

Reading Motivation and Achievement in Online Extensive Reading of English Text: A Systematic Review¹

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Abstract

The effect that online extensive reading (ER) of English texts has on learners' reading comprehension and motivation to read is not well understood. The purpose of this systematic review was to examine the efficacy of online ER by examining quantitative and mixed-methods studies that examined the effect of online ER on learners' reading achievement, motivation to read, and other perceptual and emotional aspects of English language proficiency. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) criteria were followed in this study. Online ER-related articles were selected based on the predefined eligibility criteria. Then, the 31 English-language online ER studies published between 2010 and 2021 were screened and extracted from electronic databases. The screened studies were those that involved students above 15 years of age. The findings indicated that online ER activities could be used in two ways. First, teachers could incorporate online reading strategies and technological tools for online ER to help students improve their reading achievement. Second, if they wanted to increase their students' motivation to read, they could emphasize the use of online reading management systems and reading resources for ER. Additionally, the study discovered that the size of the vocabulary and the volume of reading were predictors of online ER's success. Additionally, the article discusses the review's implications.

Resumen

No se comprende bien el efecto que tiene la lectura extensiva (ER) en línea de textos en inglés en la comprensión lectora de los estudiantes y la motivación para leer. El propósito de esta revisión sistemática fue examinar la eficacia de la ER en línea mediante el examen de estudios cuantitativos y de métodos mixtos que examinaron el efecto de la ER en línea en el logro de lectura de los estudiantes, la motivación para leer y otros aspectos perceptivos y emocionales del dominio del idioma inglés. En este estudio se siguieron los criterios de los Elementos de informe preferidos para revisiones sistemáticas y metaanálisis (PRISMA). Los artículos relacionados con la ER en línea se seleccionaron en función de criterios de elegibilidad predefinidos. Luego, se examinaron y extrajeron de bases de datos electrónicas los 31 estudios de ER en línea en inglés publicados entre 2010 y 2021. Los estudios examinados fueron aquellos en los que participaron estudiantes de 15 años o más. Los hallazgos indicaron que las actividades de ER en línea podrían utilizarse de dos maneras. En primer lugar, los profesores podrían incorporar estrategias de lectura en línea y herramientas tecnológicas para la RE en línea para ayudar a los estudiantes a mejorar su rendimiento en lectura. En segundo lugar, si querían aumentar la motivación de sus estudiantes para leer, podrían hacer hincapié en el uso de sistemas de gestión de lectura en línea y recursos de lectura para la educación religiosa. Además, el estudio descubrió que el tamaño del vocabulario y el volumen de lectura eran predictores del éxito en la educación religiosa en línea. Además, el artículo analiza las implicaciones de la revisión.

Introduction

Comprehension theory posits that students can learn grammar and vocabulary if they obtain comprehensible input (Krashen, 2004). Extensive reading (ER) is one way that intelligible information can be offered to students (McQuillan, 2020; Nisanci, 2017). Therefore, presenting them with comprehensive ER resources for pleasure reading represents a fundamental and minimally-burdensome method of encouraging learners to read texts written in English to improve their grammar and vocabulary knowledge (Renandya et al., 2019). Some scholars and experts have incorporated and recommended the inclusion of ER in education curricula and suggested that ER in English should be treated as a primary rather than a supplemental mode of instruction (Elturki & Harmon, 2020; Nakanishi, 2015; Renandya et al., 2018). However, the existing ER studies and practices in schools have largely attempted to circumvent conventional forms of paper-based ER, and there remains much room for changes and improvements such as self-reading navigation (Vaezi & Nilforooshan, 2013), reading experience (Cote & Milliner, 2014), cost efficiency (Ji et al., 2014), information cascade (Liu et al., 2020; Xu et al., 2020), and digital reading strategy use (Reiber-Kuijpers et al., 2021). All of these opportunities could be included by implementing online ER.

This systematic review seeks to identify the effects of current online ER regarding the improvement of the reading achievement of students and the amelioration of their motivation for reading, specifically for

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students above 15 years of age. It also intends to ascertain how the implementation of online ER uniquely affects the cognitive and affective aspects of English language proficiency.

Ryan and Deci (2000; 2017) stated that there are two types of motivation in learning: extrinsic and intrinsic. They asserted in their self-determination theory that intrinsic motivation is distinct from extrinsic motivation in that learners have an internal drive to manage their learning independently of external influences. Numerous studies examine the relationship between online learning and students' intrinsic motivation with regard to technological advancements. For example, Keller (2008) confirmed that online education should adhere to at least five principles: attention, relevance, confidence, satisfaction, and self-regulation. Online ER should be appealing to students, relevant to their future goals, and effective at developing their reading self-efficacy (McLean & Poulshock, 2018), as well as assisting them in regaining their self-concept after completing their reading as a kind of lifelong learning activity (Cropley & Knapper, 1983). Finally, it is hoped that students will be able to self-regulate their reading and remain focused on their reading target. Only by adhering to these principles will an ER program can be useful to make students intrinsically motivated to read.

