, the analysis did indicate a significant difference in the strategy use among the study participants. Such differences suggested that there were certain online reading strategies that foreign language learners tended to use significantly more frequently than other strategies. For instance, foreign language learners in the study would employ some strategies, such as using context clues to enhance understanding, deciding what to read and what to ignore, and adjusting one's own reading speed significantly more frequently than other strategies, such as participating in live chats with other learners or native speakers of the foreign languages, printing out online texts, taking notes while reading online, and asking one's self questions. However, as Table 5 illustrates, the one-way ANOVA analysis revealed that such a difference in the use of strategies was not significantly influenced by the learners' different language proficiency levels. That is, for learners at the intermediate foreign language level, their use of online reading strategies was not significantly different from that of learners at the advanced or native level, and vice versa.

Table 4

Difference in the Frequencies of Strategy Use

	Mean	Std. Deviation	Std. Error Mean	95% confidence interval of the difference		t	df	Sig. (2-tailed)
				Lower	Upper			
All Participants N = 32	25.219	5.999	1.060	23.056	27.381	23.782	31	.000***

*** *p < .001*

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Table 5

Difference in Strategy Use among Learners of Different Foreign Language Proficiencies

ANOVA

	N	Mean	Std. Deviation	95% confidence interval of the difference		df	F	Sig. (2-tailed)
				Lower	Upper			
Intermediate	9	122.56	21.536	106.00	139.11	8	1.841	.181
Advanced	15	122.60	15.743	113.88	131.32	14		
Native or near native	8	109.50	12.130	99.36	119.64	7		

Discussion and Conclusion

The findings of the study echo previous literature in identifying the strategies that proficient foreign language learners would adopt for online reading. As the literature suggested (Brown, 1980; Forrest-Pressley & Waller, 1984; Huang, Chern, & Lin, 2009; Park & Kim, 2011; Poole, 2008), skilled readers are capable of planning, monitoring, and evaluating when engaged in online reading activities. In this study, among the top ten strategies that foreign language learners would use to read online materials, eight of them corroborated the principal reading strategies identified by Brown (1980). Specifically, the findings of this study showed that skilled foreign language learners would usually or almost always draw their attention to relevant information (e.g., using context clues, prior knowledge, and reference materials), clarify the purposes of reading, identify the importance of the reading passages, take on corrective measures (e.g., adjusting reading speed), and recover from distractions when they read online in foreign languages.

In contrast, there were some other strategies and skills that the participants would rather use only occasionally or almost never. For instance, proficient foreign language learners, as exhibited in this study, would less frequently adopt strategies, such as self-questioning, reading aloud, and taking notes to enhance their understanding of the online reading materials. Most strikingly, it was found that they were not actively engaged in live chats with either other learners or native speakers of the foreign languages. Such low frequencies of the practice of live chats may stem from the following two reasons. First, foreign language learners may have related online live chats more directly to the demonstration of their speaking skills rather than consider it as the practice of their reading abilities. Second, foreign language learners may not be cognizant of the merits that online live chats could contribute to their reading performance. Regarding the first reason, the participants of the study could have been confused about the item statements addressing the strategies of live chats when answering the

questions in the OSORS survey. They might feel baffled because intuitively they could have associated online live chats more with the practice of their speaking ability rather than consider it as a legitimate online reading activity. In other words, language learners might not think of online chats as a strategy that could have been used to advance their reading comprehension. Nevertheless, the fact is that in the context of asynchronous communication, especially when we use instant messages to chat online, a great amount of time we spend is on reading the texts exchanged between our online interlocutors and us. Therefore, text-based online live chats can definitely be seen as an online reading task and it does demand the execution of a great deal of reading strategies on the part of the foreign language learners to enhance effective communication. Additionally, in terms of the second possible reason of why live chats were rarely used by foreign language learners as an online reading strategy, it is speculated that the participants of the study might not recognize the benefits that could be entailed in a socially constructed reading activity embodied in the form of online chats. For many language learners, online reading might be perceived more as an individual rather than a social endeavor, and live chats might not be regarded as a strategy that has its potential in eliciting reading interests and fostering online reading achievement in the process of learning a foreign language.

However, it was discovered in the study that a significant difference existed in the way that the investigated online reading strategies were used by foreign language learners. That is, learners would use certain strategies significantly more than other strategies when reading online materials in the foreign languages they were learning. Such findings imply that foreign language learners either preferred to use some particular strategies more frequently than others, or that they actually had a limited repertoire of online reading strategies, and might need language teachers' instruction and guidance to expand the bank of strategies that the learners could fluently deploy. As the literature posited (Coiro & Dobler, 2007; Kymes, 2005), skilled readers possess a large array of strategies and demonstrate them adeptly to suit their reading goals. However, contrary to the literature, the current study showed that foreign language learners did not use all of the strategies investigated in the OSORS and the way they used the strategies was concentrated on a particular, or presumably, limited number of strategies.

