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The Correlation of EFL Graduate Students' Strategies and Attitude Toward Reading English E-Journal Articles

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This study aimed at determining English as a foreign language (EFL) graduate students' searching and reading strategies they actually use when reading English electronic journal articles (EEJAs) and their attitude toward reading EEJAs. A questionnaire survey was designed and administered to 342 Taiwanese graduate students from various majors across 15 universities. The results indicated that students have a medium usage of EEJA searching strategies (ESS), high usage of EEJA reading strategies (ERS), and a moderate to high level of EEJA reading attitude (ERA). MANOVA results showed significant interaction of reading ability and time spent online for academic purposes on both ESS and ERS. In addition, students' belief was mostly correlated positively with their use of ESS and ERS, but students' feeling was mostly negative correlated. Finally, the results of the structural equation modelling (SEM) validated that the structure of the three major variables and the connections with them were reasonable.

Keywords: EFL graduate students, researching strategies, reading strategies, attitude, English e-journal articles

INTRODUCTION

The academic success of graduate students greatly depends on their ability to search and read journal articles to fulfil their academic literacy practices. Before engaging with their research, graduate students are expected to be able to learn what has been done, what remains to be answered, and what needs to be done to synthesize new knowledge and to create a review of related literature (Subramanyam, 2013). In addition, with the growth and diversity of e-journal articles and the increasing accessibility of database over the past decades, to develop the ability to read e-journal articles is imperative to graduate students (Tenopir, Wilson, Vakkari, Talja, & King, 2010). E-journal articles have been valued as an effective tool and a significant source, especially now that the digital libraries are expanding and growing in the world due to it being economically efficient and easy access to the literature and information. It has made the exposure to a boarder literature possible from anywhere and at any time for graduate students and researchers (Hemlata & Meena, 2013; Kaur, 2012).

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Good reading comprehension skills are mandatory for graduate students who must engage in research activities in their specialized areas to complete their theses (Snow, 2002). However, most international journal articles that graduate students need to read to explore new trends and research developments were written in English. As a result, most students who are not native speaker of English feel overwhelmed by the amount of reading that needs to be completed. Reading has become a critical challenge for them as they tend not to read as much as native English learners because their reading is much slower. They also suffer from reading difficulties or problems, such as poor grammatical knowledge, insufficient vocabulary, language inaccessibility, and lack of reading strategies. (Birch & Fulop, 2020; Grabe, 1991). These all made the reading of English as a foreign language so much harder than reading their first language. Furthermore, due to the availability of online resources, they need to be able to search e-database systematically using effective searching strategies to locate the articles they need to complete a comprehensive search of related literature. Then read and critique the selected articles thoroughly to apply research findings to practice and eventually write a thesis (Whitehead & Maude, 2016). Although many researchers in the last two decades have dedicated their studies on issues related to thesis writing challenges and solutions (Bitchener and Basturkmen 2006; Bunton 2002; Paltridge 2002; Samraj 2008), to properly conduct a literature search in a digital library requires a different set of skills than searching the traditional library. To fully understand EEJAs would also require a set of strategies different from reading paper articles.

From the aspect of EEJA searching strategies, most of the past research has been completed studying online information searching strategies (Çevik, 2015; Chen, 2020b; Kurt & Emiroglu, 2018; Reisoğlu, Toksoy, & Erenler, 2020; Tsai, 2009; Tsai, Liang, Hou, & Tsai, 2012; Tsai & Tsai, 2003; Tuluk & Kepceoglu, 2019). These strategies were used to offer insights into individuals' search process of online information in which screening and selection are applied (Savolainen, 2016). The process involved repeated formulate and revise the search inquiry to eventually access the required knowledge (Sharit, Taha, Berkowsky, Profita, & Czaja, 2015). The searching process in a hypertext environment has raised some issues among learners, especially disorientation which are not common in the traditional library (Antonenko and Niederhauser, 2010). Unfortunately, the students do not receive the proper instructions in their courses on strategies needed to properly search the e-databases (Jing & Mi, 2010).

