



The Effect of Learning Management System on Reading Comprehension Across 3 Types of Readers

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ABSTRACT

Through the application of the experimental research method and the factorial design, the purpose of this study was to investigate the effects of the authoring tools SoftChalk medium and Hot Potatoes medium in the learning management system (LMS), as well as the types of readers (Avid, Passive, and Reluctant), on the reading comprehension achievement (ReComA) of second year university students (sophomores). In order to identify the different sorts of readers that took part in the study, a quick survey was given to all of the participants. Both the pre-test and post-test were administered to sixty second-year students in order to evaluate the students' ReComA. The findings suggested that the use of the Hot

	<p>Potatoes medium was more successful in enhancing the students' ReComA and its features. On the other hand, the majority of components of reading comprehension contributed to ReComA (total) in both the SoftChalk and Hot Potatoes groups. In addition, despite the fact that there was no significant interaction on students' ReComA, the mean difference between the post-test and the whole sample indicated that the achievement of the Avid reader and Reluctant reader students in both the SoftChalk and Hot Potatoes groups were higher than the achievement of the Passive reader students.</p> <p>Keywords: learning management system, authoring tools, SoftChalk; Hot Potatoes, types of readers, reading comprehension achievement, factorial design</p>
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Introduction

Universities are competing toward 'World Class University' in this 21st century. In recent years, the term 'world-class university' has become a cliché shared by two opposing camps. Organizations and their leaders at the international and national levels use it to advance their standing and success on the world stage (Barnett, 2020). It is how a higher institution competes to be the members of a global society. The current period of globalization and revolution 4.0 have also influenced the progress of Indonesia's higher education system (Sukmawati et al., 2021). In the era of globalization, institutions of higher education must have good academic and non-academic quality. Moreover, higher education institutions are able to contend with the increasing demand in the educational area, not only at the local and national levels but also on the international level (Gardiana et al., 2023). In fact, students as a part of the higher institution are challenged to meet the demand of globalization. According to Levin et al. (2006), students are expected to get involved in the development of science and technology. Dwi Cahya et al., (2020) argues that in order to participate actively in the 21st century, students must cultivate the necessary foundational abilities. Students are challenged to acquire not only cognitive skills but also information i.e., processing skills. To keep up with new digital technologies like artificial intelligence (AI), virtual reality (VR), and robotics, there is an unavoidable need to increase people's abilities in the country (OECD, 2019). In fact, a good level of literacy in technology-rich environments is needed in order to get all the benefits of Internet use.

To achieve the overall skills and development goals, one must be literate. UNESCO and UNICEF (2012) mention that literacy is one of the most important tools for empowering people. It makes it possible for individual people to learn about their rights and to make use of them, including the rights to get good health, information, justice, and freedom. It is one of the most fundamental skills that students should use to develop all of the other 21st century skills. Since literacy is the basis of all learning, students should use it as an access point to learn the other skills well (Hasanah & Sholihah, 2017; Noortyani, 2018). Besides, literacy is seen as important in higher education because it helps people solve problems, think critically, learn throughout their lives, and do their jobs well (Pastore & Andrade, 2019; Záhorec et al., 2019). Literacy is the act of acquiring knowledge from a variety of sources, contexts, practices, and experiences and applying it to everyday work (Chakrabarty, 2020). Chakrabarty (2020) also emphasizes that the reading skill is one of the basic approaches of acquiring literacy.

Thus, literacy embodies the ability to read, understand the reading text, and employ the information from the passage. Learning to read is the first and most important step in any educational endeavour (Nurmawati et al., 2021). Gove (2011) states that poor readers cannot develop proper writing skills. Harmer (2007) even suggests that reading is useful for language acquisition. Reading is an activity in which readers actively seek meaning in what they read. Despite its complexity, reading is a necessary skill that is used to extract meaning and information from a text to acquire knowledge, and it is related to other abilities in its process (Erdiana et al., 2017; Sukandi & Syafar, 2018; S. B. Yusuf et al., 2018). Reading is important for self-improvement, building a personal brand, professional growth, schooling, and national growth. People who can read and write represent some of the most important factors in a country's growth (Obaidullah & Rahman, 2018; Rintaningrum, 2019). Reading is essential to the growth of one's thinking capacity, personality, and intellectual capacity, as well as to the development of a prosperous nation. Without reading, none of these things can be accomplished (Obaidullah & Rahman, 2018). In the end, reading becomes one of the indicators to strengthen literacy proficiency.

However, several recent reports show that the level of proficiency in literacy is still low in most countries. The main finding of OECD (2019) in reading showed that 77% of the students across OECD countries were able to read at a level 2 or higher. There were only 8.7 % of pupils, on average, across OECD nations, who scored Level 5 or 6 on the PISA reading test, which is the highest possible score. At this level, the students are able to distinguish between truth and opinion based on implicit clues pertaining to the content or source of information at these levels because they are able to digest lengthy texts and deal with abstract or counterintuitive notions.