Extensive reading is reading a wide-range of reading materials to develop English language skills in an English as a Foreign Language (EFL) context (Hamada, 2020). Through ER, a learner can improve their English language proficiency in various areas, including reading, speaking, writing, listening, vocabulary, and grammar (Elturki & Harmon, 2020; Uden, 2013). The reading activity is mostly done individually at the learner's own pace (Celik, 2017; Yamashita, 2008). Students read independently and implicitly acquire the second language by getting the comprehensible input from the reading (Azizi et al., 2020; Ng et al., 2019; Yamashita, 2008). Therefore, it is worth implementing ER in the school curricula to add to students' language learning experience.

Scholars also agree that ER entails reading as much as possible while adhering to ER's principles (Day & Bamford, 2002; Day, 2015). Most of the principles of ER were developed considering EFL's affective dimensions in reading, including reading motivation (Currell & Issa, 2018; de Morgado, 2009; Hum & Choi, 2020; Uden, 2013), reading self-efficacy (McLean & Poulshock, 2018), and reading experience (Day, 2015). Among these factors, reading motivation is the one that is most impacted by ER (McLean & Poulshock, 2018; Safaiea & Bulca, 2013). While the students exercise their self-driven reading through ER (Wiese, 2017; Yamashita, 2008), at the same time they also have a wide opportunity to assure their reading self-efficacy by practicing comprehending any reading texts they read (Dakhi & Damanik, 2018; Komiyama, 2018). Reading motivation and reading self-efficacy reciprocally affect one another (Dakhi & Damanik, 2018; Hum & Choi, 2020; Robb, 2015).

The ultimate goal of increasing students' reading motivation and reading self-efficacy is to increase their reading achievement as the outcome of the continuous reading (Koby, 2017; Shen et al., 2018; Yamashita, 2008). Students' reading achievement is measured by their capability in absorbing information from written texts. Therefore, reading motivation and achievement become critical components of a learner's future, particularly during their academic journey and work life.

With the rapid development of technology, ER can be carried out online by EFL instructors (Lim et al., 2021; Lin, 2014; Milliner, 2017; Milliner & Cote, 2015). A few studies have investigated online ER's effectiveness on the students' cognitive and affective development in English language learning. However, in the dataset for this study, articles from 2010 and 2021, there is only one meta-analysis study on ER (Nakanishi, 2015). This meta-analysis only focused on the effectiveness of paper-based extensive reading on students' reading proficiency. Also, there is a systematic review on digital reading (Reiber-Kuijpers et al., 2021), but there is no account of ER discussed in the review. A systematic review of how students' reading motivation and achievement are affected when they engage in online ER has rarely been discussed.

This systematic review tries to answer the following questions: Where the studies were conducted, who were the main participants of the studies, what instruments were used in online ER and their characteristics, what were the main findings, and what implication the review has toward the future studies and practices of online ER.

Method

Systematic review is a rigorous research method that offers readers the opportunity to evaluate the strengths and the weaknesses of the topic under study (Liberati et al., 2009). This systematic review involves the following stages: defining the topic of the study, identifying the related articles, screening against the predefined eligibility criteria, conducting quality appraisal, and extracting the data.

Eligibility criteria

The participants of the selected studies were students over 15 years of age because such learners were more likely to have access to the internet through smartphones, tablets, or PCs (Buzzetto-More et al., 2007). The interventions affected by the selected investigations included online ER focusing on reading achievement, reading motivation, and other related findings. Studies applying quantitative or qualitative designs were included in the review. Studies that enrolled physically impaired and special needs participants were excluded due to the potential deviations in their outcomes (Resnick, 2006).

Information sources

Only scholarly research published between 1 January, 2010 and 8 February, 2021 was included in this review from Elsevier, Scopus, Web of Science, ScienceDirect, ERIC, Wiley Online Library, Springer Exemplar, Sage, and EbscoHost. Works listed on the Extensive Reading Foundation website for ER in a second language were also included. The search for sources was run by initially using some defined critical phrases related to online ER. Those phrases were extensive reading, online-extensive reading, web-based reading, English online reading, digital reading, technology-mediated reading, computer-assisted reading, mobile reading, learning management system (LMS) based extensive reading, online-based extensive reading, paper-based extensive reading, paper and online-based extensive reading, paper or online reading, paper reading vs. digital reading, pleasure reading, reading for pleasure. We decided to use phrases rather than single keywords since it was difficult to reach the articles of interest using only a single word.