As can be seen, online information searching strategy start to attract more attention from 2009 when Tsai established a set of strategy inventory to investigate online searching strategies used by high school students. However, online information searching strategy is limited to the scope of web information search which can not apply to EEJA searching. Very few studies have focused on EEJA searching issues until Chen (2020a) conducted a study that attempted to explore EFL graduate students' uses of EEJA searching strategy in the purpose of enhancing students' accessibility of EEJAs that they need to successfully complete their degrees. The results indicated that the searching strategy was only moderately used by the participants which implied a limited searching ability.

In the aspect of EEJA reading strategy, the existed literature so far focused on how reading strategy impacted students' reading comprehension along with the importance of reading strategy training they needed (Ahmadi, Ismail, & Abdullah, 2013; Kern, 1989; Kung, 2019; Muhid, Amalia, Hilaliyah, Budiana, & Wajdi, 2020; Par, 2020; Shih & Reynolds, 2018; Taylor, Stevens, & Asher, 2006). Until recently, the advent of information technologies helped researchers to see the importance of online reading and shifted the research direction to online reading strategy (Hsieh & Dwyer, 2009; Huang, 2013; Jose, 2021; Li, 2020; Marboot, Roohani, & Mirzaei, 2020; Taki, 2016; Wu, 2019; Zenotz, 2012). Online reading strategy was then developed to enhancing readers' comprehension ability when reading electronic materials (Huang, 2013). Many scholars started to realize the importance of online reading strategy and focused their study on the instruction of useful ones to assist students (Chun, 2001; Huang, Chern, & Lin, 2009). This helped to bridge the gap between offline and online reading, but did not explain the use of EEJA reading strategy among students which is the skill that is essential for graduate students to complete their theses writing. Not much is known about the reading strategy's actual use on the comprehension of EEJAs until the above mentioned researcher, Chen (2020a) tried to investigate EFL graduate students' uses of reading and searching strategy when reading English e-journal article in their masters' thesis writing process. Before this, much research related to thesis writing has been directed at identifying thesis writing difficulties and provide possible solutions (Bitchener & Basturkmen, 2006; Keyvandarian & Afzali, 2019; Kwan, 2006; Ma, 2019, 2020; Odena & Burgess, 2017; Peng, 2018; Tiwari, 2019; Tremblay-Wragg, Mathieu Chartier, Labonté-Lemoyne, Déri, & Gadbois, 2021).

Furthermore, there is extremely limited literature focusing on students' attitude towards reading EEJAs. Not much can be found that is related to online English reading attitude, researchers primarily focused on the development of reading program to assist students' reading and improve their reading attitudes. For example, Lin (2010) devoted on the effects of e-book program on students' reading attitudes change and the e-book features that influence this attitude change. Chen, Chen, Chen, and Wey (2013) also studied the effects of extend e-book reading program on EFL reading attitude and found that the reading program helped improved students' attitude toward reading along with vocabulary acquisition and reading comprehension. Most recently, Kaban (2021) examined the influence of gamifying e-book reading practices on the reading comprehension and attitude of EFL students. It also concluded that this reading intervention has potential to increase students' attitudes toward reading English. Moreover, Al-Shawesh and Hussin (2015) implemented a computer assisted reading program which positively improved students' English reading attitudes.

Overall, empirical research evidence related to EEJA reading issues remains scarce and related literature also does not draw on students' perspectives. Therefore, this study explored the extent of EFL graduate students' reading attitude and their uses of searching strategies and reading strategies of EEJAs from the students' viewpoints, together with the relationships across participants of these three factors to support the EEJA readings. The structural model, shown in Figure 1, represents the design of the

present study which shows relationships between the variables and their degree of correlation among the ESS, ERS, ERA, and the subcategories.

