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Effects of Problem-Solving Strategies on Undergraduate Students' Performance in Reading Online Texts

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ABSTRACT

Aim of the Study: Reading online is an interactive process between a reader and the online text. Online reading provides an opportunity for students to improve their problem-solving reading strategies. This study has seen with the improvement of reading practices over the last few years, digital technology has promoted reading and literacy research (Mangen & Weel, 2016). Many students have limited reading experiences and strategies, and therefore struggle to understand the online text. The purpose of the study is to investigate the effect of problem-solving strategies for undergraduate students on their academic attainments while reading the online material.

Methodology: Sample of study consisted of 60 undergraduate students from a local women's college. The study used a mix method approach where the data was collected through convenience sampling using questionnaires, to discover the difficulties of students in reading online.

Findings: This study showed that problem-solving strategies enhanced the reading comprehension of the online readers. The students benefitted from using different subcategories of problem-solving reading strategies for improving their reading comprehension.

Conclusion: The results indicated that most of the students were moderate users of reading strategies and preferred using problem solving strategies while reading online. The study recommended teaching problem-solving strategies to encourage students to improve their online reading process.

Keywords: Academic Attainment, Online Reading, Online Reading Text, Problem Solving Strategies.

Introduction

Reading allows the reader retrieve relevant information in order to interact with the text to elicit the meaning (Alyousef, 2006).Considered an important receptive skill; effective reading practices enable learners to improve their knowledge successfully (Othman et al., 2010). The reading sources are suggested

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by teachers for the students in the language classroom, and the internet facilitates online reading with students using effective reading strategies. Herold (2014) placed emphasis on the act of reading online as it is connected to the internet where the focus is on reading using online devices like computers and iPad rather than paper. With the improvement of reading practices over the last few years, digital technology has promoted reading and literacy research (Mangen & Weel, 2016).

The integration of digital technologies into everyday life has displaced reading from its natural place in the arrangement of the communication processes; with students typically facing problems in creating meaning from the written texts (Grabe & Stoller, 2002). Virtual text continues to be the most extensively exploited means of information for learners (Zarrabi, 2015). In the online reading process, readers find that information that is relatively different from the written form. Anderson, (2003) established that the readers have more opportunities, to explore and have easier access to information while reading online. Currently, online reading resources are increasingly used in the different educational institutions with students preferring to integrate digital devices as learning tools in order to explore the technological outcomes of these tools on texts available virtually (Amer et al., 2010).

The benefits and difficulties of reading both offline and online text have been investigated in studies (Ackerman & Gold Smith, 2011), nevertheless Foasberg (2014) points to a visible lack of research on strategies useful for online reading. Furthermore, Herold (2014) stated that online reading encouraged the students to skim relevant information rather than reading critically. Although online reading provides opportunities for students to use strategies to make reading more effective, it has reduced their reading ability (Coiro and Doblers, 2007).

In Pakistan there is an ever-increasing number of educational institutions equipped with new technology to support students learning. Providing a technologically unique learning setting, the development of computers and the internet has brought a revolutionary change in the description of reading ability involving students in active learning and critical thinking (Zaki, Hassan, & Razali, 2008). The virtual learning environments provide opportunities for students to work independently, however, learners often encounter challenges in adapting reading strategies that control and modify their efforts to read the online text and construct meaning (Mesgar et al., 2012).

Channa et.al,(2012) point out that students face problem in understanding the online text due to limited knowledge of strategies use as reading online requires strategies that are different than those used for traditional printed texts restricting the insight and understanding of virtual text. In the new technologically advanced era proficient readers need skills and strategies in order to integrate the virtual resources to be successful in using strategies to access, organize and integrate many sources of information (Akyel & Ercetin, 2009).Research emphasizes that the cognizant and purposeful learner actions while reading web-based materials involves several strategies that make used reading successful (Behalova, 2010;Coiro & Dobler, 2007; Leu et al., 2005).

