

THE EFFECT OF INTEGRATING SOCRATIVE AND KWL ON STUDENTS' ACADEMIC READING COMPREHENSION

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Article Info	Abstract
Article History Received: August 2023 Revised: September 2023 Published: October 2023	Socrative as one of educational technologies provides the students an ease to learn language through reading activities. They can practice reading on screen as the students in global era have commonly familiarized with. However, the teacher can apply certain reading strategies for students' understandings on materials when trying to integrate technology for reading. Thus, this research proposes to investigate the effectiveness of Socrative and Moodle in reading classrooms that employ Kow-Want to Know-Learned (KWL) strategy. By using causal comparative study, seventy students of English Department at one of Islamic state universities in East Java Indonesia who are in the third semester are divided into intervention and control groups. The previous group is directed to read by using Moodle and do quiz with Socrative, while the latter read and do the quiz in Moodle. Here, KWL strategy is integrated with both technologies. The results of study exemplify that there is no significance difference between the students in the intervention and the control group. However, the mean scores of posttest on the intervention group increased better than the control group.
Keywords Academic text; KWL, Moodle; Socrative; Reading comprehension;	
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INTRODUCTION

Know-Want to Know-Learned (KWL) strategy that was firstly introduced by Ogle (1986) has proven its potential in assisting students of non-English departments with reading comprehension (Dieu, 2015; Greenwood, 2019; Jimenez-Silva & Luevanos, 2017; Joseph et al, 2016) and for writing performance in conventional setting (Fengjuan, 2010) and in online learning (Steele & Dyer, 2014). Teacher can evolve this KWL strategy into Know-Want to Know-Head Words-Head Words and Learned or KWHHL (Szabo, 2006) or KWL plus (Hamdan, 2014). Additionally, this strategy is useful to implement in English Foreign Language (EFL) classrooms of Indonesian context (Hamid et al, 2016; Sinambela, et al, 2015; Usman et al, 2018). Thus, KWL is applicable in various subjects with different skills. It can also be promoted for across grade levels (Xu, 2012).

Knowing that reading strategy can refine student's confidence and a feeling of control over the reading process, integration of information technology can be a new alternative to confront with new challenges in administering the reading instruction (Tsai & Talley, 2014) to improve the academic text proficiency (Stoffelsma & Spooren, 2017). This academic text takes pivotal role for the students to engage in higher education (Chou, 2013; Stoffelsma & Spooren, 2017) and it is found that the academic reading rate of undergraduate students remained low (St Clair-Thompson et al, 2018). However, lack of research on KWL reading strategy combined with technology in classroom setting (Hamid et al., 2016) and in virtual learning (Cross & Palese, 2015; Steele & Dyer, 2014). As one of graphic organizer tools used to teach text

structures, KWL leads to improve comprehension and facilitates the reader understanding by providing a framework in which a certain body of knowledge and the relationship among various concepts within are visually represented (Mahdavi & Tensfeldt, 2013). Therefore, this is necessary to employ KWL reading strategy and technology in EFL classroom.

The growth of technology has introduced the English teachers about Moodle as one of course management system (CMS) softwares to enhance academic reading comprehension in blended learning (Tsai & Talley, 2014). It can be chosen due to its friendliness and function on preparing the instructional designs, activities monitoring, and evaluation (Damnjanovic, Jednak, & Mijatovic, 2015; Govender, 2010; Ndlovu & Mostert, 2018). Recent trends on 21st education also offer the teachers and students free online learning tools in the form of quiz, such as, TopHat, Socrative, and Clicker. Of three online student response systems (SRS), a survey shows Socrative is more effective to understand the student's comprehension, share enjoyment, promote collaboration and use instant feedback (Ingalls, 2018). These advantages are also stipulated on other research in non English courses conducted by (Abdulla, 2018; Archila et al, 2018; Balta et al, 2018; Balta & Tzafilkou, 2019).