METHOD

One of the main goals of this study was to formulate and empirically test the research model that maps the application of searching strategies, reading strategies and attitude toward reading of EEJAs to successfully. Thus, resolving graduate students' difficulties of literature searching and reviewing aspects of thesis writing. It was hoped that three sets of strategies could be established linking the efficacy of searching and reading processes and understating the reading attitude of students to the nature of thesis literature searching and reviewing problems. This study adopted the survey method as it is the most rational approach to implement and validate the research framework. Through the questionnaires, quantitative data were collected and analyzed to understand the direct experiences of graduate students in their application of EEJA searching, reading strategies and reading attitude during the thesis literature reviewing process along with their attitude toward reading.

Participants

Participants in this study were 342 graduate students randomly selected from 15 universities representing various regions of Taiwan. The majority of them have learned English as a foreign language as an academic subject at school for more than ten years. There were 198 males and 144 females. Most of them were under age 25 (86.3%, N = 295), and in their first year of graduate study (55.3%, N = 189). Two hundred and one students (58.8%) reported that they have average reading ability. Most students (43.3%, N = 148) spent 5 hours online in which 1- 2 hours are for academic purposes (41.8%, N = 143) and 2-3 hours for non-academic purposes (33.4%, N = 104).

Instrument

The questionnaire used in this study consisted of a total of 90 questions which include 28 items on the uses of EEJA searching strategies (ESS), 41 items on the EEJA reading strategies (ERS), 16 items on EEJA reading attitude (ERA) and five items on the demographics. Particularly, two measurements, EEJA searching strategies inventory and EEJA reading strategies inventory by Chen (2020a) were adapted and one measurement, the EEJA reading attitude inventory, were developed. ESS inventory was revised from online information searching strategy inventory developed (OISSI) by Tsai (2009). It was used to identify EFL graduate students' English e-journal article searching strategy which consists of 7 aspects of the original OISSI: Control, select main ideas, evaluation, purposeful thinking, trial and error, disorientation, and problem solving, which was categorized into three domains of behavioral, procedural and metacognitive. Behavioral domain refers to students' online manipulation and navigation, procedural domain represents students' online content-general searching approaches, and metacognitive domain indicates students' self-control and higher order content-related cognitive activities on the Internet. It comprises of a series of statements to which the participants are asked to respond on a six-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree). The value of Cronbach's alpha is 0.894 and the KMO value is 0.804.

ERS inventory was revised from an inventory developed by (Chen, 2017) which was originated from a related survey named The Survey of Reading Strategy (SORS) by Mokhtari and Sheorey (2002). It was used to identify non-native English speaker graduate students' reading strategies of English e-journal articles with three original SORS category of global, problem solving and support. It comprises of a series of statements such as "I review the EEJAs first by noting its characteristics like length and organization." to which the participants are asked to respond on a five-point Likert scale ranging from 1 (never or almost never) to 5 (always or almost always). The value of Cronbach's alpha is 0.953 and the KMO value is 0.861.

Finally, the drafts of ERA items were constructed on the related literature and the contributions of the instructors and graduate students from various universities through interviews with selected graduate students. A pilot study was conducted with the participation of 50 graduate students who were not included in the main research samples to polish, theorize and finalize the items of ERA inventory. The ERA section consisted of three views: Belief, feeling and behavior. It comprises of a series of statements such as "I believe that reading EEJA allows to gauge academic knowledge and skills" to which the participants are asked to respond on a six-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The reliability analyses were performed and obtained a Cronbach alpha of .756, indicating that the inventory was highly reliable. The KMO test yielded a value of .746, indicating that the inventory validity was high. Therefore, the reliability and validity of three study instruments were warranted. The items of students' ESS and ESS, ERS questionnaire was presented in Appendix A.