Furthermore, Nicholas (2009) argues that proficient readers tend to focus on reading the online text and deal with different strategies in the computer environment. Online reading has become a source of information and necessary part of the modern research, superseding the printed texts as the only source of information (Zarrabi, 2016).

Despite the popularity of virtual reading, minimal research on the relationship between problem solving strategies and online reading and its effect on the readers is available (Jusoh & Abdullah, 2015). Earlier, some research on problem-solving reading strategies takes into account the characteristics of the online setting and a different context. In fact, reading online is a complex process which requires students to use metacognitive process and problem-solving strategies to comprehend the text (Anderson, 2003; Incecay, 2013; Kim, 2011).

Study Objectives

- 1. Explore the effects of problem-solving strategies on undergraduate students reading of online texts.
- 2. Determine strategies the undergraduate students, use while reading online texts.

Literature Review

At present new literacies are swiftly changing because of technologies (Alexander & Jotten, 2000). In these days online reading strategies are considered an important issue that needs to be investigated. Students apply new strategies, skills and organize information on the internet to make their reading process more effective (Leu et al., 2004). Some researchers claimed that traditional reading strategies would not be sufficient to meet the need of learners to comprehend the online material. As a result, research indicates the inevitability of using diverse reading approaches to make online reading comprehension meaningful (Coiro & Dobler, 2007; Leu et al., 2007).

Reading online text, from different sources on the internet facilitates readers to make reading more interesting by using strategies. The internet has a vital role in the developmental challenges in teaching learning process (Alyousef, 2006). According to Auer (2014), online reading resources are increasingly used in the language classroom while some students prefer to use computer and mobile devices as learning tools in the language classroom. There is need to explore the effect of technology on readers while reading the online text. Although, online reading has reduced the readers' reading proficiency in the language classroom, Yamac and Ozturk (2019) found that effective critical thinking strategies offer novel opportunities for learners effectively read online using several efficient reading practices.

Hobbs (2006) found that the readers face some problems during applying reading strategies to the internet-based materials. The learners need to be aware of different strategies for reading online texts. In the online reading process, readers find out the information online while it is partly different from the offline version. As Anderson (2003) found that students try to search more background knowledge to comprehend the text while reading online. Reading comprehension is considered a critical part while it is also understood that many students of undergraduate have to face problems to comprehend the online texts.

Finding in some studies revealed that providing diverse means of representative reading material can help improve students' understanding of complex texts. Multimedia offers a variety of flexible supports including various types of nonlinear, multi-media and interactive online texts while reading online material that students encounter. Consequently, in order to facilitate readers the teachers can provide strategies for the readers to achieve their aims, requiring that the teacher must be aware of the usefulness of the online reading strategies (Mesgar et al., 2012).

Kang (2014) observed that although online texts provided various features, such as audio, video, and graphics, to support comprehension, e-learners still needed to apply specific strategies tailored to these texts. The Online Survey of Reading Strategies (OSORS), which Anderson (2003) adapted, was used to evaluate students' use of online reading strategies. However, the only significant difference found was in the use of problem-solving strategies among undergraduate online readers (Mokhtari et al., 2004). In another study, Taki and Soleimani (2012) examined Iranian readers' use of online strategies and found that the readers employed different subcategories of metacognitive reading strategies, including global, problem-solving, and support strategies, at a moderate level.

Teaching strategies through guided practice can facilitate the readers in selecting the appropriate approach to read difficult text allowing them to use these strategies without help in time (Liang & Dole, 2006, as cited in Atkin, 2013). In addition, Kim (2011) delineated teachers' role as being significant to raise awareness of the different strategies among the students and enable them to successfully use metacognitive strategies to achieve their objectives when reading online text.