Besides, based on the current result of the survey of adult skills, OECD summarized that 1.5% to 19% of young tertiary-education graduates have low literacy and numeracy skills and 13% of 15-to-29- years-olds were not in employment, education, or training. Besides, the OECD Program for International Student Assessment (PISA) (2021) also reported tragic results. Students in Indonesia scored lower (371) than the OECD average (487) in reading. It is shown that Indonesia was ranked number 72 out of 77 countries assessed on their reading achievement. In fact, the average score of students' reading achievement in 2018 was lower than that in 2012. The average score of students' reading achievement in 2012 was 396 while the score in 2018 was 371.

The results above can reflect the students' English reading achievement. The students' English literacy is assumed to be much lower than the data mentioned previously. The students' native reading achievement is still far away from expectation, let alone their English reading achievement. The report released by ETS on Test Takers Worldwide describes that Indonesia ranked number 32 out of the 32 countries involved in the report (ETS, 2021). The mean score for reading was 162, which was the lowest score on the list. It can be assumed that though there have been many research studies conducted in the field of teaching and reading literacy, upgrading, and updating the way of teaching and learning for better reading achievement is still needed. It is a lifelong process.

However, the way of teaching always changes due to global change. The way of teaching in the 20th century was slightly different from that in the 21st century. Digital technologies profoundly transform teaching and learning in environments of higher education, with the rapidity of technological development increasing the difficulty (Nikou & Aavakare, 2021). The current report of PISA proved the increasing numbers of internet users. The number of people using the internet grows, and so does the way that individuals engage with text, and this has a significant impact on how we communicate with one another. Digital gadgets have overtaken print and face-to-face communication as the primary means of acquiring new knowledge (Program for International Student Assessment (PISA), 2021). In fact, as a result of the covid-19 pandemic, the urgency to make digital technologies the lifeline for education has grown. The recent worldwide crises, and especially the current pandemic situation, has necessitated a comprehensive restructuring of higher education (Skulmowski & Rey, 2020). It has also sparked renewed interest among students, educators, and policymakers in supporting 21st-century readers.

As the demands for the students have changed, English teachers and lecturers must be aware of the reading trend in the 21st century. It is a major challenge for today's educators to prepare their students for success in the

dynamic, crowded, and chaotic digital world of the twenty-first-century educational world. They must put the current future demands into their consideration in teaching (Oktarina et al., 2022). Association (2012) argues that no quick answer is given as the solution for the changing demand of literacy. The best solution to ensure appropriate literacy instruction is to continue to build on what is known to best support the adolescents of today. It is also said that adolescents, in this 21st century, as they work toward becoming contributing members of society, need to be able to read and understand a wide range of print and non-print documents in both traditional and digital formats. Align with the idea, technology embodies reading literacy in the 21st century. It is either the demand that must be fulfilled or the reason to reach the goal.

Concerning the importance and the goals of reading literacy and the urgency to strengthen adult literacy proficiency, the demands, and how technologies could bring the effects to the result of learning, the researchers propose the study that Integrated SoftChalk and Hot Potatoes in Learning Management System (LMS) to improve reading comprehension achievement (ReComA) of Sophomores. The study focuses on integrating what is called technology web-based media in a multimodal setting to enhance students' reading comprehension.

SoftChalk and Hot Potatoes are considered tools that can be used as interactive teaching and learning media. Vargas and Monge (2018) agree that Hot potatoes stand as an authoring tool that allows users to create interactive teaching materials with its six different exercise-creating tools using predetermined templates. SoftChalk is also an authoring tool. Yet, unlike hot potatoes in which activities are developed through six separate creating tools, activities developed using SoftChalk can be presented in unity. When SoftChalk is integrated into LMS, it becomes a set of media that consists of various activities. With these characteristics, it is believed that the demands for the betterment of reading achievement in the multimodal era can be fulfilled.

Unexpectedly, the typical readers who exist in Indonesia are known as passive readers and tend to be reluctant readers. This phenomenon can be determined from the reading habit. Instead of being intent on reading, most teenagers in Indonesia choose to be television viewers. According to Pitoyo (2020), reading is still not a popular activity among Indonesian students. According to UNESCO data, Indonesia is ranked nearly last in global literacy, indicating a very poor interest in reading. The reading interest of Indonesians is alarmingly low, with barely 0.001 percent of the population showing any interest in reading. That is, only one person out of every 1,000 Indonesians is an avid reader. Another study, titled *World's Most Literate Nations Ranking*, undertaken by Central Connecticut State University in March 2016, found

that the country of Indonesia was rated 60 out of 61 countries in terms of reading interest (Miller & McKenna, 2016). Moreover, the study conducted by Aisah et al. (2019) showed that among the 130 Pre-Service EFL students, there were only 19 students who spent their free time reading, whereas the rest of the students preferred watching movies to reading.