Procedures and data analysis

The survey questionnaire was given an appropriate time frame and to be completed at the participants' convenient time. The students were also informed of the purpose of the survey and of the fact that the data collected will solely be used for research purposes. After all completed surveys were carefully examined, the returned questionnaires were coded for statistical analysis to draw comparison and insights to be made on students' uses of EEJA searching and reading strategies, and their attitude toward EEJAs. Data were analyzed using descriptive statistical procedures. To properly evaluate searching strategy use among the participants, three levels of usage used were used to identify searching strategy usage: high (mean of 4.6 or higher), medium (mean of 3.0–4.5), and low (2.9 or lower). In examining reading strategy use and reading attitude among the participants, three levels of usage were used: high (mean of 3.5 or higher), medium (mean of 2.5–3.4), and low (2.4 or lower). These scales allowed the comparisons among participants with respect to their ESS, ERS and ERA. MANOVAs were used to access background characteristic differences in terms of gender and year of graduate study of students' use of ESS and ERS as well as their ERS. Correlation analysis was performed using Zero-order correlations in SPSS to find out the associations among students' overall and subcategory of ESS, ERS and ERA. Finally, structural equation modeling (SEM) was used to examine the relationship of students' ESS and their ERS and ERA.

FINDINGS

The use of EEJA searching and reading strategy and the reading attitudes toward EEJA

Table 1 demonstrated the analysis results of EFL graduate students' uses of ESS and ERS and their ERA. The means of individual ESS items ranged from a high of 5.17 to a low of 3.82 (M = 4.57), indicating a medium overall use of searching strategies according to the scale criteria defined above. This indicated that overall students used somewhat fair and balanced ESS according to Tsai and Tsai (2003). Control strategies (M = 4.98) are the most favored by the participants and they favored the least are the Disorientation strategies (M = 3.89).

Table 1
The use of EEJA searching and reading strategies and the attitudes toward reading EEJAs

	N	Min	Max	M	SD
ESS	342	3.14	6.00	4.565	.53329
Control	342	2.50	6.00	4.975	.76591
Select main ideas	342	2.40	6.00	4.818	.71657
Evaluation	342	2.40	6.00	4.585	.71557
Purposeful thinking	342	2.60	6.00	4.473	.67839
Trial and error	342	2.00	6.00	4.811	.85809
Disorientation	342	1.00	6.00	3.889	1.06810
Problem solving	342	2.33	6.00	4.467	.81970
ERS	341	2.71	4.85	3.776	.43393
Global	342	2.68	5.00	3.906	.47544
Problem solving	342	2.17	4.83	3.649	.49602
Support	342	2.10	5.00	3.688	.53065
ERA	342	2.88	4.56	3.726	.32705
Belief	342	2.83	5.00	4.469	.47089
Feeling	342	1.83	4.83	3.488	.61442
Behavior	342	1.83	4.83	3.489	.61423

In the use of ERS, the means of individual strategy items ranged from a high of 4.50 to a low of 2.83 for ESL graduate students (overall M = 3.78), indicating a significantly high overall use of reading strategies according to established strategy usage criteria described above. Global strategies (M = 3.91) are the most favored by the participants and they favored the least are the problem-solving strategies (M = 3.65). As to the ERA, the means of individual strategy items ranged from a high of 4.51 to a low of 2.69 for ESL graduate students (overall M = 3.73), indicating a moderate to high overall attitude toward reading. This result indicated that students have overall positive attitude toward EEJA reading.

Differences on background characteristics

Gender and year of graduate study

As shown in Table2, the analysis results of MANOVA suggested no significant effects of gender on ESS, $F(1, 336) = 2.310$, $p>.05$, ERS, $F(1, 336) = 3.242$, $p>.05$, and ERA, $F(1, 336) = 2.028$, $p>.05$. However, significant year of study effects were found in students' ESS, $F(2, 335) = .044$, $p<.05$. Therefore, significant interactions were observed to support the difference of year of study in searching strategy uses. Third-year graduate students used significantly more searching strategies (M = 4.86) than second-year (M = 4.67) and first year students (M = 4.47).