In Pakistan reading is considered one of the basic need to learn the language skill.Many researchers successfully resolved the problems of learners in their learning process by changing traditional method in teaching reading. Reading skill is the mental process that reader use to comprehend the text (Cohen, 1990). Researchers defined that when readers face difficulties to comprehend the online text then they start to use reading strategies to cope with difficulties (Paris et al., 1983). Most important in reading the text, are the strategies that can facilitate students to adapt reading skills which help them to set goal to make successful reading. Reading is considered a shared activity between the text and the reader, consequently for an online reader; this is a "social" activity.

Ramli stated that (2011) reading is considered a social interactive process through which learns to read online texts. Readers apply approaches strategies to facilitate them to achieve reading comprehension. The reader keeps the mental connection between the text and the knowledge they acquire while reading online text to develop the mental capability. Grabe (1991) identified problem solving reading strategies one of the important reading components of proficient readers. The fact highlighted that high proficient readers prefer to use problem solving strategies with increased frequency as compare to the less proficient readers.

Additionally, research involving problem solving methods for assisting Pakistani pupils in becoming self-sufficient readers who may fulfill their reading goals.

Channa et al. (2012) while investigating perceptions of undergraduate students about different strategies in reading text also suggest that different reading strategies motivate students give good performance in language learning. The reading strategy is systematic process that readers used to guide their reading online text (Harris & Hodges,1995 as cited in Kirmzi,2012). These reading strategies included previewing making connection, monitoring, summarizing and evaluating.

In a later study, Anderson (1999) emphasized the use of approaches in reading text to facilitate learners to read more effectively. Online reading strategies are important source to search, locate and comprehend the online text to develop reading proficiency. The online reading strategies are built on a wide knowledge of print-based reading strategies (Moktar & Riichard, 2004; Sheorey, 2006; Sheory & Mokhtari, 2008). Ramli et al. (2011) specified that students in an online reading session need to be equipped with strategies to understand the reading text may support in the reading of online texts. The lack of integrating strategies to understand the reading text may slow the progress of the learners. In addition to providing teachers evidence that would be useful in designing and developing effective instructional materials to teach the online.

Mceneancy (2002) explained about the behavior of the learners to keep themselves engaged with online text to extract relevant information due to lack of awareness about the skills and strategies. However, skilled online readers who employ problem solving strategies can comprehend text in a better way and make the text more meaningful (Mc Namara & Shapiro 2005).

The present study is based on Flavell's (1979) theory of metacognition and Anderson's (2003) model of metacognition. Useful in investigating the problem-solving reading strategies of the online readers while reading the text. Anderson's (2003) model of metacognition lays out principles that play the effective role to examine the problem-solving reading strategies.

The OSORS instrument has been widely used in various researches indicating that students used the problem-solving strategies more frequently which helped them to overcome the comprehension problems while reading text (Lan, Lo, & Hsu, 2014; Akyel & Erçetin, 2009). As described by Vaičiūnienė and Užpalienė (2013) in their study, the undergraduate student preferred problem-solving reading strategies in understanding online texts, to guess the meaning of the difficult text the reader prefer to read slowly to develop understanding about online texts. By consulting dictionary make easy to get meaning of the difficult words. The readers adjust their reading speed during reading online texts and concentrate to recognizance the complex text, trying to reread the text to understand the context and skip difficult words to read. Bagci et al. (2020) found in his study students are well familiar about problem solving strategies

and awareness about subtypes of reading strategies help them to be more active and participant in reading texts.

Pookcharoen (2009) in their study found that reading online text can be made more easy by using problem solving strategies and students can critically evaluate the information on internet; for students to be able to critically evaluate information on the internet, identifying the problems learners encounter when interacting with online texts. The result showed that participants used problem solving reading strategies in a limited way due to their lack of awareness about these strategies.