Study selection

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines guided the study selection process (Liberati et al., 2009; Moher et al., 2009). A total of 36 duplicate articles were removed from the 341 retrieved studies. Then, 305 studies were separately screened using the established title and abstract screening criteria. Finally, the remaining 83 documents were shortlisted because 222 excluded papers were considered irrelevant. Subsequently, a full-text review was carried out on the 83 identified studies. At the next stage, 52 of the articles were excluded for reasons such as the application of inappropriate study designs, erroneous interventions, the absence of complete articles, and wrong settings. Ultimately, 31 studies on online ER were assessed.

Results

The contexts of the reviewed studies

The countries covered by the reviewed studies are shown in Figure 1. An interesting fact is that eleven of the thirty-one studies were conducted in Japan, which suggests researchers' interest in the topic and the commitment with which Japanese schools are incorporating extensive online reading into their curricula. Additionally, it demonstrates the Japanese schools' readiness to facilitate extensive online reading. Twenty-one of the reviewed studies (nearly 70%) are from an Asian context. Surprisingly, no single study has been conducted in China, despite the country's potential as the largest EFL context by nationality. Additionally, there is only one study from Indonesia, the country with the second-largest population of EFL learners.

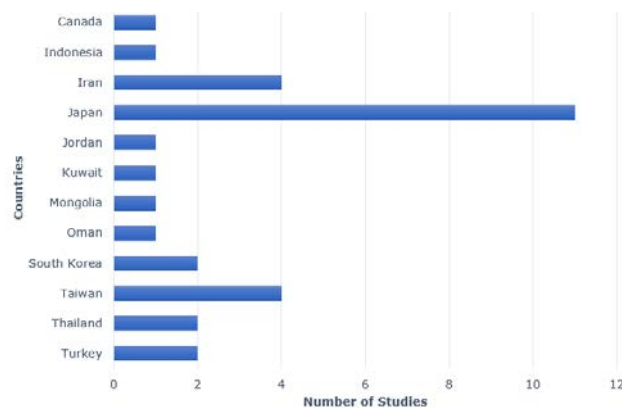


Figure 1: Countries conducting extensive reading from 2010-2021

Studies and participants

As illustrated in Figure 2, nearly 43% of the studies are quantitative, while 42% are mixed-methods. However, there are is an insufficient number of studies that use statistical analysis, including control groups and online ER intervention. Since not all studies focus exclusively on the effect of online ER on students' reading achievement and motivation, determining the effect size of each study is quite problematic. Over 90% of the studies involved undergraduates. It is self-evident that today's college students are very connected with the internet. We anticipate that future studies will include a more significant number of participants from senior high schools students (15-18-years-old).

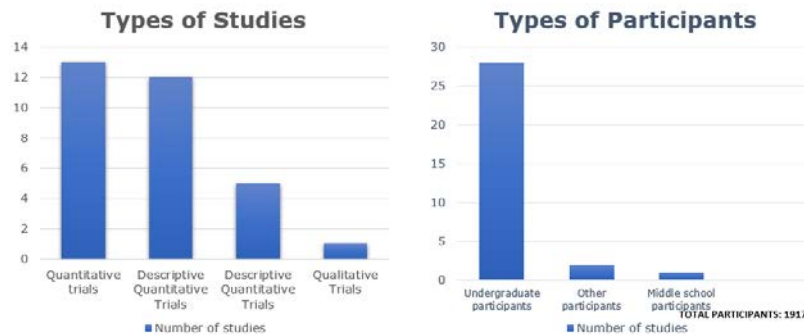


Figure 2: Types of studies and types of participants in the reviewed studies

The instruments used in online ER and their categories

Figure 3 depicts two types of online ER instruments: reading management systems and learning media. While virtual libraries assist students in locating and managing their reading records, the quiz site *M-Reader* assists them in evaluating their reading coverage by asking questions about well-known published reading materials from around the world and recording their score. Reading coverage means an extent to which students have read various reading materials on different topics. Additionally, some instructors use an LMS such as *Moodle* and or self-developed websites to manage their students' reading activities and virtual discussions. The right side of Figure 3 shows the three types of learning media: web-based materials, e-books, and mobile-based activities.