Table 2
Gender and year of graduate study differences in students' ESS, ERS and ERA

Variables	Group		N	M	SD	F	η2
ESS	Gender	Male	197	4.581	.53940	2.310	.007
		Female	142	4.542	.52577		
	Year of study	1st	189	4.470	.54487	7.636	.044*
		2nd	137	4.666	.50134		
		3rd	13	4.863	.39578		
	Gender*Year of study					3.242	.019
ERS	Gender	Male	197	3.795	.44220	.523	.002
		Female	144	3.751	.42254		
	Year of study	1st	188	3.745	.43773	.754	.005
		2nd	140	3.812	.43215		
		3rd	13	3.842	.38828		
	Gender*Year of study					2.028	.012
ERA	Gender	Male	197	3.722	.33165	.002	.000
		Female	144	3.731	.32170		
	Year of study	1st	189	3.721	.34891	.037	.000
		2nd	140	3.734	.29500		
		3rd	13	3.712	.35497		
	Gender*Year of study					.945	.000

Reading ability and time spent online for academic purposes

Graduate students' reading ability and time spent online for academic purposes are also important indictors of ESS, ERS and ERA. Table 3 displayed the results of MANOVA which suggested significant effects of reading ability on ESS, $F(1, 336) = 2.846$, $p<.05$ and ERS, $F(1, 336) = 1.981$, $p<.05$. Significant effects of time spent online for academic purposes were also found in students' ESS, $F(2, 335) = 4.579$, $p<.05$ and ERS, $F(2, 335) = 3.060$, $p<.05$. Therefore, significant interactions were observed to support the difference of reading ability and time spent online for academic purposes in searching and reading strategy uses when reading EEJA for all the participants. Students with higher level of reading ability and spent more time online for academic purposes used significantly more ESS and ERS.

Table 3
Reading ability and time spent online differences in students' ESS, ERS and ERA

Variables	Group		N	M	SD	F	η2
ESS	Reading ability	Excellent	19	3.988	.46263	2.846	.045*
		Good	71	3.925	.41022		
		Average	199	3.794	.43198		
		Fair	44	3.687	.41975		
		Poor	4	3.602	.32204		
	Time spent online for academic purposes	<1	32	3.574	.33127	4.579	.807*
		1-2	143	3.730	.33680		
		2-3	84	3.733	.30793		
		3-4	41	3.727	.33221		
		4-5	23	3.872	.32173		
		>5	19	3.750	.25345		
	Reading ability * Time spent online for academic purposes					.327	.074
ERS	Reading ability	Excellent	19	4.554	.49030	1.981	.032*
		Good	71	4.852	.52038		
		Average	199	4.575	.53201		
		Fair	44	4.491	.41220		
		Poor	4	4.165	.53888		
	Time spent online for academic purposes	<1	32	4.099	.47413	3.060	.060*
		1-2	141	4.549	.49760		
		2-3	83	4.631	.53427		
		3-4	41	4.683	.57561		
		4-5	23	4.6893	.45932		
		>5	19	4.769	.47980		
	Reading ability * Time spent online for academic purposes					.533	.048
ERA	Reading ability	Excellent	19	3.651	.36403	.394	.007
		Good	72	3.728	.35202		
		Average	200	3.731	.31363		
		Fair	44	3.759	.31311		
		Poor	4	3.672	.40303		
	Time spent online for academic purposes	<1	32	3.476	.49125	2.858	.056
		1-2	142	3.774	.41779		
		2-3	84	3.791	.38415		
		3-4	41	3.880	.41425		
		4-5	23	3.887	.45829		
		>5	19	3.878	.49333		
	Reading ability * Time spent online for academic purposes					.884	.053

Note: *p<0.5.