Considering the effect of language proficiencies on the use of online reading strategies, the present study showed that there was no significant difference in the use of online reading strategies among learners of different foreign language proficiencies. In other words, the participants of the study would use similar strategies when reading online materials regardless of their foreign language proficiencies. However, such research findings have to be interpreted with caution because in the current study, there were only three levels of foreign language proficiencies self-identified by the participants, namely, intermediate, advanced, or native. No participants self-evaluated themselves as beginners or who barely knew a foreign language. Such restricted foreign language proficiency background of the study participants, on the one hand, limited the generalizability and implication of the research findings. On the other hand, the lack of beginning level learners participating in the study might have reflected the possibility that to some extent the ability to read online materials in a foreign language may require a certain threshold of proficiency level. Without reaching the proficiency threshold, it would be difficult for foreign language learners to practice online reading and adopt strategies to facilitate their online reading endeavors.

Implications and Suggestions

Based on the findings of the current study, implications and suggestions for future teaching and research are recommended as follows. First, it is suggested that in the future foreign language teachers should emphasize the social aspects of online reading to a greater extent. As revealed in the findings of this study, only about 3% to 6% of the foreign language learners would usually engage in online chats with other learners or native speakers of the foreign languages, while 60% to 75% of them never had any experience of chatting online about their reading experience in foreign languages. However, by creating a blog or online discussion forum, teachers could easily provide more opportunities for students to engage in conversation with each other. In this way, students, with their online chatting partners, can either help each other acquire vocabulary or comprehend complicated sentence structures that they respectively encounter in their online foreign language reading materials. In the meantime, they could also give support to each other and enhance as well as sustain each other's online reading interests (Henry, Castek, O'Byrne, & Zawilinski, 2012). Additionally, it is suggested that foreign language teachers should focus on instructing learners about a wider variety of strategies and helping learners expand the repertoire of strategies that they could use for online reading. To this end, teachers can employ the think-aloud approach as proposed by Kymes (2005) to crystalize and shed light on the nebulous process of strategy use. They could provide explicit demonstration and individualized scaffolding to students and help students find out the strategies that are most suitable for their own reading purposes and interests. Most importantly, through the continuous think-aloud practices, foreign language teachers can ultimately assist and empower students to internalize the reading strategies being taught and exhibit their abilities to deploy the strategies in a fluent, proficient, and automatic fashion (Afflerbach, Pearson, & Paris, 2008).

Furthermore, for future research, it is suggested that researchers can adopt other instruments or research methods to gauge the process in which foreign language learners implement online reading strategies. Particularly, qualitative methods, such as interview and observation can be adopted to find out how students use strategies to facilitate their online reading experience. By so doing, researchers can provide more in-depth implications for teachers to help students learn how to apply reading strategies in online environments. Also, for future research, it is recommended that researchers can conduct studies to find out the strategies that students may differently adopt when reading online for different purposes. As it would be assumed, the strategies that students would employ when reading for test preparation, retrieving information, or merely for pleasure, can be quite distinct and thereby deserve further clarification and different research attention.

Limitations of the Study

There are two major limitations of the present study. One is about the methodology used for data collection, and the other is the limitation inherited in the collected data. First, the use of a self-report questionnaire may have an effect on the reliability of the collected data. The participants, in order to "present themselves in the most positive manner" or to meet "social desirability" (McMillan, 2004, p. 214), may have provided fake responses when answering questions addressing their use of strategies for online reading. In other words, they may respond in the questionnaire that they make plans, have a clear purpose for online reading, monitor, reflect, as well as evaluate their online reading experience, yet in fact without enacting any or all of the strategies when they actually engage in online reading tasks.

Besides, as illustrated, the only instrument adopted for data collection in the study was the OSORS questionnaire. This one and only data collection method, as McMillan (2004) stated, confines the credibility of the findings and cannot present the research findings in a holistic manner. To alleviate such a methodological drawback, triangulation in data collection, such as the adoption of interview and observation, may otherwise provide more complete results and strengthen the credibility of the findings.

Second, in the gathered data, no participants self-identified themselves as beginners or someone who barely knows a foreign language. This limitation may have restricted the generalizability of the findings, leading to an incomplete identification of the strategies that language learners would use for online reading in foreign languages and failing to draw a more robust conclusion with regard to the relationship between foreign language proficiency and strategy use for online reading. To address this limitation, enlarging the sample size should be a desirable remedy.