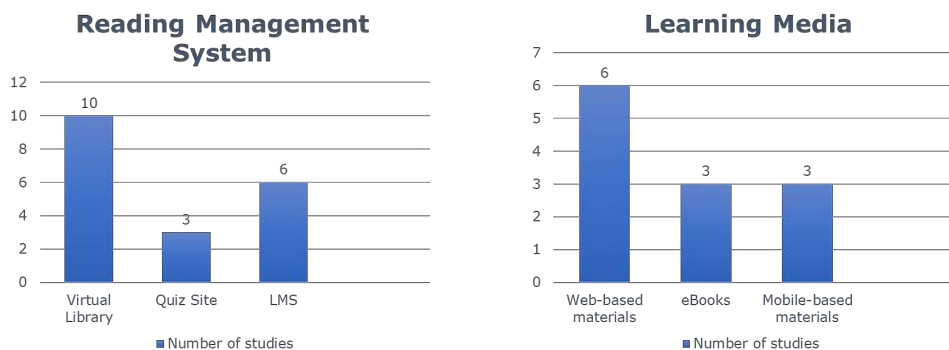


Figure 3: Characteristics of the instruments in online extensive reading

Over 61% of the reviewed studies used a reading management system rather than a type of learning media in online ER. As illustrated in Figure 3, each of the three categories of reading management systems employed a system for tracking students' reading records, including the number of texts read, quizzes completed, virtual discussions, and new lexical items acquired. In a reading management system, the virtual library is more frequently used than the other two instruments. The remaining 39% of the studies that used learning media employed websites for learning on a personal computer or smartphone, as well as e-books. The most frequently used learning medium was web-based materials accessed via a personal computer.

Results

Reading achievement

Some outcomes related to the effects of online ER on the reading achievement of students were carefully identified. According to the outcomes, the findings were divided into three categories: favorable, unfavorable, and indirectly beneficial (see Table 1). As for the favorable outcomes, researchers favored the

use of online learning media for ER to observe students' reading achievement. For instance, the studies of Chavangklang et al., (2019) and Rezaee et al. (2020) regarding multimedia-based text in Iran and Thailand, respectively, reported the positive impact of the use of any online media such as text, images, or videos to help learners understand a predetermined topic. The use of multimedia-based ER proved helpful to students improve reading skills. Milliner (2017) also found that permitting the use of mobile phones as gateways for access to authentic online reading materials helped students improve their reading achievement. Chen and Chen (2014) and Furtado et al., (2017) supplemented their studies on online ER as a learning tool by studying several participants who used specially designed ebook features and interactive reading applications. They found that the selected features of both types of media enhanced the reading achievement of the participating learners. Some studies conducted on online reading resources for ER by researchers such as Lin's (2014) experiment with *Raz-Kids*, Smadi, and Al-Zawahreh's (2013) investigation of open educational resources, and Milliner's (2017) use of online reading management systems for ER reported significant reading achievements by students.

As for the unfavorable outcomes, online ER produced adverse outcomes in four studies (Akbar et al., 2015; Lim et al., 2021; Milliner, 2019; Milliner & Cote, 2015). The ambiguity and complexity of the interactive features of ebooks were found unhelpful in the first three studies because they had the possibility of hindering comprehension from the readers. The lack of familiarity with the vocabulary was cited as a drawback in Milliner's investigation.

Regarding the indirect benefits, Cote and Milliner (2015) reported a secondary finding that students' reading speed predicted the reading score they attained on the TOEIC test. Dincer (2020) suggested that using the online reading log for their reading tasks made students believe they could improve their reading comprehension.

Some positive and negative outcomes were also identified related to the reading-related motivation of learners and their perceptions of the interventions they were experienced. Most studies assessed the reading motivation of learners through self-developed questionnaires. However, Rezaee et al. (2020) employed the Motivation for Reading Questionnaire (MRQ), and Lin (2014) utilized the Technology Acceptance Model (TAM). Both questionnaires were critical in eliciting information about students' reading motivation after they use an online ER program. The former is concerned with the affective well-being of the learners, while the latter examines to the students' acceptance of technology.

Eleven studies confirmed that students professed a positive perception of online ER. Specifically, eight investigations reported students' positive response to the use of online reading management systems for ER. These studies included a linguistics-based investigation (see Table 1). Meanwhile, three studies from Taiwan by Furtado et al., (2017), Lim et al., (2021), and Wang (2017) reported the positive experiences of students with online ER as learning material. The positive experience was a significant increase in reading achievement and a positive perception of online ER as a media in learning English reading.

Four studies selected for this review reported mixed responses by students about online ER interventions. Studies conducted by Allen-Tamai et al., (2018), Cote and Milliner (2014), and Matsuda, (2020) with Japanese students, and Hendriwanto's and Kurniati's (2019) investigation with an Indonesian sample yielded both positive and negative opinions by students with respect to online ER interventions.