Anderson (2003), classified metacognitive strategies into three subcategories:

- Global reading strategies –
- Support strategies –
- Problem-solving strategies –

In problem-solving strategies, the readers engage in actions in order to comprehend a text by inferring the meaning of unfamiliar words or rereading text. These strategies involves readers read slowly and carefully to maintain focus on reading, adjusting reading speed based on the material being read online they read online and focus on understanding of the difficult text, In order to remember what they have read, readers also visualize the information, go back and look up words or phrases to get a better understanding of the context, and occasionally skip over challenging words to get to the next section. Online reading abilities of readers can be encouraged through the OSORS strategies (Anderson, 2003). Furthermore, Kim (2011) suggested that teachers should play role to facilitate the students to implement reading strategies to set aims while reading. This would enable the students to use specific strategies for their readings. The subscales of metacognitive reading strategies included: problem-solving strategies; support reading strategies and global reading strategies, where the problem-solving strategy was more frequently used than the other metacognitive reading strategies (Suharni, 2017).

Ahmad et al. (2013) elaborated the positive effect of problem reading strategies for learning a language that the learners can able to use these strategies according to their need for academic purpose. The difficulties of learners are identified by the researchers. The learners had to encounter difficulties due to limited reading strategies. The learners after completion of their higher secondary education in English course have to face problem to comprehend the text due to lack of integrating the reading strategies and students neglected to use these reading comprehension strategies in the language classroom.

In Pakistan, English courses are taught in different programs at the undergraduate level, however due to limited reading strategies, students always have to struggle to comprehend the text in English. A majority of Pakistani learners lack the reading proficiency required at the undergraduate level. Many undergraduate students have problems in comprehending text (Shaife & Nayan 2011). There is also a lack of critical thinking among the learners also attributed to a lack of reading strategies which can be seen in their examination results. Moreover, Channa et al. (2016) identified the problems of students' during reading a text and suggested that different strategies for reading text should be utilized by teachers to develop reading comprehension of the students in English. Therefore, it is indicated that the college level readers avail benefit to improve reading proficiency.

In Pakistan problem solving reading strategies are neglected by teachers during teaching-learning process, it is the responsibility of the teacher to guide the learners that how to utilize these strategies in reading comprehension. As indicated by Habibian (2015) that, it became quite evident through the research that students have lack of knowledge about the effectiveness of these strategies. The learners have to face problem to comprehend the text due to limited knowledge of strategies. If they become familiar with the importance of problem-solving reading strategies, then the positive aspects can be developed among the learners about these strategies and they can become eager to learn that how these strategies facilitate them in reading comprehension. In this way, the learner will be successful students in their academic field and

they will be motivated to read the academic text in the light of these strategies. The learners will ready to do the practice of these strategies if they get positive feedback by integrating these strategies in reading the text.

The learners need to know the effectiveness of reading strategies which can improve reading ability in their academic performance (Tavakoli, 2014). Atkins (2013) considered reading strategies as useful in aiding readers to transfer their awareness of the printed text to online text. Therefore, students must be encouraged to use strategies while reading online texts, making them independent readers and be able to successfully achieve reading goals by involving problem solving reading strategies while reading the text (Channa et al., 2017).

For that reason, Najeb and Shahrebabaki (2015) noted that the student, who start to think strategically and familiar with using strategies they become more successful and motivated in their learning ability. As different variables such as motivation, attitude and anxiety factors are addressed but other factors need to be explored e.g. interest, limited strategies, social factors, feelings towards negative attitude.

Theoretical Framework

The study was underpinned by the Online Survey of Reading Strategies (Anderson, 2003) as the theoretical framework. The OSORS survey was adapted for the study in order to identify strategies readers use while reading online texts. This instrument was used to measure the effect of problem-solving reading strategies of undergraduate students while reading the online text.

Methodology

In the study aimed to investigate the effectiveness problem-solving strategies on undergraduate students reading of online texts. For this purpose, the current study used a quantitative research design.

Participants

The population of the study was undergraduate second-year college level female students. Participants of the study were selected through convenient sampling. The sampling of the study was determined by using the Taro Yamane's (1973) formula on the students' population. The final sample size of 60 students was determined. The participants read the novel as a part of their English course.