Conclusion

Online reading has become the essential new literacy skill that people should be equipped with in the digitalized information age. Serving as an attempt to explore the strategy use in online foreign language reading, the present study identified a cluster of strategies most and least frequently used by language learners. It also investigated the difference in strategy use as well as the relationship between strategy use and foreign language proficiency levels. As research findings suggested, language learners when engaged in online foreign language reading, did employ some strategies significantly more than other strategies. It was suggested that through the use of the think-aloud approach, foreign language teachers could help learners expand their repertoire of online reading strategies, thereby improving their online reading outcomes. It was also found in the study that there was no significant difference in the strategy use among foreign language learners at the intermediate, advanced, and native proficiency levels. Yet, without obtaining data from a broader range of participants, it was unclear whether strategy use would be different among learners at other proficiency levels, such as beginners or people who have limited knowledge of a foreign language. Future research and teaching are needed to enhance our understanding of strategy use for online foreign language reading.

References

Afflerbach, P., Pearson, D., & Paris, S. (2008). Clarifying differences between reading skills and reading strategies. *The Reading Teacher*, *61*(5), pp. 364 – 373.

Anderson, N. J. (2003). Scrolling, clicking, and reading English: Online reading strategies in a second/foreign language. *The Reading Matrix*, *3*(3), pp. 1 – 33.

Arnold, N. (2009). Online extensive reading for advanced foreign language learners: An evaluation study. *Foreign Language Annals*, *42*(2), pp. 340 – 366.

Bannert, M., Hildebrand, M., & Mengelkamp, C. (2009). Effects of a metacognitive support device in learning environments. *Computers in Human Behavior*, *25*(4), pp. 829 – 835.

Bannert, M., & Mengelkamp, C. (2008). Assessment of metacognitive skills by means of instruction to think aloud and reflect when prompted. Does the verbalization method affect learning? *Metacognitive Learning*, *3*, pp. 39 – 58.

Bernard, M., Fernandex, M., & Hull, S. (2002). The effect of line length on children and adults' online reading performance. *Usability News*, *4*(2). Retrieved from http://psychology.wichita.edu/surl/usabilitynews/42/text_length.asp

Bouvet, E., & Close, E. (2011). Online reading strategy guidance in a foreign language: Five case studies in French. *Australian Review of Applied Linguistics*, *29*(1), pp. 7.1 – 7.13

Brandl, K. (2002). Integrating internet-based reading materials into the foreign language curriculum: From teacher- to student-centered approaches. *Language Learning & Technology*, *6*(3), pp. 87 – 107.

Broadbent, J., & Poon, W. L. (2015). Self-regulated learning strategies & academic achievement in online higher education learning environments: A systematic review. *The Internet and Higher Education*, *27*, pp. 1 – 13.

Brown, A. (1980). Metacognitive development and reading. In R. J. Spiro, B. Bruce, & W. F. Brewer (Eds.), *Theoretical issues in reading comprehension* (pp. 453 – 482). Hillsdale, NJ: Erlbaum.

Ciampa, K. (2012). ICANREAD: The effects of an online reading program on grade 1 students' engagement and comprehension strategy use. *Journal of Research on Technology in Education*, *45*(1), pp. 27 – 59.

Coiro, J. (2007). *Exploring changes to reading comprehension on the Internet: Paradoxes and possibilities for diverse adolescent readers* (Doctoral dissertation). Retrieved from ProQuest.

Coiro, J. (2011a). Predicting reading comprehension on the internet contributions of offline reading skills, online reading skills, and prior knowledge. *Journal of Literacy Research*, *43*(4), pp. 352 – 392.

Coiro, J. (2011b). Talking about reading as thinking: Modeling the hidden complexities of online reading comprehension. *Theory Into Practice*, *50*(2), pp. 107 – 115.

Coiro, J., & Dobler, E. (2007). Exploring the online reading comprehension strategies used by sixth-grade skilled readers to search for and locate information on the Internet. *Reading Research Quarterly*, *42*(2), pp. 214 – 257.

Coscarelli, C. V., & Coiro, J. (2015). Reading multiple sources online. *Revista Linguagem & Ensino*, *17*(3), pp. 751 – 776.

Dreyer, C., & Nel, C. (2003). Teaching reading strategies and reading comprehension within a technology-enhanced learning environment. *System*, *31*(3), pp. 349 – 365.