The studies concerning the implementation of the Learning Management System in teaching language are already available. The study conducted by Amalia and Ramdhani (2018) discussed the use of e-learning in teaching writing. It suggested that e-learning could assist the teachers in the teaching process as well as bring significant change to the students' writing achievement. Another study was conducted by (Masyhudianti et al., 2018). The study was a factorial design study to see the effect of Schoology, a learning management system, viewed from the students' creativity. The study revealed that teaching writing by using LMS was more effective than that without LMS. There was a study on the use of e-learning to increase TOEFL Score (Syakur et al., 2019). The study conducted by Taufik et al. (2021) also revealed that the use of one LMS could effectively improve students' English achievement. Other studies were also conducted to gauge students' perception toward the use of LMS in the teaching and learning process (Kashinath & Raju, 2022; Purnawarman et al., 2016; Safitri & Lestari, 2021; Y. Q. Yusuf & Yusuf, 2018).

Most of the studies, however, did not consider reading as a variable and moderator variables that might influence the results. Besides, most of the studies discussed the learning management system itself without considering the companion tools to deliver the materials. Regarding the phenomenon, the researchers conducted the study to see the effect of two authoring tools in LMS, Hot Potatoes and SoftChalk, and Types of Readers on ReComA of Sophomores. Types of readers, namely avid, passive, and reluctant readers, are determined as moderator variables. Fraenkel et al (2012) define a moderator variable as a type of independent variable that is selected to investigate if it modifies the relationship between the dependent and the major independent variable. As a matter of fact, by conducting this study, the researchers seek to see if the effects of the interventions which have two levels, (1) Integrating SoftChalk, and (2) Integrating Hot Potatoes, an LMS, are consistent across the types of sophomore readers. Therefore, the focus of this study was to answer the following research questions:

1. Was there any significant improvement in ReComA and its aspects after the students were taught using SoftChalk in LMS?
2. Was there any significant improvement in ReComA and its aspects after the students were taught using Hot Potatoes in LMS?

3. Was there any significant difference between ReComA and its aspects of the students who were taught using SoftChalk and those who are taught by using Hot Potatoes?
4. Was there any contribution of ReComA aspects to the ReComA in total?
5. Was there any significant interaction effect between teaching media used and types of readers on students' ReComA?
6. Was there any significant difference in ReComA among the students with avid, passive, and reluctant readers who were taught using SoftChalk in LMS?
7. Was there any significant difference in ReComA among the students with avid, passive, and reluctant readers who were taught using Hot Potatoes in LMS?

Literature Review

Reading Comprehension Achievement

To be able to comprehend a text is the core of reading activity. All reading instruction is directed toward fostering comprehension of written material (Melsandi et al., 2018; Septiyana et al., 2021; Smith et al., 2021). In all subjects, reading comprehension serves as the foundation for knowledge acquisition (Hjetland et al., 2020; Smith et al., 2021). If a reader does not have sufficient skills in reading comprehension, they will undoubtedly experience difficulties gaining a grasp of many various subjects (Nasir et al., 2019). Reading comprehension is expected to be at the peak of reading skills and the foundation of all reading processes (Mardianti et al., 2021). Indeed, this research concentrated its attention, as its findings, on the level of reading comprehension attained by the students.

In order to see the students' overall ReComA, there are several aspects of ReComA that are put into attention. The first aspect is identifying main idea. The capacity to identify quickly and accurately what the author is trying to convey most effectively is arguably the most critical skill for effective reading comprehension (Peterson's, 2007). A reader who is skilled at extracting the text's main ideas will have a much easier time making sense of the material and will have a deeper understanding of the points being made (Beech, 2006). In other words, identifying main ideas helps readers understand a text as it is the core point of the entire paragraph. The second aspect is detail information. Identifying detail information refers to the activity for locating specific information in reading text. It is important when a reader needs to find a specific piece of information in a large given text without having to grasp everything else. In order to identify detail

information, scanning strategy is needed. According to Brown and Abeywickrama (2019), all readers utilize scanning to locate relevant information in a text. Brown and Lee (2015) also argue that Students may be asked to locate names or dates, the definition of a key topic, or a specified amount of supporting details during scanning activities. The objective of scanning is to retrieve specific information without reading the entire text.

While Identifying detail information concerns more on the factual information that literally stated in the text, the third aspects of ReComA, making inference, refers to the type of comprehension in which the reader must infer a meaning using reasoning and logic (Peterson, 2007). In fact, inferences are fact-based educated guesses. Excellent readers draw inferences when reading. In other words, in addition to reading the words, they utilize their imagination and world knowledge to fill in facts and ideas that are not explicitly expressed in the text (Mikulecky & Jeffries, 2007; Oakhill et al., 2015) or reading between the line (Grabe & Stoller, 2011; Mikulecky & Jeffries, 2007). Another aspect of ReComA is vocabulary knowledge. Oakhill et al. (2015) mention that vocabulary knowledge is one of the variety skills that readers need to coordinate in order to comprehend successfully. The ability to read the words in a text will affect the reader's ability to understand what is being read. To make sense of what is being read, however, the reader has to have some familiarity with the meanings of the words being read. Thus, vocabulary knowledge is one of a necessary skill.