Data Collection

The data to find the effects of problem-solving strategies on students reading of online texts was collected in three strategies:

Stage 1: Pretest the subjects took the online reading comprehension test.

Stage 2: Posttest - the participants took the online reading comprehension test.

Stage 3: Online Web-based Survey.

Pre-Test

The pretest was given to all participants before the application of treatment.

Treatment

The treatment activities were designed to allow the participants the use of problem-solving strategies while reading the online text. The online activities were used with some changes according to the need and level of the students. The treatment (See Activity1 and 2) was given to all participants when they read online passages. The online reading comprehension passages followed answer question statements. The students were required to answer these given questions after reading the online text. The time allocated for the online activities were 30 minutes. The treatment was given to the students while reading online texts in order to identify the use of problem-solving reading strategies. The online readers were instructed to take

help of problem-solving reading strategies during read the online text. The online activities related to the English course of the undergraduate students. The students were given treatment of three weeks in which they have integrated subcategories of problem-solving reading. (See activity 1 and activity 2 for reading comprehension).

Activity 1



Activity 2



Post-Test

The posttest was used to measure the amount of progress the learners have made after treatment. The posttest administrated after the treatment to check the effect of treatment on problem-solving strategies which was given after treatment. The time allotted for the posttest was 30 minutes.

Design of Pre-test and Post-test

Both tests have similar pattern to check the students' online reading comprehension. Two online reading comprehension passages followed by multiple-choice questions on each. The students were required to select the correct answer from the given options. The time allocated for online reading comprehension passage was 30 minutes.

Web-based Survey

The OSORS survey was emailed to 60 students. It was administrated twice once after the pretest and again after the posttest. The responses of the students were saved to analyses the data easily.

Results and Observation

The study explored the undergraduate students use of reading strategies: problem-solving reading strategies aspects that may improve comprehension and areas of concern for online reading. In order to answer the first research question, "strategies and its effect on students' reading online texts", the Mean and Standard Deviation for pretest and posttest academic scores are described in Table 1.

A paired t-test was used to analyze the significant difference in the students' pretest and posttest scores before and after the treatment.

 H_{0} -1 There is no significant difference between the scores before and after treatment.

Table	e 1: Effects of prob	iem-soivin	ig reaaing s	strategies an	a its effec	t on stuaent	<i>s</i> .		
		Paired Differences							
			Std.	Std. Error	95% Confidence Interval of the Difference				Sig.(2-tail
		Mean	Deviation	Mean	Lower	Upper	Т	Df	ed)
Pair	Before treatment -		2 0 2 2	2.61		4 7 2 0	00 111	50	000

Table 1: Effects of problem solving reading strategies and its effect on students

2.022

-5.250

After treatment Level of Significance: $\alpha = 0.05$

1

H₀1 is computed by applying paired sample *t*-test and results are presented in the Table 1. The statistics show that H_01 is rejected (P < 0.05). The results indicate a difference between the scores for pretest (M= 6.53, SD = 1.501) and posttest (M = 11.78, SD = 1.290). From the results in Table 1, it has been observed that P value = 0.000 which is less than $\alpha = 0.05$. There is insufficient evidence to support null hypothesis. Hence it is concluded that treatment is effective such as there was difference in the students' pretest and posttest scores before and after the treatment.

.261

-5.772

-4.728

-20.111

The use of reading strategies of the students was surveyed using the Online Survey of Reading Strategies (OSORS) questionnaire by Anderson (2003). The questionnaire was employed in order to analyze the reading strategies of the undergraduate students used in reading online texts.

In Figure 1 analysis of the students' responses to using PROB Strategies is described mentioned.