The influence of attitude toward EEJA reading on searching strategies and reading strategies

Zero-order correlation

Table 4 displayed the results of zero-order correlations between ERA, ESS and ERS. It revealed that students' belief was positive correlations with the use of ESS and ERS (r =

.280 to .515), expect for the disorientation strategies (r = 0.98). Their feeling was negative correlations with their use of ESS (r = .203 to .458), expect for purposeful thinking (r = -.152) and trial and error strategies (r = -.157). In addition, students' feeling was negative correlations with their global reading strategy uses. With regard to the behavior category, it showed positively correlations with their use of ESS and ERS (r =.331 to .554), expect for disorientation strategies (r = .083). This indicated that the student might believe and did try to use both ESS and ERS, but in fact feel reluctant to use these strategies when searching and reading EEJAs.

Table 4
Zero-order correlation among students' ESS, ERS and ERA

	Belief	Feeling	Behavior
Control	.397***	-.238***	.399***
Select main ideas	.444***	-.203***	.410***
Evaluation	.416***	-.222***	.510***
Purposeful thinking	.455***	-.152	.554***
Trial and error	.430***	-.157	.331***
Disorientation	.098	-.458***	.083
Problem solving	.280***	-.278***	.355***
Global	.515***	-.257***	.524***
Problem solving	.457***	-.122	.542***
Support	.383***	-.057	.489***

Note: ***p<.001.

The structural equation modelling (SEM)

The relationships between students' use of searching strategies, reading strategies, and their attitudes toward reading EEJAs were further analyzed by SEM. As demonstrated in Table 1, Chi-square value ($\chi 2$ = 306.141, df = 62, p = 0.00) and ($\chi 2$/SD = 4.983). The CFI value = .947, the IFI value = .948, the TLI value = .934, the PCFI value = .753 and the RMSEA value = .089. These values indicated that the model's fit indexes are reasonable. For structural equality modeling, Path Coefficients are shown in Figure 1. It indicated that ESS was positively related to both ERS (β = .75) and ERA (β = .54). ERS was also positively related to ERA (β = .51).

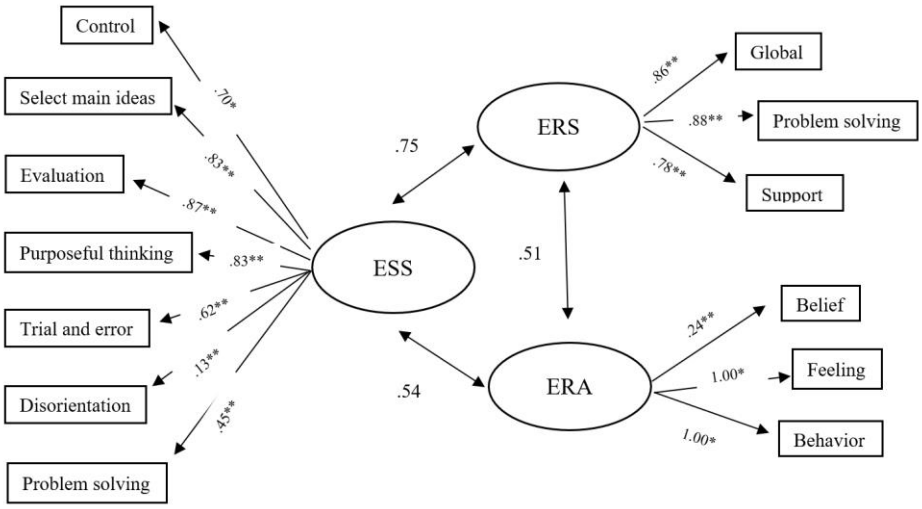

Figure 1
Structural model of relations between variables
Note: ESS = EEJA searching strategies, ERS = EEJA reading strategies, ERA = attitude reading toward EEJA; *p<.05, **P<.01, ***p<0.01

DISCUSSION

The present study was based on the issues surrounding the strategies used among EFL graduate students for searching and reading of English e-journal articles. Results from this survey questionnaire indicated that these students employ a medium range of EEJA searching strategies and use reading strategies frequently. Students, generally, are aware of which strategies to use and when to use them while searching and reading EEJAs. These results corresponded with Chen's study in 2020 which concluded that ESS was moderately used as well as ERS was most frequently used among EFL graduate students. In addition, the usage of searching strategies are positively related to the usage of reading strategies revealing that students who are frequent user of searching strategies are also more likely to use more reading strategies.