Henry, L. A., Castek, J., O'Byrne, W. I., & Zawilinski, L. (2012). Using peer collaboration to support online reading, writing, and communication: An empowerment model for struggling readers. *Reading & Writing Quarterly*, *28*(3), pp. 279 – 306.

Hsieh, P. H., & Dwyer, F. (2009). The instructional effect of online reading strategies and learning styles on student academic achievement. *Journal of Educational Technology & Society*, *12*(2), pp. 36 – 50.

Hua, T. K., & Lai, L. M. (2010). Strategy awareness raising in online reading. *The International Journal of Learning*, *16*(12), pp. 257 – 68.

Huang, H. C. (2013). Online reading strategies at work: What teachers think and what students do. *ReCALL, 25*(3), pp. 340 – 358.

Huang, H. C., Chern, C. L., & Lin, C. C. (2009). EFL learners' use of online reading strategies and comprehension of texts: An exploratory study. *Computers & Education*, *52*(1), pp. 13 – 26.

Forrest-Pressley, D. L., & Waller, T. G. (1984). *Cognition, metacognition, and reading*. New York, NY: Springer-Verlag.

Garner, R. (1987). *Metacognition and reading comprehension*. Norwood, NJ: Ablex Publishing.

Kinzer, C., & Leander, K. M. (2003). Reconsidering the technology/language arts divide: Electronic and print-based environments. In J. Flood, D. Lapp, J. R. Squire, & J. M. Jensen (Eds.), *Handbook of research on teaching the English language arts* (pp. 546 – 565). Mahwah, NJ: Erlbaum.

Kymes, A. (2005). Teaching online comprehension strategies using think-alouds. *Journal of Adolescent & Adult Literacy*, *48*(6), pp. 492 – 500.

Lai, L. M. (2009). Reading strategy awareness training to empower online reading. *The English Teacher*, *38*, pp. 133 – 150.

Leu, D. J. (2002). The new literacies: Research on reading instruction with the Internet. In A. E. Farstrup & S. J. Samuels (Eds.), *What research has to say about reading instruction* (3rd Ed., pp. 310 – 336). Newark, DE: International Reading Association.

Leu, D. J., Zawilinski, L., Castek, J., Banerjee, M., Housand, B. C., Liu, Y., & O'Neil, M. (2007). What is new about the new literacies of online reading comprehension? In L. S. Rush, A. J.

Eakle, & A. Berger (Eds.), *Secondary school literacy: What research reveals for classroom practice* (pp. 37 – 68). Urbana, IL: National Council of Teachers of English.

Lin, L. C., & Yu, W. Y. (2013). A think-aloud study of strategy use by EFL college readers reading Chinese and English texts. *Journal of Research in Reading*, *38*(3), pp. 286 – 306.

McMillan, J. H. (2004). *Educational research: Fundamentals for the consumers*. Boston, MA: Pearson Education.

Michinov, N., Brunot, S., Le Bohec, O., Juhel, J., & Delaval, M. (2011). Procrastination, participation, and performance in online learning environments. *Computers & Education*, *56*(1), pp. 243 – 252.

Mokhtari, K., & Sheorey, R. (2001). Measuring ESL students' awareness of reading strategies. *Journal of Developmental Education*, *25*(3), pp. 2 – 10.

O'Hara, K., & Sellen, A. (1997). A comparison of reading paper and on-line documents. In *Proceedings of the ACM SIGCHI Conference on Human Factors in Computing Systems* (pp. 335 – 342). Atlanta, GA: The Association for Computing Machinery.

Park, H. R., & Kim, D. (2011). Reading-strategy use by English as a second language learners in online reading tasks. *Computers & Education*, *57*(3), pp. 2156 – 2166.

Paris, S. G., & Myers, M. (1981). Comprehension monitoring, memory and study strategies of good and poor readers. *Journal of Literacy Research*, *13*(1), pp. 5 – 22.

Poole, A. (2008). The relationship of reading proficiency to online strategy use: A study of US college students. *Journal of College Literacy & Learning*, *35*, pp. 3 – 11.

Salmon, G. (2013). *E-tivities: The key to active online learning*. New York, NY: Routledge.

Snow, C. (2002). Reading for understanding: Toward an R&D program in reading comprehension. Retrieved from http://www.rand.org/content/dam/rand/pubs/monograph_reports/2005/MR1465.pdf

Tan, K. H., & Lai, L. M. (2009). Empowering Malaysian readers to read online. *European Journal of Social Sciences*, *8*(2), pp. 360 – 379.

Tseng, M. C. (2010). Factors that influence online reading: An investigation into EFL students' perceptions. *The Reading Matrix*, *10*(1), pp. 96 – 105.