Figure 1: Problem Solving Strategies used by Students

59

.000

Figure 1 shows the eight problem-solving sub-strategies frequently used by the students. The results revealed that 78.30 % students read slowly and carefully, while 70 % of the respondents tried to stay focused on reading. 83.3 % of the students adjust their reading speed according to what they read online and focused on understanding of the difficult online text. On the other hand, 64.40% of the respondents tried to picture or visualize information to remember what they read online. It was found that 72.90% students reread the online text to understand the context. The result show that 59.3% of the students guess the meaning of the unknown words or a phrase, while reading the online text. The results also showed that 30.5 % of the students skipped the difficult words when they read online. They preferred reading strategies used by students when reading online materials included: 9. *I read slowly and carefully to make sure I understand what I am reading online*; 13. *I have adjusted my reading speed according to what I am reading online*, 16. *When online texts become difficult, I pay closer attention to what I am reading; While*, the least frequently used strategy was: 28. *When online text becomes difficult, I reread it to increase my understanding. Indicating* that students were constrained by time and, tended to lose interest when expected to reread any online text.

Conclusion

The present study enhanced the understanding of Pakistani undergraduate students' problem-solving reading strategies. The current study found that students were moderate strategy users of problem-solving reading strategies. It can be concluded that students preferred using subcategories of problems solving strategies more frequently also read online texts. The students focused on the material by reading the text and slow their reading speed to develop the comprehension. The readers adjust their reading speed according to what they read online and focused on understanding of the difficult online text. The students were strategic to use frequently the internet in their reading online texts after getting treatment about strategies. In these strategies students reread the text loudly, skipped the difficult text to understand the text. They relied on a dictionary for better understanding to improve the vocabulary words. Students had to face problem to comprehend the online text due to limited knowledge of vocabulary words. To overcome these problem students used online dictionary to develop their understanding. The awareness of reading strategies enables the students to acknowledge the needs and importance of reading strategies. In the study the students benefited from the problem- solving reading strategies that's why they preferred to use strategies while reading online texts. Teachers' instructions about reading strategies play vital role to develop the interest of students as by using digital material make students proficient readers. These strategies develop the online reading skills and reading comprehension of the students. In addition, reading strategies help students to identify the goal, purpose, and main idea of the online texts. Finally, these strategies are easier, more effective and more efficient to improve the reading comprehension of the students.

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References

- Ackerman, R., and Goldsmith, M. (2011). Metacognitive regulation of text learning: On screen versus on paper. *Journal of Experimental Psychology: Applied*, 17(1), 18.
- Akyel, A., and Erçetin, G. (2009). Hypermedia reading strategies employed by advanced learners of English. *System*, *37*(1), 136-152.
- Alexander, P.A., and Jetton, T.L. (2000). *Learning from text: A multidimensional and developmental perspective*. In M. L. Kamil, P. B. Mosenthal, P. D. Pearson, & R.
- Alyousef, H. S. (2006). Teaching reading comprehension to ESL/EFL learners. *Journal of Language and Learning*, *5*(1), 63-73.
- Amer, A., Al Barwani, T., and Ibrahim, M. (2010). Student teachers' perceived use of online reading strategies. *International Journal of Education and Development using Information and Communication Technology*, 6(4), 102.
- Anderson, N. (2003). Scrolling, clicking, and reading English: Online reading strategies in a second/foreign language. *The Reading Matrix*, 3(3), 1-33. *Recuperado de: http://www.readingmatrix.com/articles/anderson/article.pdf*.
- Anderson, N. J. (2002). *The Role of Metacognition in Second Language Teaching and Learning*. ERIC Digest.
- Anderson, N. J. (2003). Metacognitive reading strategies increase L2 performance. *The Language Teacher*, 27(7), 20-22.
- Atkins, J. G. (2013). The effect of explicit teaching of comprehension strategies on reading comprehension in elementary school. Columbia University.
- Auer, N. (2014, October). Reading on tablets: Students' awareness and use of foreign language reading strategies. In *European Conference on e-Learning* (p. 624). Academic Conferences International Limited.
- Bagci, H., & Unveren, D. (2020). Investigation the Relationship between Metacognitive Awareness of Reading Strategies and Self-Efficacy Perception in Reading Comprehension in Mother-Tongue: Sample of 8th Graders. *International Journal of Educational Methodology*, 6(1), 83-98.
- Barr (Eds.), *Handbook of reading research* (Vol. III, pp. 285-310). Mahwah, NJ:Lawrence Erlbaum Associates.
- Behalova, A. *Exploring online reading strategies of American undergraduate students*. Ph.D. thesis, Oklahoma State University. Retrieved September 17, 2024 from https://www.learntechlib.org/p/126171/.
- Channa, A. M, Yossatorn, Y., and Yossiri, V. (2012). Students' Attitudes towards teachers' using Activities in EFL class. *International Journal of Academic Research in Business and Social sciences*, 2(5), 34-43.
- Channa, M. A., Nordin, Z. S., Siming, I. A., Chandio, A. A., and Koondher, M. A. (2014). Developing reading comprehension through metacognitive strategies: A review of previous studies. *English Language Teaching*, 8(8), 181.
- Channa, M. A., Nordin, Z. S., Simming, I. A., and Chandio, A. A. (2016). A Qualitative Study of Reading Comprehension: An Insight from Pakistani Context Bridging the Needs of Engineering Students. *International Journal of English Linguistics*, 6(2), 85.
- Channaa, M. A., Nordina, Z. S., and Simmingb, I. A. (2017). lenses on metacognition: teachers' perceptions toward strategies in reading in a Pakistani context. *Psychology in Russia. State of*