In case of vocabulary used, writers do not repeatedly utilize the same word. They frequently substitute words with nearly identical meanings. As a matter of fact, a reader needs to be able to understand the use of reference in a text. One component of the reader's processing of the text is the establishment of connections between personal pronouns and the entities to whom they refer (Oakhill et al., 2015). Finding the text's organizational pattern or text structure is the other important factor in reading comprehension. In most academic reading, the genre of the text used is informational or expository. In contrast to narrative writing, informational texts do not focus on particular characters and their objectives (Oakhill et al., 2015; Schumm, 2006). In fact, sequence, cause, and effect are patterns in which information is organized in expository text. Expository text patterns help students understand knowledge and organize ideas for tests and class discussions. Expository text patterns also help students organize their writing.

In short, the reading comprehension test employed must be representative of the seventh component of reading comprehension in order to produce reliable data regarding the students' ReComA scores.

Learning Management System and Authoring tools

Learning Management System or LMS is one of the most significant developments in online education (Cheng & Yuen, 2018; Cigdem & Topcu, 2015). It is an e-learning software designed for the administration, documentation, tracking, reporting and delivering of electronic technology education courses or training programs (McGill & Klobas, 2009; Ülker & Yılmaz, 2016). This system stores and manages course content and activities online (Nurakun Kyzy et al., 2018; Ozkan & Koseler, 2009). According to Riestra-González et al. (2021, learning Management System (LMS) is a sort of information and communication technology that enhances the educational experience for both instructors and students. It also refers to a variety of systems that provide online educational services for students, teachers, and administrators (al Handhali et al., 2020). Indeed, as a result of their widespread use, LMSs are now considered a crucial component of today's educational infrastructure (Amin & Sundari, 2020).

LMS offers numerous advantages for educational procedures. One distinguishing characteristic of LMS is the idea of disregarding actual location (Aldiab et al., 2019). With this feature, school attendance is not an absolute requirement for students to learn. Students can access the information from any location and at any time, regardless of their time zone (al Handhali et al., 2020; Aldiab et al., 2019; Raza et al., 2021). It makes it possible to have a centralized database of information. This reduces the administrative burdens associated with maintaining educational resources in multiple locations. Hence, it reduces the expense of educational institutions. Moreover, as the world around us evolves, including the spread of pandemics, LMS proves effective in its role as a learning environment provider. By using LMS, students will be more likely to reach their study goals because they will be able to learn more quickly. This is especially true if they are socially isolated because of the coronavirus pandemic (Raza et al., 2021). Besides, when it is not enough for the students to understand the material during the classroom instruction, LMS helps the learners to have time extension to learn more (Amalia & Ramdhani, 2018). LMS facilitates interaction between conventional teaching methods and digital learning materials, while also providing students with customised e-learning chances (Aljawarneh, 2020). With an LMS in place, teachers, students, and parents can share information and work together more easily to remove obstacles to education (Suartama et al., 2019). In fact, the LMS platform represents its benefits.

According to Altinpulluk & Kesim (2021), in the world of open-source LMSs, Moodle is by far the most widely used and suggested option. Moodle LMS is a widespread tool for online education (Gamage et al., 2022).

It was reported that more than 30,000 educational institutions throughout the globe had utilized Moodle (Cole & Foster, 2007). As a result of Moodle's widespread popularity and adoption by educational institutions, it now hosts thousands of active courses translated into dozens of languages (Al-Ajlan & Zedan, 2008; Sergis et al., 2017). The use of Moodle as LMS assists blended learning instruction to be delivered easily (Suartama et al., 2019). Makruf et al. (2022) agree that Moodle is chosen by colleges as their LMS platform due to its attractive ability to deliver excellent, adaptable, and engaging learning experiences. It is an open-source learning management system, which makes it extremely appealing to users (Nash & Khan, 2018). According to the findings of Oguguo et al. (2021), who studied the impact of LMSs on students' success in educational measurement and evaluation, instructors should become familiar with and begin using LMSs like Moodle. For the lecturers, in order to adapt with the technological improvement, it is essential to use educational technology such as Moodle innovatively and interactively. Two authoring tools that can be embed in Moodle are Hot Potatoes and SoftChalk. Hot Potatoes is an authoring tool developed by University of Victoria known as UVIC in Canada. It is used to produce online materials. Hot Potatoes offers six tools in producing interactive online materials. They are: JCloze, JMatch, JQuiz, JCross, JMix, and The Masher. Those six tools have different functions that are mostly used for assessment. With its features, hot potatoes can be used as a digital reading assessment tool. Nurwanti et al. (2015) stated that whether for an exam or for fun, Hot Potatoes remains a handy tool for creating questions of any kind. Each question has a hint solution, and an answer key is provided, making it easy for students to study. Hot Potatoes represent reciprocal interactions, cyclical tasks, and reinforcements. The use of Hot Potato in the teaching and learning process increases the quality of learning (Sari et al., 2022; Susiati et al., 2019). The other intriguing tool is SoftChalk. It is a tool that helps teachers in high school, college, and medical school. It helps teachers better their lessons and their students' educational experiences by facilitating the rapid and simple creation of high-quality, interactive learning content. Some tools can be used in SoftChalk to create interactive learning, exercises, and quizzes. According to Evans et al. (2014), SoftChalk is unique since there are various kinds of interactive activities that can be integrated into lessons, such as quiz poppers, which offers an e-version of basic question format: true/false, multiple choice, short answer, matching, and ordering. SoftChalk is an information and communication technology (ICT) that enables instructors to design interactive, individualized, and engaging classes. SoftChalk also enables educators to assess the success of students' pre-class learning (Brown et al., 2017).