For instance, the Japanese students in the Cote & Milliner study answered a questionnaire after using a reading management system called *Xreading* for online ER. Their answers indicated that 75% of the students reacted positively to the use of their smartphone for reading, but 70% never used their smartphones to read an ebook or access a reading resource such as *Xreading* (2014). Likewise, Hendriwanto and Kurniati (2019) revealed that 27 of 45 Indonesian students claimed that they did not use their smartphones for reading activities despite claiming that they preferred grade-specific readers in digital formats. Additionally, 54% of the Japanese students in Allen-Tamai et al. (2018) said they were inclined more toward paper-based reading materials than digital content for reading practice. The Japanese students in the Matsuda's (2020) investigation stated that they found it easy to read texts using *Goodreads*, but some of them found the website intimidating because of the density of the information it contained. The Akbar et al., (2015) experiment with learners in Japan found that students did not respond positively to digital reading management systems.

Reading motivation

Five studies describe the effects of online ER interventions on the reading-related motivation of students. The studies from Japan, Mongolia, Thailand, and Indonesia indicated that reading management systems were beneficial in motivating students to read (see Table 1). Students in Japan experienced changes in their

reading habits and attitudes after experiencing *Extensive Graded Reading* and taking *Moodle Reader* quizzes. Similarly, the reading autonomy of students from Thailand improved through the implementation of a blended learning and ER teaching model. Students from Indonesia reported increased reading motivation after being introduced to interactive mobile technologies. Finally, and perhaps most notably, Mongolian students chose to subscribe to the *Xreading* website and used their pocket money to pay the subscription fee, indicating their strong desire to read. Unlike the students of the above three countries, however, Iranian students were motivated to read through the integration of multimedia-based texts as learning media into their online ER activities.

Some Japanese students in Milliner and Cote's (2015) investigation reported it easier to read in English after using *Xreading* in their class as a reading management system. However, despite the reading resource and management system offered by *Xreading*, it was noted that students' engagement with it was conveyed in different ways. *Xreading* did not seem to influence their motivation to read.

Other cognitive and affective aspects

The present review identified English language proficiency's cognitive and affective aspects besides students' reading achievement and reading-related motivation. The findings were classified into three categories: vocabulary-related, reading volume, and other minor results (see Table 1). Six studies revealed that the enhancement of vocabulary was a positive effect of online ER (see Table 1). In particular, Alavi and Keyvanshekouh (2012) reported that 38 participants from Iran experienced improved word recognition and word production after using *Moodle Reader* as part of their online ER tasks. In Chen et al., (2013), 89 Taiwanese students were divided into two groups to compare the outcomes of online ER in the experimental group and offline ER in the control group. Interestingly, the 46 students placed in the online ER group outperformed their counterparts in vocabulary usage. Another study on a group of 60 Iranian students found that the use of *Moodle Reader* for online ER exercises helped students acquire an intensive vocabulary (Vaezi & Nilforooshan, 2013). A study from Taiwan with 70 students reported advancements in contextual vocabulary learning through an adaptive computer reading system management (Wang, 2016). Similarly, 253 students from Japan and Thailand reported a significant increase in vocabulary size after online ER (Allen-Tamai et al., 2018; Chavangklang et al., 2019). Three of the interventions performed for the abovementioned studies employed reading management systems, two used learning media interventions, and one utilized a reading resource intervention. Cheetham et al., (2016) investigation with 36 Japanese EFL students indicated a significant negative grammar and vocabulary outcome for its pilot utilization of *MReader* to conduct ER activities with students.

Four studies conducted by Cote and Milliner (2015), Dincer (2020), Hendriwanto and Kurniati (2019), and Shurentsetseg et al., (2015) with students in Japan, Mongolia, Indonesia, and Turkey, respectively, reported that the reading volume of their participants improved as a direct effect of online ER. Participants from Japan and Mongolia benefitted from the use of *Xreading* as a reading management system. The Japanese participants achieved their 50000-word reading target, and the Mongolian participants reported quiz-based improvements of 2.1% in their scores. Turkish students were able to utilize self-log to keep records of their reading. Finally, 45 university students from Indonesia reported significant increase in reading volumes through graded reading activities conducted via mobile phones. The increase of the reading volume was indicated by the number of texts they have read in their mobile phone. Through the recording they have noticed their reading increased significantly compared to before they recorded. The interventions of all four studies mentioned above applied reading management systems.

Secondary outcomes

Some secondary outcomes were identified as effects of online ER. Smadi, and Al-Zawahreh's (2013) suggested that online extensive reading of English texts could improve every skill associated with English proficiency, except for grammar. In testing affective skills, Ahour and Ghaderi (2013) stated that the reading self-efficacy of 60 students in Iran was improved by the use of an internet-based reading management system along with a researcher-designed weblog. Investigating reading skills, Allen-Tamai et al., (2018) reported no significant influence of the integrated ER approach on the reading speed of their experimental group. The interventions performed for the first two studies used reading management systems, while the third study was based on a reading resource intervention.