Regarding to the advancement of technology for education in millennial era, particularly how to integrate it with KWL reading strategy, it is found a little previous research that provided the evidence of integrating KWL and online technology. Reading strategies are seen as fundamental components of the reading technique, and readers can occasionally exert substantial influence over how they read (Dawadi & Shrestha, 2018). Hamid et al (2016) utilized learning media Prezi to support the practice of KWL strategy in EFL classroom which the reading process is done once at the classroom led by the teacher. An investigation of Socrative in EFL context only reveals the student's perception on active learning in reading comprehension (Shaban, 2017), not seeking the effect of treatment. Similarly, Tsai & Talley (2014) who indentified how Moodle can improve student's academic reading proficiency focused on certain reading strategy and Moodle, not combining it with another online learning tool and KWL strategy. Accordingly, the present study is intended to investigate the implementation of KWL strategy and technology particularly Moodle and Socrative in EFL reading classrooms. In other words, this study searches which strategy and technology can support the student's reading comprehension. The research problem is formulated as follows: Does the implementation of reading by using Moodle with KWL strategy have a significant impact on reading comprehension of students compared to read and use Moodle with KWL strategy?

RESEARCH METHOD

Research Design

This study compared two groups of students involving two different reading strategies and see which one is more effective than the other. One group was taught reading by using Moodle and do quiz with Socrative, while the other group read and did the quiz in Moodle. Those activities were combined with KWL strategy. The previous activity has been commonly done in the context of the researchers conduct this research, while the latter is the new strategy to teach reading. Because it attempts to determine the cause or consequences of differences that already exist between or among groups of individuals it may be considered as a causal comparative study (Ary et al., 2006; Cresswell, 2008).

Subject of the Research

The participants include 70 Indonesian-English Foreign Language (EFL) students at one of Islamic state universities in East Java, Indonesia who are at the third semester. All of them had studied intensive reading in the previous semester, so the third semester is the stage to introduce them with academic text as the part of curriculum as a compulsory course. They are divided into intervention group and control group. 35 students in the intervention class are

familiarized to use Know-Want to Know-Learned (KWL) reading strategy with the use of Moodle and Socrative, while the control group that comprises 35 students learn reading text by KWL strategy and Moodle only.

Conducted in six weeks including the the pre-test and post-test, the two strategies were compared to examine whether the treatment given affects the students' reading performance before and after the treatment. Pre-test and posttest were functioned to obtain the scores of the students' reading proficiency before and after treatment. Two different topics on the pretest about IELTS Section 1 and posttest about General Reading Test A and B were employed to avoid the testing effect. IELTS reading as a general academic text (Chou, 2013) was purposively selected due to its function. Categorized as a high-stakes test used to measure the English-language proficiency of people who plan to pursue their study or work in countries or institutions that uses English to communicate, the reading passages of IELTS include a set of three authentic texts from sources such as books, journals, magazines and newspapers ranging from the descriptive and factual to discursive and analytical with graphic input (O'Sullivan, 2018). For instance English speaking background students have been highly recommended to submit IELTS result for university admission in Australia (Oliver & Vanderford, 2012). According to IELTS reading, the quiz in Socrative and Moodle is in the forms of Multiple Choice, True/ False/ Not Given, and Matching.

Instruments

In doing the pretest, scores of the two groups in Levene's test show a homogeneity .174 (see Table 1).

Table 1
Test of Homogeneity of Variances

F	Levene's Test		t-test for Equality of Means		
	Sig.		T	df	Sig. (2-tailed)
1.883	.174		-2.230	68	.029

The students are required to access the material online in Moodle for a week. The selected material is general academic text in Cambridge IELTS books. Student's comprehension on the material is firstly stimulated by the use of Know-Want to Know virtually. The students can actively comment on their classmates' opinions related to their schemata. After that, they try to do the exercises available online in Moodle for control group and in Socrative for intervention group. As a follow up, the students can share what they have learned in FTF meeting. During the FTF meeting, the students are collaboratively encouraged to discuss the materials they have Learned and to present it in the classroom. Each group is required to share five different information related to the topic they have learned. It is used to avoid similar ideas among students and to recheck the students' comprehension on the reading texts.

In order to foster a dynamic and engaging learning environment, it is highly beneficial for students to engage in collaborative discussions about the topics they have recently read. These discussions serve as a platform for students to share their perspectives, insights, and interpretations of the material, enriching their understanding. To further enhance the effectiveness of these discussions, it is advisable to organize students into groups, each responsible for extracting different pieces of information from the text. This diversified approach not only encourages active participation but also ensures that a broad spectrum of content is covered. As a result, students are more likely to retain the learning content, as they have been actively involved in its exploration and analysis. Moreover, modern technology plays a pivotal role in education, and this is no exception in facilitating discussions. To facilitate

seamless interaction and knowledge exchange, students can utilize online platforms to upload their group discussions. This not only preserves the valuable insights generated during the discussion but also enables students to revisit and reflect on the shared information. Additionally, it promotes ongoing engagement among students beyond the classroom, as they can continue to comment, question, and expand upon the ideas presented by their peers. In this way, the collaborative discussion process becomes a powerful tool for maintaining students' interaction and fostering a deeper understanding of the learning material. The activity arrangement between the intervention and control group is in Table 2.