When examining the attitudes toward reading EEJAs, the results also showed a moderate to high positive attitude towards reading. Notably, zero-order correlation showed a negative correlation between the students' feelings toward the searching and reading strategies as well as actually reading EEJA. This indicated that EFL graduate students understood that EEJA reading is essential to their graduate study. Furthermore, they tried or compelled themselves to use both searching and reading strategies it to fulfill their assignments and theses, even if they felt reluctant in the process. This phenomenon might lead to ineffective reading as they did not feel that they were given the ownership of what they are reading. Yet, the process of literature searching and reading journal articles are usually time consuming and complex, thus students can easily lose focus of their works in the process. It is suggested that guidance should be

included in graduate courses for conducting the searching and reading tasks of journal articles. It is important to help students make use of effective strategies to help them organize and plan their EEJAs searching and reading. Only if value is attributed to EEJA reading can it be fully appreciated by the graduate students, then they can use the searching and reading strategies to its highest potential.

CONCLUSIONS

The growth of e-journals has led to the change in medium of how scientific communication is shared among researchers in the world. With its advanced features, e-journals better fit researchers' needs and more easily increase value to their academic works (Liew, Foo & Chennupati, 2000). Yet, graduate students whose native language is not English often struggled with the searching and reading of e-journal. The primary purpose of this study was to explore EFL graduate students' reading and searching strategies along with their attitude toward reading EEJAs. The findings indicated that students have a medium usage of searching strategies and high usage of reading strategies. They also showed a medium to high level of positive attitudes toward reading EEJAs. When comparing the individual differences, MANOVA results revealed that only reading ability and time spent online for academic purposes had significant interaction with ESS and ERS. In addition, zero-order correlation suggested a positive relationship of students' belief and behavior, but negative relationship of feeling toward ESS and ERS. Finally, the structural equation modelling (SEM) validated that the model with data collected using a questionnaire with three major variables and the connections with them were reasonable.

Whilst reviewing the literature about online information searching strategies (Tsai, 2009), online reading strategies (Chen, 2017; Mokhtari and Sheorey, 2002) and EEJA searching and reading strategies (Chen, 2020), it appears research was still in its infancy. The results of this study contributed to the emerging literature by revealing the actual dilemmas of EFL graduate students toward EEJA reading, even though they made significant efforts to use searching and reading strategies. The instructors might consider if it is necessary to provide a scaffolding for their students to help them engage in their graduate study. Further, differences on searching strategy uses were identified on year of study. The uses of searching and reading strategy uses when reading EEJAs also differ on students' reading ability and time spent online for academic purposes.

As many studies, this study has limitations which lay the foundation for future studies on EEJA reading matters. First, as students' attitude change toward EEJA reading in their Master's study, there might be several potential factors that associated with the change. It is important to understand students' attitude change over time, to identify challenges they face, then to determine if interventions are needed to guide them through the process. Further, it is beneficial to identify EEJA searching and reading strategies to encourage the use of these strategies other than just increasing the students' English reading abilities as these variables are positively related. These strategies need to be further probed in longitudinal studies to determine whether it predicts higher level of EEJA reading ability. Last, it is also recommended that further study look into how EFL graduate student reacts to EEJA reading requests, especially on the differences in their

early and later stages of Master's study to help them identify the reading issues and also help instructors to generate a richer understanding of students' needs.