the Art, 10(1), 56-67.

- Cohen, L., Manion, L., & Morrison, K. (2013). Research methods in education. Routledge.
- Coiro, J., and Dobler, E. (2007). Exploring the online reading comprehension strategies used by sixthgrade skilled readers to search for and locate information on the Internet. *Reading research quarterly*, 42(2), 214-257.
- Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive–developmental inquiry. *American psychologist*, *34*(10), 906.
- Foasberg, N. M. (2014). Student reading practices in print and electronic media. *College & Research Libraries*, 75(5), 705-723.
- Grabe, W. P., and Stoller, F. L. (2013). Teaching and researching: Reading. Routledge.
- Harwell, M. R. (2011). Research Design in Qualitative/Quantitative. *The Sage handbook for research in education: Pursuing ideas as the keystone of exemplary inquiry*, 147.
- Herold, B. (2014). Digital reading poses learning challenges for students. *The Education Digest*, 80(1), 44.
- Hobbs, R. (2006). Non-optimal uses of video in the classroom. *Learning, media and technology*, 31(1), 35-50.
- Huang, H. C., Chern, C. L., and Lin, C. C. (2009). EFL learners' use of online reading strategies and comprehension of texts: An exploratory study. *Computers & Education*, 52(1), 13-26.
- Inceçay, G. (2013). Metacognitive online reading strategies applied by EFL students. *Journal of Theory and Practice in Education*, 9(4), 390-407.
- Jusoh, Z., and Abdullah, L. (2015). Online Survey of Reading Strategies (OSORS): Students' Online Reading in Academic Context. *Malaysian Journal of Distance Education*, 17(2), 67-81.
- Kang, H. (2014). Understanding online reading through the eyes of first and second language readers: An exploratory study. *Computers & Education*, 73, 1-8.
- Karbalaei, A. (2011). Metacognition and reading comprehension. *Íkala, revista de lenguaje y cultura, 16*(28), 5-14.
- Kim, J., Kwon, Y., and Cho, D. (2011). Investigating factors that influence social presence and learning outcomes in distance higher education. *Computers & Education*, 57(2), 1512-1520.
- Lan, Y. C., Lo, Y. L., and Hsu, Y. S. (2014). The Effects of Meta-Cognitive Instruction on Students' Reading Comprehension in Computerized Reading Contexts: A Quantitative Meta-Analysis. *Journal of Educational Technology & Society*, 17(4), 78-84.
- Leu, D. J., Castek, J., Hartman, D., Coiro, J., Henry, L., Kulikowich, J., and Lyver, S. (2005). Evaluating the development of scientific knowledge and new forms of reading comprehension during online learning. *Final report presented to the North Central Regional Educational Laboratory/Learning Point Associates. Retrieved May*, 15, 2006.
- Leu, D. J., Coiro, J., Castek, J., Hartman, D. K., Henry, L. A., and Reinking, D. (2008). Research on instruction and assessment in the new literacies of online reading comprehension. *Comprehension instruction: Research-based best practices*, *2*, 321-346.
- Leu, D. J., Everett-Cacopardo, H., Zawilinski, L., McVerry, G., and O'Byrne, W. I. (2007). New literacies of online reading comprehension. *Journal of Adolescent & Adult Literacy*, 55(1), 5-14.
- Leu, D. J., Kinzer, C. K., Coiro, J. L., and Cammack, D. W. (2004). Toward a theory of new literacies emerging from the Internet and other information and communication technologies. *Theoretical*