Table 2
Schedule for the Treatment

Meeting	Control Class (B) (KWL and Moodle)	Intervention Class (A) (KWL, Moodle and Socrative)
1	Pretest	Pretest
2	The students are introduced with Moodle and online enrollment	The students are introduced with Moodle and online enrollment
3	Reading Activity ✓ The students are directed to understand the reading strategy of Know-Want to Know-Learned through Moodle. Additionally, they are given a topic. Then, they have to recall their schemata on K chart and raise their curiosity on W chart. ✓ The next step is the students are given a text related to the topic. ✓ After reading the material, the students have to do the exercise in the form of multiple choice, true/false/not given, word matching and short answer in Moodle. ✓ Finally, the students have to collaboratively discuss about the topic they have learned (L). They list the information that should be different from other groups and upload the result of the discussion in Moodle.	Reading Activity ✓ The students are directed to understand the reading strategy of Know-Want to Know-Learned through Moodle. Additionally, they are given a topic. Then, they have to recall their schemata on K chart and raise their curiosity on W chart. ✓ The next step is the students are given a text related to the topic. ✓ After reading the material, the students have to do the exercise in the form of multiple choice, true/false/not given, word matching and short answer in Socrative. ✓ Finally, the students have to collaboratively discuss about the topic they have learned (L). They list the information that should be different from other groups and upload the result of the discussion in Moodle.
4	Post test	Post test

After the treatment, the student's results on post-test are measured by using independent sample *t*-test to understand whether there is significant difference between post-test of groups A and B.

RESEARCH FINDINGS AND DISCUSSION

Reading by Using Moodle with KWL and Reading by Using Moodle with KWL

To find out the effect of reading strategy and the use of technology on the students' reading comprehension, the students' pretest scores were firstly compared by using descriptive statistics analysis. The result of statistical computation exemplified that the mean score of class A reading through KWL combined with Moodle and doing quiz in Socrative was 21.52 with standard deviation 13.093, while class B was 27.61 with standard deviation 9.48 (see Table 3). It indicates that most of students' scores of both groups are low. However, group B obtained higher score 27.61 than that of group A 21.52. It implies that some students in group B scored better than group A. The reading passage in pretest consists of 40 items in which most of the students correctly answered for small numbers of questions.

Table 3
Descriptive Statistics of the Pretest Scores

	Group	N	Mean	Std. Deviation	Std. Error Mean
Class	Class A	35	21.52	13.092	2.213
	Class B	35	27.61	9.480	1.602

The comparison result of the pretest scores by using independent t-test indicated that there was significance difference (p value $< .05$) between the means of the students in class A and those in class B (see Table 4).

Table 4
Comparison of the Pretest Scores Using Independent Sample T-Test

		t-test for Equality of Means			
		Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference
					Lower
Class Pretest	Equal variances assumed	.029	-6.094	2.732	-11.546
	Equal variances not assumed	.029	-6.094	2.732	-11.555

The comparison of posttest scores reveals interesting insights into the effectiveness of the instructional methods employed in two different classes. In Class A, where students engaged in a combination of KWL (Know-Want-Learn) reading strategy, utilized Moodle, and participated in quizzes via Socrative, the mean posttest score was calculated to be 56.46, with a standard deviation of 19.533. Conversely, in Class B, the mean posttest score stood at 50.82, accompanied by a standard deviation of 21.102 (as depicted in Table 5). These numerical values signify variations in the posttest performance of the two classes, suggesting that the instructional approaches implemented had a discernible impact on the students' reading comprehension skills. Further analysis of the data underscores the diversity in student performance. Some students in both classes demonstrated higher posttest scores, indicating an improvement in their reading abilities. However, it is worth noting that a portion of the students achieved lower scores, indicating the need for additional support or a more tailored approach to address their specific learning needs. The change in scores from pretest to posttest is particularly noteworthy. The pretest consisted of a comprehensive set of 40 items, and the data suggests that, in the posttest, a majority of students demonstrated improved performance by correctly answering more questions than they did in the pretest.