Authors (Year)	Aims	Instruments	Online ER Intervention	Results
Allen-Tamai et al. (2018)	Integrating skills approach to ER	- Pretest-posttest - End-of-term survey	-as a reading resource	- Partly positive and partly Negative perception about online ER - Vocabulary improvement
Smadi & Al-Zawahreh (2013)	Online ER to English	- Test - Questionnaire - Interview	as a reading management system	- Positive perception about online ER - Significant English proficiency achievement
Fraser & Abbott (2016)	E-readers in ER	- A paper-based pre-study background questionnaire - Weekly eBook-reading record sheets - An online post-EERP questionnaire	as a learning media	- Positive perception about online ER
Chanthap & Wasanasomsithi (2019)	Blending ER to learner autonomy	- Pretest-posttest - Semi-structured interview	as a reading management system	- Positive motivation for reading
Bakla, 2020	Integrating Web 2.0 in ER	- Blog statistics - Focus group interviews	as a reading management system	- Positive perception about online ER - Negative motivation for reading
Rezaee et al. (2020)	Using multimedia-based ER to promote receptive skills	- Oxford placement test - TOEIC – The listening and reading test - Motivation for Reading Questionnaire (MRQ) - Students' worksheets - Instructor log - Semi-structured interview - Open-ended questionnaire	as a learning media	- Significant reading achievement - Positive motivation for reading
Akbar et al. (2015)	Using ebooks for reading	- Students' writing diaries - Two questionnaires	as a learning media	- Insignificant reading achievement - Negative perception about online ER
Lim et al. (2021)	Interactive ebook vs. paper book	- Pretest - Five comprehension tests - Survey	as a learning media	- Insignificant reading achievement - Positive perception about online ER
Milliner & Cote (2015)	Xreading to impression	- Post-pilot questionnaire - FGD	as a reading management system as a reading resource	- Negative motivation for reading
Cote & Milliner (2014)	Xreading report	- Questionnaire - WPM Reading speed and comprehension test	as a reading management system as a reading resource	- Partly positive and partly Negative perception about online ER
Matsuda (2020)	Goodreads report	- Goodreads - Online survey	as a reading management system as a reading resource	- Partly positive and partly Negative perception about online ER
Wang (2016)	Adaptive computer-assisted RS, words recurrence specific to individual unknown words	- Online immediate and delayed vocabulary tests - Questionnaire regarding system use	as a reading management system	- Vocabulary improvement - Positive perception about online ER
Cote & Milliner (2015)	Xreading report	- Online questionnaire - Students' Xreading data	as a reading management system as a reading resource	- Predicting reading achievement - Reading volume improvement
Shurentsetseg et al. (2015)	Xreading implementation	- Pre-pilot questionnaire - A pedagogical observation based on action research principles	as a reading management system as a reading resource	- Positive motivation for reading - Reading volume improvement
Cheetham et al. (2016)	Piloting MReader	- Likert scale survey - Semi-structured interview	as a reading management system	- Positive perception about online ER - Negative improvement in grammar and vocabulary
Milliner (2017)	Evaluated graded readers	- TOEIC® IP test scores and scores in the reading section of this test	as a learning media as a reading resource	- Significant reading achievement
Suk (2018)	Learner's reaction to MReader	- Semi-structured interview - Teacher's observation	as a reading management system	- Positive perception about online ER
Hendriwanto & Kurniati (2019)	Mobile-assisted ER to fluency	- Reading rate	as a learning media as a reading management system	- Partly positive and partly Negative perception about online ER - Positive motivation for reading - Reading volume, reading fluency improvement