Considering the benefits that Moodle offers, this study seeks to find scientific evidence on the effect of the authoring tools on the students' ReComA. The study aims to compare the effect of the implementation of the two tools, SoftChalk and Hot Potatoes on the students ReComA viewed from what types of readers they belong to.

Types of Readers

There are some types of readers; they are avid, passive, and reluctant readers. Avid readers are those who read inside and outside of the school and enjoy it. Those who are categorized as avid readers, who are keen on reading and choose to read often, have a positive attitude and motivation toward reading to achieve better achievement (Wilson & Kelley, 2010). Moreover, avid readers as summarized by Bridges (2015) demonstrate both superior literacy development and wide-ranging knowledge across subjects. As avid readers had positive attitudes towards reading, and teachers made the students motivated in reading, it would bring benefits that are immeasurable. According to Bridges (2014), a reader reaps around nine incalculable benefits from reading regularly. To start with, avid readers naturally increase their vocabulary by hundreds of words each year. Also, avid readers have a broader and deeper understanding of the world and themselves as they read more and more books. They will master reading and listening to the language as they become proficient speakers. A fourth advantage is that test takers who are also avid readers will have a better grasp of the exam's overall layout and composition. They will be proficient in the many literary and nonfictional genres, as well as their respective formats, styles, and elements. A person who reads extensively also learns to think critically about the structure and traditions of the English language. Finally, avid readers are better writers because they pick up on essential writing mechanics like spelling, grammar, and punctuation. In other words, they are aware of their identity as readers. Readers who put in the time to read widely benefit from adopting a growth mentality and a positive, optimistic outlook on their own reading skills and abilities. Finally, avid readers succeed in meeting the demands English Language Arts benchmarks; they do this and more with each book they read.

The second type of reader which is common in the field of literacy and education is called a passive reader. A passive reader is the one who reads fluently but not to seek to read outside of required school reading. Passive readers are individuals who engage in reading with less enthusiasm and may view it as a more passive or casual activity. They may read primarily for functional purposes, such as obtaining information or fulfilling specific requirements. Passive readers may not actively seek out reading opportunities beyond what is necessary or readily available to them. They may approach

reading with less enthusiasm or curiosity compared to avid readers, often consuming texts in a more relaxed or detached manner. Willingham (2017) mentions that A passive reader is characterized by a lack of active engagement and critical thinking while reading. They tend to approach texts passively, without actively questioning or analysing the content. Wolf (2018) also indicates that in the context of passive reading, readers consume text superficially, skimming through information without fully engaging with the material.

The third types of readers are referred to as reluctant readers, who tend to avoid reading expect to fail. Reluctant readers are those who have negative attitude toward reading. Reluctant readers are individuals who display a resistance or lack of interest in reading. According to Wilhelm (1995) the lack of engagement of reluctant readers helps explain why they have negative reading attitudes. For them, reading is an activity in which they have neither ownership nor a sense of agency; their reading responses do not serve their personal purposes. Reluctant readers may exhibit a hesitancy or unwillingness to engage in reading activities, often finding it challenging or uninteresting. Reluctant readers may struggle with aspects such as decoding, comprehension, or finding books that captivate their interest. They may require additional support, encouragement, or targeted interventions to help foster a positive relationship with reading and develop their reading skills. Besides, Stringer & Mollineaux (2003) argue that Reluctant readers are frequently unmotivated and uninterested. Students who dislike reading develop attitudes of learned helplessness because they believe that no matter what they attempt, they will fail. There are numerous reasons for a person's lack of motivation or achievement. One factor could be that hesitant readers believe they have little control over their success. This is in line with what Hebb & Axiotis (2000) mentioned about reluctant readers. If they have encountered failure throughout their educational career, they likely have good reason to be reluctant to read. They have likely been told or received the message that they are poor readers, causing them to feel frustrated, inadequate, perplexed, and ashamed.

In other words, the type of readers matters a lot in determining reading achievement. The types of readers can moderate the effectiveness of different instructional approaches on reading achievement. For example, a specific instructional method may work well for avid readers, leading to significant improvements in their reading skills. However, the same approach might not yield the same results for reluctant or passive readers. In fact, by considering types of readers as moderate variables, the study aims to examine the nuanced relationship between types of readers and reading achievement.

Ultimately, it highlights the importance of accounting for reader types to gain a comprehensive understanding of the factors influencing students' reading achievement.