models and processes of reading, 5(1), 1570-1613.

- Mangen, A., and Weel, A. (2016). The evolution of reading in the age of digitisation: an integrative framework for reading research. *Literacy*, 50(3), 116-124.
- Mesgar, M., Bakar, N. A., and Amir, Z. (2012). Online metacognitive reading strategies used by postgraduate ESL readers of academic texts. *International Journal of Asian Social Science*, 2(10), 1779-1794.
- Mesgar, M., Bakar, N. A., and Amir, Z. (2014). Online Metacognitive and Interactional Strategy Use: Iranian Students' Internal Locus of Control. *Procedia-Social and Behavioral Sciences*, 118, 288-295.
- Mokhtari, K., and Reichard, C. (2004). Investigating the strategic reading processes of first and second language readers in two different cultural contexts. *System*, *32*(3),379394.
- Mokhtari, K., and Sheorey, R. (Eds.). (2008). *Reading strategies of first-and second-language learners: See how they read*. Christopher-Gordon Pub.
- Nejad, B. S., and Mahmoodi-Shahrebabaki, M. (2017). Effects of Metacognitive Strategy Instruction on the Reading Comprehension of English Language Learners through Cognitive Academic Language Learning Approach (CALLA).
- Nicholas, D., Rowlands, I., Clark, D., Huntington, P., Jamali, H. R., and Ollé, C. (2008, July). UK scholarly e-book usage: a landmark survey. In *Aslib Proceedings* (Vol. 60, No. 4, pp. 311-334). Emerald Group Publishing Limited.
- Othman, Y., Mahamud, Z., and Jaidi, N. (2014). The effects of metacognitive strategy in reading expository text. *International education studies*, 7(13), 102.
- Pookcharoen, S. (2009). Metacognitive online reading strategies among Thai EFL university students (Doctoral dissertation). *Retrieved from ProQuest Dissertations & Theses Global.(UMI No. 304902052).*
- Shafie, L. A., and Nayan, S. (2011). The characteristics of struggling university readers and instructional approaches of academic reading in Malaysia. *Journal of Human Sciences*, 8(1), 1-15.
- Taki, S., and Soleimani, G. H. (2012). Online reading strategy use and gender differences: The case of Iranian EFL learners. *Mediterranean Journal of Social Sciences*, *3*(2), 173-184.
- Tavakoli, H. (2014). The effectiveness of metacognitive strategy awareness in reading comprehension: The case of Iranian university EFL students. *Reading Matrix*, 14(2).
- Vaičiūnienė, V., and Užpalienė, D. (2013). Metacognititve Online Reading Strategies in Foreign Language Learning Context at University. Social Technologies 3(2), 316-329.
- Zarrabi, S. (2016). *Exploring metacognitive online reading strategies of non-native English-speaking translation students* (Doctoral dissertation, University of San Francisco).