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APPENDIX A

Items of students' ESS and ESS, ERS questionnaire

ESS
Control
I know how to use a web browser
I know how to utilize advanced-search functions on search engines
I know how to log-in on a specific English website with its URL
I know how to search EEJAs in an e-database
Select main ideas
I think about the English keywords to use prior to searching
I look through titles or hyperlinks in a web to access EEJAs
I look through titles in a database to obtain EEJAs
I use subjects to locate EEJAs
I check the reference lists to identify relevant studies
Evaluation
I scan the abstract first to decide if I will proceed reading the entire EEJA
I evaluate the relationships among the EEJAs obtained from the web

I think of how I will present and organize the EEJAs I have found on the web
I compare EEJAs collected from different websites or e-database
I decide if the EEJAs provided in websites or e-database can be used as a reference
Purposeful thinking
I keep reminding myself of the purpose of searching EEJAs online
I think of how I will utilize the obtained EEJAs
I make sure of my goals before starting my search for EEJAs online
I sometimes stop and think if more EEJAs is needed
I look for EEJAs with positive and negative findings
Trial and error
I try other possible websites when I cannot find enough EEJAs
I try other English databases when I cannot get any EEJAs in one database
Disorientation
I always feel nervous when searching EEJAs online
I do not know how to start my search for EEJAs
I always feel lost while searching for EEJAs online
I do not know what to do when searching for EEJAs online
Problem solving
I usually give up searching when I encounter unsolved problems
I do my best to solve any problems during my search
I think of resolutions when I get frustrated with problems in searching
ERS
Global
I am familiar with thesis writing format and style
I have a purpose in mind
I scan the main topic to decide if it fits my purposes before reading it
I think about what I already know to help me understand the EEJA
I do an overall review of the EEJA to ascertain the context before reading
I assess whether the content of the EEJA meets my reading purpose
I take note of the EEJA characteristics, such as its organization and length
I decide what to read thoroughly and what to ignore
I try to increase my understanding by looking at the tables, figures, and pictures
I use context clues to enhance my understanding
I review the title and abstract to help me understand what I am reading
I pay attention to specific information, like method, analysis and conclusion
I critically analyze and evaluate the information in EEJA
I check my understanding when I come across new information
I try to guess what the content of the EEJA is about
I check if my guesses about the text are right or wrong
I try to learn more about statistics and research design
I use silent reading techniques for rapid processing
I read a sufficient number of EEJA
Problem solving
I read carefully and slowly to make sure I understand the EJA
I try to get back on track when I lose my concentration
I adjust my reading speed according to what I am reading
When the text becomes difficult, I pay closer attention to what I am reading
I stop from time to time to consider what I am reading
I try to picture or visualize information to help remember what I have read
When the text becomes difficult, I read aloud to increase my understanding
When the text becomes difficult, I re-read it to increase my understanding
I guess the meaning of unknown words or phrases
I critically evaluate the EEJA text before choosing to use the information

I distinguish between facts and opinions in an EEJA text
I look for information that cover both sides of an issue
Support
I take notes while reading to help me understand
I highlight information to help me remember
I use reference materials (e.g. an online dictionary)
I paraphrase or summarize the text
I go back and forth in the text to find relationships among ideas
I ask myself the questions I want the EEJA I am reading to answer
I translate from English to Chinese
I think about the text in English and Chinese
I summarize what I have read in writing
I discuss with others to confirm my understanding
ERA
Belief
Reading EEJA is helpful for completing my graduate degree.
Reading EEJA is helpful for my thesis writing.
I think I can learn my research field knowledge by reading EEJAs.
I think I can apply what I have learned in reading to writing thesis.
I know how to search for the journal articles I need is very important
It is crucial for me to learn effective English e-journal paper reading strategies.
Feeling
I have a headache just thinking of searching for EEJAs.
It is difficult for me to read EEJA.
I often give up reading because the content of the EEJA is too difficult.
I regard reading journal papers as an interest.
Behavior
As long as I have free time, I will try to search for EEJAs.
As long as I have free time, I will read EEJAs.
In addition to the EEJAs assigned by the professor, I will also read additional EEJAs。
I often try my best to read and understand the content of the EEJAs.
I seek help from my professors or classmates when I don't understand EEJAs that I am reading.
I will try to find the answer by myself when I don't understand EEJAs that I am reading。