Methods

This experimental research applied a 2x3 factorial design. There were two teaching methods compared with 3 types of readers: avid, passive, and reluctant. In this study there were two independent variables (SoftChalk and Hot Potatoes media), one moderator variable (types of readers), and one dependent variable (reading comprehension). This research had two experimental groups: SoftChalk and Hot Potatoes groups. They were given a pre-test then after the treatment a post-test was administered to both groups to assess the improvement in students' ReComA.

The population of this study were all sophomores in one private University in Palembang. The students took English 2 subject. There were about 442 students and were from different majors. The sample was taken randomly; the researchers chose the sample by following some procedures: (1) the researchers handed out a short survey to all the population; this survey was used to identify the types of readers of the populations. (2) After that, the result of the survey was used to group the population based on their types of readers, they were avid, passive, and reluctant reader. (3) The researchers chose 60 students as a sample of the study based on types of readers. This means that each group had the same distribution of the sample that consisted of avid, passive, and reluctant readers. (4) The researchers assigned the sample into two groups, and they were experimental group 1 and experimental group 2.

The researchers gave a short survey to the population to determine the types of readers of the populations and classified them into avid, passive, and reluctant readers. After that was IRI (Informal Reading Inventory) Jennings assessment. The IRI Jennings assessment is an individualized reading assessment tool designed to measure a student's reading abilities and determine their instructional reading level. In this study, the researchers prepared reading assessment which consisted of 50 questions starting from level 3, 4, 5, 6, and 7 in the form of essay administered to the students. After analysing the results, it was found that the readability level of the population was in level 5. Before the test was tried out to the non-sample students, some experts helped the researchers check the content validity of the test. Furthermore, there were 40 items of reading comprehension questions in the form of multiple choices given to the sample ($r=0.929$).

The researchers employed the same intervention protocols but used different authoring tools for the treatments. SoftChalk was included into LMS

in Experimental Group 1, whereas Hot Potatoes were integrated into LMS in Experimental Group 2. The researchers began by introducing the subject. The next step was to conduct a survey. Students acquired a rough sense of today's reading topic from this. Students were engaged in this segment by pictures or questions relevant to the topic. The following phase was the question parts. Students were encouraged to make predictions about the text by addressing questions such as "what, when, who, where, how, and why." The researchers used the read, record, recite, and review activities during the main activities. Students read the text provided by the LMS. The students then confirmed their guess by responding to their own questions. Following that, the students were asked to answer the question aloud to determine how much knowledge they had gleaned from the reading. The students then completed questions and checked their responses relevant to the material in the review section. During the closing activities, students were given the opportunity to ask questions about the topic. Finally, the students were given assignments via the LMS to help them improve their comprehension.

After the interventions, the students' pre-test and post-test scores were compared using paired sample t-tests to determine whether both methods had a positive effect on their ReComA. Then, the significance of the ReComA differences between the students taught with Soft Chalk and those taught with Hot Potatoes was determined using the independent t-Test. The overall input of the ReComA components was then viewed using a stepwise regression analysis. Two ways ANOVA was also used to find the significant interaction between teaching media used and types of readers on students' ReComA.

Findings and Discussion

SoftChalk Group and Hot Potato Group ReComA

The raw scores of students' ReComA (total score) and each aspects were analyzed using paired sample t-test to find the answers for the first and second research question , "was there any significant improvement in ReComA and its aspects after the students were taught using SoftChalk (SC) in LMS and Hot Potatoes (HP) in LMS?" and to answer the third research question, "was there any significant difference between ReComA and its aspects of the students who were taught using SoftChalk and those who are taught by using Hot Potatoes?" the researchers used independent sample t-test. Table 1 showed the result of paired and independent sample t-test of ReComA and its aspect. The consideration of the scores had significant improvement within group and a significant difference between group when p (sig.) $< .05$.

The results in the table 1 showed that SoftChalk and Hot Potatoes Media significantly improved reading comprehension (total) and its seven aspects. In addition, the independent sample t-test revealed that there was no substantial difference in post-test performance between the SoftChalk and Hot Potatoes groups. However, there was one result that was significantly different.