Table 5
Descriptive Statistics of the Posttest Scores

	Group	N	Mean	Std. Deviation	Std. Error Mean
Posttest	Class A	35	56.46	19.533	3.302
	Class B	35	50.82	21.102	3.567

In order to assess the disparity in reading comprehension among the students, a comparison of posttest scores was conducted using an independent sample t-test. While the mean scores of the students did show a discernible difference between the pretest and the posttest, the statistical analysis conducted through SPSS surprisingly revealed that there was no statistically significant difference (p -value > 0.05) between the means of the scores of students in Class A and those in Class B. Both groups exhibited significance values of .249, accompanied

by a mean difference of 5.647. This outcome suggests that, despite variations in the mean scores, these differences did not reach statistical significance, indicating that the two classes displayed similar overall reading comprehension levels after the instructional interventions. These findings provide valuable insights into the effectiveness of the teaching methods employed and emphasize the importance of considering various factors that may contribute to students' performance beyond mean score differences (see Table 6).

Table 6
Comparison of the Posttest Scores Using Independent Sample T-Test

		Independent Samples Test								
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower		Upper
Posttest	Equal variances assumed	1.082	.302	1.162	68	.249	5.647	4.860	-4.052	15.346
	Equal variances not assumed			1.162	67.598	.249	5.647	4.860	-4.053	15.347

Discussion

As a result of findings, it can be obtained that there is no significance difference between the intervention group and control group after a period of treatment with $pvalue > 0.05$. Reading comprehension of the students in this research varied due to their proficiency levels. As demonstrated by Anggraini and Cahyono in 2020, online reading comprehension processes vary among readers. Those with high proficiency levels tend to have a more individual approach, whereas low-proficiency readers more frequently employ a socio-affective reading strategy, such as sharing, asking questions, and confirming their understanding through live chat with group members. It appears that low-proficiency readers lean towards using chat features compared to their higher-proficiency counterparts. Moreover, Socrative and Moodle in this research do not provide any features that can attract the students' learning interactions. Therefore, reading comprehension may be influenced not only by the use of technology (Suci et al., 2022).

In spite of no significant difference, the mean scores of descriptive statistics of class A and B in the pretest and posttest depict that the reading comprehension of class A and B had differently risen. Class A obtained lower score in the pre test, but this group gradually attain highers score in post test. In contrast, class B that achieved better mean score in the pretest gain lower mean score than that of class A in posttest. It can be argued that Know Want to Know Learned (KWL) that is applied through online platforms and face to face (F2F) meeting such as Socrative and Moodle can change the student's reading comprehension.

This is in agreement with the finding of previous studies arguing that KWL integrated in online reading can enhance the student participation as it relates to student learning, student outcomes, and student retention (Steele & Dyer, 2014). Followed by Hamid et al (2016) finding out that the students who were taught by KWL and Prezi could improve their reading skill. Furthermore, without technology integration, KWL indeed can improve the student's reading comprehension (Fengjuan, 2010; Greenwood, 2019; Hamdan, 2014; Szabo, 2006; Usman et al., 2018). In US, most of preservice teachers in primary grade classrooms whose initial knowledge and subsequent use of explicitly taught reading comprehension strategies were investigated

during a year-long field-based teacher preparation program have figured out that they understood KWL in theory and practice (Sampson et al, 2013). Because of these advantages on KWL with or without technology integration, consequently this strategy is important to apply in EFL reading classrooms.

Centering on online mobile technology, the finding of this research exemplifies that the posttest results of intervention group increase. Reflected to the treatment, the students can explore the quiz in Socrative more than once. Accordingly, the students have their opportunity to meticulously read the quiz. It is in accordance with what has been suggested by a number of previous researchers. In US context, Shaban (2017) uncovered that both techniques Socrative and active learning activities contributed to increasing the students' reading comprehension. The students were able to go up their level of engagement, promote their critical thinking, and stimulate their collaboration. Under survey study, on the one hand, Awedh et al (2014) scrutinized that students at community college in Jeddah, Saudi Arabia showed high level of engagement during group discussions and felt very interesting to do quiz Socrative using mobile.

For other research, Socrative can be employed in writing class as conducted by Archila et al (2018) that asked the students to write Spanish-English bilingual argumentative paragraph individually. The students responded that the activity by using Socrative cultivated their science-specific vocabulary and boost their participation. For further aim, Abdulla (2018) who analyzed the ability of Psychology students major found out that the student's reading achievement which had been assigned in Socrative tool increased rather than the students who were not assigned with Socrative. At the same time, Socrative could propel the positive attitude and raise the physics scores of civil engineering students of major (Balta et al., 2018; Balta & Tzafilkou, 2019). Hence, it can be concluded that Socrative is flexible to use in learning and teaching.