Authors (Year)	Aims	Instruments	Online ER Intervention	Results
Dincer (2020)	Extending reading using a reading log	- Online survey -	as a reading management system	- Predicting reading achievement - Reading volume improvement
Alavi & Keyvanshekouh (2012)	Moodle reader to incidental vocabulary	- Recognition Vocabulary Levels Tests - The Oxford Placement Test - Vocabulary Learning Strategies Questionnaire	as a reading management system	- Significant incidental vocabulary acquisition
Hagley (2017)	Discovering changes in general reading habit	- Pre-post surveys	as a reading management system	- Positive motivation for reading
Vaezi & Nilforooshan (2013)	Investigating the effect of Moodle reader	- Test	as a reading management system	- Evaluation and potency of intensive vocabulary acquisition
Wang (2017)	Impact on RC and satisfaction	- Post-treatment reading test - Questionnaire related to learner satisfaction.	as a learning media	- Positive perception of online ER
Milliner & Cote (2015)	Reflecting on Xreading	- Summary of student engagement - Post-pilot questionnaire	as a reading management system as a reading resource	- Insignificant reading achievement
Milliner (2019)	Learners' listening and reading	- TOEIC® listening test scores - Listening vocabulary levels test (LFLT) - TOEIC® reading test scores	as a learning media	- Insignificant reading achievement
Chen et al. (2013)	ER via eBook to reading attitude comprehension, vocabulary	- Reading Attitude Scale - TOEFL reading test - Vocabulary test	as a learning media	- Significant reading achievement - Positive reading attitude - Vocabulary improvement
Lin (2014)	Online ER to reading and perception	- Learning records on Raz-Kids - The reading skills tests on Raz-Kids, and the Technology Acceptance Model Questionnaire	as a reading management system as a reading resource	- Significant reading achievement - Positive perception of online ER
Al Zeidi & Al Quraini (2019)	ER Moodle report	- Survey	as a reading management system	- Positive perception of online ER
Furtado et al. (2017)	Reading application to reading	- Test and survey	as a learning media	- Significant reading achievement - Positive perception of online ER
Ahour & Ghaderi (2013)	Internet-based ER to self-efficacy	- Test - Self-Efficacy Scale - Semi-open-ended questionnaire	as a reading management system	- Self-efficacy improvement
Chavangklang et al. (2019)	Online multimedia-based ER to vocabulary size and RC	- Pretest and posttest - Online multimedia-based extensive reading activities	as a learning media	- Significant reading achievement - Vocabulary improvement

Table 1: Data and results extracted from the screened studies

Discussion

Notably, most online ER experiments that found favorable reading achievement outcomes employed internet-based reading materials and technological devices as learning media rather than as reading management systems (see Table 1). Moreover, students reported that they better understood varied topics by using online learning materials for ER rather than taking paper-based ER approaches (Chavangklang et al., 2019). For instance, students could refer to *Wikipedia* and *YouTube* to learn more about certain topics. In some cases, they could also use interactive features of eBooks to highlight, annotate, summarize stories, and maintain essential glossaries. Thus, multimodality was critical for the improvement of the comprehension of English texts by students (Komala & Rifai, 2021; Shepard-Carey, 2020; Singer Trakhman et al., 2018; Yum et al., 2021). Rezaee et al. (2020) found evidence to support the multimodality argument

by demonstrating that online ER activities helped enhance students' reading achievement. The students were extensively involved in the reading activity by using screens. The hypermedia on the websites helped the students to understand about the reading topic better. Therefore, it is concluded that online ER differs from paper-based ER because it offers multimodal tools that facilitate learners' comprehension of English texts.

However, some studies selected for this review also indicated the negative effects of online ER on the reading achievement of participating students. Akbar et al., (2015) found that female college students did not benefit from the reading of ebooks. Likewise, the participants of Milliner's (2019) experiment with a reading-while-listening ER intervention did not achieve positive reading scores in the test conducted afterward since the intervention did not increase the students' reading scores. Lim et al. (2021) also compared the influences exerted by two distinct reading media on the reading achievement of learners: interactive ebooks and paper-based texts. These three studies did not find any evidence to support the hypothesis that online ER is effective in advancing students' reading achievement. Perhaps these studies did not appropriately inculcate online reading strategies in their participating students.

Among other benefits, online ER provides students with a plethora of reading material on varied subjects to choose reading material that suits their interests (Allen-Tamai et al., 2018). ER emphasizes comprehensible input over comprehension goals; thus, reading strategies become less critical as students learn to read (Kerr & Frese, 2017). Therefore, teachers should consider incorporating online reading strategies into their online extensive reading programs to improve the students' reading achievement. Online reading strategies are typical as they include accessing the web, engaging in online interchanges, and employing computer-based skills and digital devices (Park & Kim, 2017). It is believed that the incorporation of online reading strategies into online extensive reading activities can exert a significant impact on students seeking to improve their reading achievement.

Most studies supporting the idea that online ER improves students' motivation toward reading used Internet-based reading management systems rather than learning media for ER (see Table 1). Unlike the usage of online learning media for ER, the employment of internet-based reading management systems for ER allowed students to keep track of their reading histories and thus offered them a sense of steady progression. Additionally, such reading management systems created a database of students' reading habits and interests, and teachers could use these inputs to provide individualized feedback to the learners.