Table 1

Result of Paired and Independent Sample t-test of ReComA and Its Aspects

Aspect of Reading Comprehension	Group	Mean Pre	Mean Post	Mean Difference of Pre & Post		Mean difference of Post-test between SC and HP	T value and Sig. between Pre & Post		T Value and Sig. post-test between SC and HP groups	
				t	Sig.		t	Sig.		
Det.	SC	6.27	7.57	1.30	14%	0.87	5.204	.000	1.809	.076
	HP	5.40	6.70	1.30	13%		5.419	.000		
M. Idea	SC	2.40	4.27	1.87	21%	0.50	9.517	.000	-1.855	.069
	HP	2.70	4.77	2.07	21%		10.832	.009		
Ref.	SC	1.23	1.83	0.60	7%	0.24	4.039	.000	-.993	.093
	HP	1.30	2.07	0.77	8%		4.892	.000		
Seq.	SC	1.17	1.93	0.76	8%	0.06	5.139	.000	.726	.471
	HP	1.33	1.87	0.54	5%		4.287	.000		
C. E.	SC	2.17	2.57	0.40	4%	0.30	3.026	.005	-2.470	.016
	HP	2.23	2.87	0.64	6%		5.641	.000		
Inf.	SC	4.20	5.93	1.73	19%	0.24	7.549	.000	-.675	.233
	HP	3.90	6.17	2.27	23%		8.885	.000		
Voc.	SC	3.47	5.80	2.33	26%	0.30	8.836	.000	-1.188	.240
	HP	3.80	6.10	2.30	23%		11.689	.000		
Total Score	SC	20.9	29.90	9.00		0.65	22.852	.000	.116	.908
	HP	20.66	30.55	9.89			20.758	.000		

Note: Det (Detail), M. Idea (Main Idea), Ref (Reference), Seq (Sequence), C.E (Cause Effect), Inf. (Inference), Voc. (Vocabulary)

Some variables may also influence the pace at which students' ReComA improve. Reading text, could be the first factor here or one of factors that affected the results of the students' ReComA. The instructional and assessment texts used were well-suited to the students' linguistic competence. This factor was equitable since in teaching reading, the students should read the texts that are appropriate to their language proficiency level. Previously, the researchers had measured the student reading level before conducting this study and discovered their level was at level 3, level 4, level 5, level 6, and level 7. Another factor was media. As 21st century technologies can engage the students in learning, students' natural interest in the use of various media can engage them in reading (NCFTE, 2009). SoftChalk as one of media used in this research was very helpful in providing the students online and interactive material, as its function to digitalizing the text from the printed one to the digital one, known as the multimodal text. It put the students at ease and in a new experience in reading the text through a digital one. SoftChalk provided some tools and was powerful in creating interacting material as its functions designed for educators to create professional, engaging, learning content quickly and easily, which enhanced the teaching and improved the learning experience for the students. Finally, the researchers led the students to exploit their background knowledge in grasping the main idea of the text by asking some questions related to the text or having discussion. Nunan (2003) argues that constructing meaning from a text involves a seamless integration of the text's material and their own prior knowledge. Therefore, background information or prior knowledge was one of the elements that should be considered in teaching quality of reading. As in this group the students should know the main idea of the text first, before examining for detail information in the text.

Applying Hot Potatoes in teaching reading to this group was also effective. After accomplishing the treatment, it was found that there was a significant difference in ReComA and its each aspect. Hence, it proved that Hot Potatoes Medium was appropriate and one of alternative ways that could be used in improving the students' ReComA. Besides, some other factors influenced the improvement of the reading achievement. First, as happened in SoftChalk group, the reading materials and examination texts were tailored to the students' individual levels of linguistic competence. Besides, Hot Potatoes was a good medium to build students vocabulary base as it provided six different exercise creating tools; they are: JQuiz, Jcloze, JCss, JMix, JMatch, and The Smasher (Vargas & Monge, 2018). Multiple choice and some activities e.g., crossword and flashcard etc, were very useful in building the students' vocabulary base. Therefore, among the seven aspects of reading,

there were two aspects that improved significantly from pre-test to post-test; they were inference and vocabulary. Yet, the highest improvement was in the aspect of vocabulary (24%).

Contribution of Reading Comprehension Aspects to ReComA

Stepwise regression analysis was used to find out which aspect of ReComA that gave contribution to the ReComA (total) in each group. This multiple regression analysis was aimed to answer the fourth research question, “was there any contribution of reading comprehension aspects to ReComA in total?” The following tables (Table 2 and 3) showed the contribution of reading comprehension aspects to ReComA in SoftChalk and Hot Potatoes Groups.

Table 2

The Contribution of Reading Comprehension Aspects to ReComA in SoftChalk Group

Aspects of Reading Comprehension	R Square	R Square Change	Sig. F Change
Inference	.370	.370	.000
Inference, Vocabulary	.639	.269	.000
Inference, Vocabulary, Detail	.827	.189	.000
Inference, Vocabulary, Detail, Main Idea	.950	.122	.000
Inference, Vocabulary, Detail, Main Idea, Reference	.988	.038	.000
Inference, Vocabulary, Detail, Main Idea, Reference, Sequence	.993	.006	.000

Table 3

The Contribution of Reading Comprehension Aspects to ReComA in Hot Potatoes Group

Aspects of Reading Comprehension	R Square	R Square Change	Sig. F Change
Detail	.606	.606	.000
Detail, Reference	.749	.143	.001
Detail, Reference, Inference	.805	.056	.011
Detail, Reference, Inference, Vocabulary	.892	.087	.000

Detail, Reference, Inference, Vocabulary, Main Idea	.944	.052	.000
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Table 2 and table 3 presented the data of all aspects of reading comprehension; it showed that some aspects in reading comprehension gave a contribution to ReComA (total) in both SoftChalk and Hot Potatoes groups. The highest contribution in SoftChalk Group was inference (37.0%), while the least contribution was sequence (0.6%). In Hot Potatoes group, detail gave the highest contribution (60.6%) to main idea (5.2%).