Similar to Socrative, Moodle as the second technology for reading comprehension in this research has propelled the students' reading scores. When used by the control group, the students can equally access as many as what the intervention group do. It is that because Moodle is equipped with quiz menu that can be set from one to ten attempts. Thus, students can try the quiz more than once too. As reported in experimental study by Tsai & Talley (2014), Moodle can be beneficial for the EFL students' overall reading comprehension and strategy use and this CMS can promote independent learning strategy for the students. It is that because students were encouraged to access various materials either in written texts or audio visual materials like videos that are accessible everywhere and anytime as long as there is internet connection in the students' gadget for a week. This is the time for the students to have a reading process. In so doing, the students have input on their mind when they are asked to share their output in the form of listing the information at the stage of Know reading strategy. This activity of writing the information in a table shows whether students' reading comprehension is fluent or not. It is notable to understand the student's reading fluency through the use of technology (Lange, 2019).

For another activity, the students can actively interact when they have responded to KWL activity in Moodle. It shows that Moodle is adequate to maintain a learning experience. The students are able to communicate with other students, ask and reply their teacher, interact with initiation materials and access feedback through thoughtful integration of online and F2F environments (Tarasova, 2018; Arifina & As'ad, 2019). In addition, Zhang et al (2018) demonstrate Moodle provides an ease to the teacher to detect whether the students have accessed the materials through what so called learning analytics (LA). During the treatment of class A and B, the information on LA is used by the teacher to remind the students in F2F meeting. From knowing the benefit of Moodle which is integrated in KWL, it implies that reading activity is not passive because of the activity that should be completed by the students in Moodle.

To conclude, having KWL reading strategy - either with Moodle only or with Moodle and Socrative - offered positive change on the students' reading comprehension. At the beginning, the two groups had very similar reading comprehension on the reading tests. It is portrayed at the descriptive statistics of the pre-test to which the control group scored higher than the intervention group. However, there is a different accomplishment. The intervention group appears to have made more rapid progress between pre-test and post-test with a gain score of 34,94 compared with 23,21 for the control group.

These data, finally, raise intriguing conclusion that the students need more reinforcement in academic reading text that they firstly experienced. As IELTS has a range of band score from A1 basic user to C2 proficient user, the students should strengthen their academic reading skill to level up their reading proficiency. Yang & Badger (2015) state that the IELTS entry requirements of international students in UK for target universities are usually between 6.5 and 7.0, so some students who obtained low scores should learn better in reading comprehension. The most important finding in this study is that the teachers had effective time to check the students' understanding on assessing the students' reading practices. Both of Moodle and Socrative can provide instant feedback when the correct answers have been set along with the scores that can easily be downloaded (Balta et al., 2018; Balta & Tzafilkou, 2019; Damnjanovic et al., 2015; Ingalls, 2018; Ndlovu & Mostert, 2018; Shaban, 2017; Tsai & Talley, 2014).

CONCLUSION

This research study yields valuable insights, demonstrating that neither Class A nor Class B exhibited a significantly higher level of effectiveness compared to the other in terms of improving students' reading comprehension. The findings underscore the importance of incorporating reading strategies and technology in English as a Foreign Language (EFL) teaching practices to enhance students' reading comprehension abilities. EFL teachers are encouraged to integrate these tools into their pedagogical approaches for the betterment of student learning outcomes. Furthermore, there exists a potential avenue for further research in this domain. It would be beneficial to delve deeper into examining the frequency of students' accessibility to independent reading practices and quizzes conducted through platforms like Moodle and Socrative. Exploring the impact of the time students spend engaged with technology on their reading habits could also yield valuable insights. Notably, this study observed a fluctuation in scores for a few students in both the intervention and control groups, with some showing significant improvements while others maintained low or stable scores from pretest to posttest. These variations may prompt future researchers to investigate the underlying factors contributing to these outcomes, particularly focusing on the abstract nature of certain test questions. For future studies, extending the treatment duration could be considered, as this research encompassed only six sessions, including pretest and posttest assessments. A more prolonged intervention might provide a more comprehensive understanding of the effectiveness of the employed strategies and technology on students' reading comprehension skills, offering a broader perspective for educators and researchers alike.

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