The extant research has suggested that a reading management system builds learning autonomy in students (Chanthap & Wasanasomsithi, 2019). For example, *Xreading* represented the most commonly used ER website in the studies discussed (Cote & Milliner, 2014; Milliner & Cote, 2015; Shurentsetseg et al., 2015). This website offers a wide range of tailormade reading content of varying difficulty levels. The *Xreading* system allows students to read a text or book to accomplish a predetermined number of word requirements set by the teacher. This system records texts retrieved and returned by students. When they complete tasks by reading a book, answering relevant quizzes on the content, and returning the book, the system records the reading accomplishment of the students and enables teachers to provide feedback to students based on their reading records. Students can share information on the texts they have read with their peers and teacher at the end of the reading task. In so doing, online ER applies at least two important principles of Keller's (2008) instructional model: control and satisfaction. Reading management systems afford students a sense of control over the material they read and grant them a degree of satisfaction with the progression in their skills.

Other reading management systems, such as *MReader*, *Moodle Reader*, and *Goodreads* were also used by some of the selected studies (Al Zeidi & Al Quraini, 2019; Cheetham et al., 2016; Hagley, 2017; Matsuda, 2020; Suk, 2018). In a few instances, the authors also employed self-developed websites for online ER programs. The students found such websites helpful and encouraging. This suggests that online ER can encourage students to read more if internet-based reading management systems and reading resources are utilized for the purpose.

Teachers assigned readings as well as reading websites to their students in most of the discussed studies. Such prescriptions led the online ER activity to become unnatural because the student did not initiate it. For instance, Milliner and Cote (2015) and Matsuda (2020) reported that the positive perceptions of students in relation to the use of reading management systems such as *Xreading* and *Goodreads* did not yield satisfactory reading experiences for the learners. This outcome indicates the unnatural nature of the ER designs that were employed for the studies. In fact, in their retrospective case analysis of reading experiences, Renandya et al., (2019) concluded that a genuinely motivated reader would read naturally and

continuously based on choice. Only then can readers organically learn a second language without conscious effort (Ng et al., 2019).

It is further suspected that readers would never stop reading about a particular topic unless appropriate saturation and satisfaction were achieved (Morgan et al., 2017). Reading content via *Google* searches and social media platforms often gratifies readers. However, *Google* does not yet offer a reading management system or application that can track a person's reading history. Inventories of internet-based reading management systems are critical tasks to be achieved in the future because the findings of the current systematic review suggest the efficacy and benefits of employing online reading management systems for ER in motivating students to read. Lifelong learning by students can be supported by implementing positive reading habits (Kálmán, 2016). Therefore, a *Google*-driven or social media-based automatic reading management system that can record a person's reading history, calculate the number of words read, generate a related quiz, highlight important words, phrases, and sentences, and grade reading levels would be advantageous for the promotion of positive reading habits in young people.

Some studies found that online ER affected certain other aspects of English language proficiency. In the studies reviewed, the reading management systems applied for online ER primarily recorded the reading volumes of students, including reading times, number of texts, words, and quizzes (Cote & Milliner, 2015; Dincer, 2020; Hendriwanto & Kurniati, 2019; Shurentsetseg et al., 2015). Consequently, learners became more confident about their reading skills and felt as if they were achieving important milestones. One study investigating the reading self-efficacy of students clarified that online ER made other affective aspects viable for students besides reading motivation (Ahour & Ghaderi, 2013). On the other hand, a few vocabulary tests indicated that some students had indeed managed to significantly improve the number of words they had acquired (Alavi & Keyvanshekouh, 2012; Allen-Tamai et al., 2018; Chavangklang et al., 2019; Vaezi & Nilforooshan, 2013; Wang, 2016). To conclude, Arnold (2009) supported the statement that ER can lay the affective and linguistic groundwork for EFL students. These secondary findings suggest the existence of several aspects worth investigating regarding online ER activities.

Conclusion

Notwithstanding the limitations mentioned above, this systematic review offers at least seven notable observations as the implication for future practice, especially in extensive reading activities. First, online ER can be used to avail of learning media to improve students' reading achievement. Second, online reading strategies are useful for students to supplement online ER activities. Third, reading management systems for online ER can help teachers increase the reading-related motivation of their students. Fourth, a combined version of the Motivation for Reading Questionnaire (MRQ) and the Technology Acceptance Model (TAM) to assess the reading motivation of learners can be adapted. Fifth, vocabulary development and reading volumes contribute to the success of an online ER program, so both aspects can be parameters for the success of an online ER program. Sixth, reading management system websites or online reading platforms in EFL contexts still leave room for improvement, particularly at the university level. The creation of a reading management system that can track students' reading activities via *Google* and social media platforms is recommended. If developed, such a tool could help students record their reading trajectories over time. Seventh, additional randomized-controlled trials on online ER are suggested to generate more statistical inferences and effect sizes.

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