Interaction Effect Between the Use of Authoring Tools and Types of Readers

Two-way analysis of variance was employed to determine the impact of different instructional methods and reader types on students' ReComA scores. Two-way ANOVA here was used to discover the answer for research question number five, "Was there any significant interaction effect between teaching media used and types of readers on students' ReComA?". The results of two-way ANOVA analysis were presented in the following table 4.

Table 4

The Results of two-way ANOVA Analysis

Source	Dependent Variable	Type III Sum of Squares	Mean Square	F	Sig.
	ReComA Total	15.700	7.850	.692	.505
Teaching Media * Types of Readers	Detail	6.933	.800	.702	.500
	Main Idea	1.600	3.467	1.082	.346
	Reference	1.433	.717	.870	.425
	Sequence	.433	.217	1.721	.189
	Cause-effect	.700	.350	1.588	.214
	Inference	1.033	.517	.271	.764
	Vocabulary	4.900	2.450	2.821	.068

The results of two-way ANOVA analysis showed that p-value of teaching media and student's types of readers in reading total were .505 (higher than .05). Moreover, the p-value of reading comprehension in each aspect was also higher than .05. It can be inferred that there was no significant interaction effect between instructional media used and student reader types on ReComA and its individual components. It was clear that the improvement of the students' ReComA only happened due to those teaching

media (SoftChalk and Hot Potatoes). This result explained that those two media and types of readers had no correlation. In other words, it can be concluded that SoftChalk and Hot Potatoes could improve students' ReComA without being moderated by types of readers.

Although the results of two-way ANOVA above showed that there was no significant interaction effect between teaching media used and student's types of readers on ReComA and each aspect. In the total, avid readers gave a huge contribution to ReComA in both SoftChalk and Hot Potatoes Groups.

Table 5

The Contribution of Types of Readers to ReComA in SoftChalk and Hot Potatoes Groups

Types of Readers	R Square	R Square Change	Sig. F Change
Avid SoftChalk and Hot Potatoes	.378	.378	.004

Contribution of Types of Readers to the Students' ReComA

In order to answer research questions number six and seven— “Was there any significant difference in ReComA among the students with avid, passive, and reluctant readers in each group (SoftChalk and Hot Potatoes groups) —the researchers used independent sample t-test in analyzing post-test scores in each group based on types of readers. Table 6 presents the results that there was no significant difference in ReComA among the students with avid, passive, and reluctant readers in each group.

Table 6

Result of Independent Sample t-Test of ReComA among Students with Avid, Passive, and Reluctant Readers in SoftChalk and Hot Potatoes Groups

Variable	Mean	Mean Difference	T-value and sig.
ReComA SoftChalk	A	30.4	.352 (A-P) .679 -.190 (A-R) .220 -.663 (P-R) .277
	P	29.8	
	R	30.7	

Hot Potatoes	A	31.5	1.7 (A-P)	1.393 (A-P)	.246
	P	29.8	2.2 (A-R)	1.489 (A-R)	.072
	R	29.3	0.5 (P-R)	.305 (P-R)	.403

However, in the total score of reading achievement, avid readers gave a huge contribution to ReComA in both SoftChalk and Hot Potatoes Groups. Furthermore, independent t-test, which compared the post-test score among the students with avid, passive, and reluctant readers, indicated the achievement of avid readers in Hot Potatoes was higher than that of those who were passive and reluctant. Surprisingly, the achievement of avid and reluctant readers in SoftChalk was almost the same, with avid readers achieving 30.4 while reluctant readers, 30.7. The findings strengthen the theory of Bridges (2014), which describes that avid readers give a lot of contributions to the score of students' ReComA, and it proved that avid readers bring immeasurable benefits.

Conclusion

From the overall results of the analysis and interpretations in the previous chapter, some conclusions can be drawn. First, SoftChalk and Hot Potatoes media bring positive impacts onto students' ReComA. Second, both SoftChalk and Hot Potatoes media can improve ReComA of the students among avid, passive, and reluctant readers. However, there was no significant interaction effect between teaching media used and types of readers on students' ReComA. Yet, there was a significant difference in ReComA of the students between avid, passive and reluctant readers. The achievement of the students with avid readers, performed better than those with passive, and reluctant readers. Finally, the achievement of the students who were taught using Hot Potatoes was statistically higher than that of the students who were taught using SoftChalk medium.

Besides, there are some suggestions that the researchers would like to offer. First, for English teachers, it is a good idea to integrate media in the process of teaching English in the classroom to improve students' achievement. SoftChalk and Hot Potatoes media can be one of them to be applied in their teaching activities especially reading. The researchers had shown that media could bring good effects into the students' reading achievement. Moreover, it is also absolutely essential for the teachers to be well prepared, especially in preparing the materials for the students. The teacher should check the students' reading level and provide the texts that are appropriate to the students' language proficiency.

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