Developing EFL Reading Comprehension and Learning Engagement Using Socrative SRS-based Assessment

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Abstract

Socrative SRS-based Assessment was used to develop the reading comprehension and learning engagement of EFL students. The study is a quasi-experimental one following the two groups design. A group of EFL students (n=80) at Faculty of Education, Suez University, participated in the study. They were divided into two equivalent groups (a control group n=40, and an experimental one n=40). During the study, Socrative SRS-based assessment was used with the experimental group while the control group was taught using the conventional way. A researcher-devised pre/post reading comprehension test as well as a learning engagement scale were the main instruments of the study. Independent samples t-test revealed a significant difference in the mean scores of the control group and that of the experimental one on the post test of the reading comprehension and engagement scale in favor of the experimental group. A statistically significant difference was found in the mean scores of the experimental group on the pre and posttest of reading comprehension and engagement scale in favor of the posttest using paired samples t-test. Thus, it was concluded that using Socrative SRS-based assessment enhanced EFL students' reading comprehension and increased their learning engagement.

Key Words

Socrative SRS-based assessment, EFL reading comprehension, learning Engagement, EFL students.

تحسين استخدام التقويم القائم علي نظام الاستجابة التفاعلي سوكراتيف لتنمية الفهم القرائي باللغة الانجليزية والانخراط في التعلم

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المستخلـــص باللغـــة العربيـــة

تهدف الدراسة الحالية الي معرفة أثر تطبيق التقويم القائم علي نظام الاستجابة التفاعلي سوكراتيف علي تنمية الفهم القرائي والانخراط في التعلم لدي طلاب اللغة الانجليزية كلغة أجنبية. أجريت الدراسة علي طلاب الفرقة الثالثة بقسم اللغة الانجليزية بكلية التربية بالسويس– جامعة السويس وقد تم تقسيمهم إلى مجموعتين متكافئتين إحداهما المجموعة الضابطة (٤٠ طالبا) والأخرى المجموعة التجريبية (٤٠ طالبا). قبل البدء قامت الباحثة بتطبيق اختبار الفهم القرائي القبلي وكذلك مقياس الانخراط في التعلم (من اعداد الباحثة) علي جميع الطلاب المشاركين في كلتا المجموعتين. وقد شغلت الإجراءات التجريبية ثلاثة شهور من الفصل الاول للعام الدراسي ٢٠١٩–٢٠٢٠. وخلال هذه الفترة قامت الباحثة باستخدام منصة سوكراتيف في تقويم الفهم القرائي باللغة الانجليزية اثناء المحاضرات. بعد انتهاء التجربة، تم التطبيق البعدي لاختبار الفهم القرائي وكذلك مقياس الانخراط في التعلم – من اعداد الباحثة – علي جميع الطلاب.

ولقد توصلت الباحثة إلى النتائج التالية:وجود فروق دالة إحصائياً بين متوسطي درجات الطلاب في المجموعة التجريبية في القياسين القبلي والبعدي للفهم القرائي لصالح الاختبار البعدي.ووجود فروق دالة إحصائياً بين متوسط درجات طلاب المجموعة الضابطة و متوسط درجات طلاب المجموعة التجريبية في القياس البعدي للفهم القرائي لصالح المجموعة التجريبية.ووجود فروق دالة إحصائياً بين متوسطي درجات الطلاب في المجموعة التجريبية في القياسين القبلي والبعدي للانخراط في التعلم لصالح الاختبار البعدي.ووجود فروق دالة إحصائياً بين متوسط درجات طلاب المجموعة الضابطة ومتوسط درجات طلاب المجموعة التجريبية في القياس البعدي للانخراط في التعلم لصالح المجموعة التجريبية و لقد خلصت الباحثة من نتائج الدراسة الحالية إلى أن استخدام التقويم القائم علي نظام الاستجابة التفاعلي سوكراتيف له أثر دال احصائيا على تنمية الفهم القرائي والانخراط في التعلم لدي طلاب اللغة الإنجليزية كلغة اجنبية.

الكلمات المفتاحية التقويم القائم علي نظام الاستجابة التفاعلي سوكراتيف ، الفهم القرائي باللغة الانجليزية ،الانخراط في التعلم

Introduction

Reading in general and reading comprehension in particular are essential skills for success in school as well as life. Reading comprehension and its related sub skills form the foundation for most of the academic work EFL students encounter at school and behind. Therefore, students are required to have good understanding and comprehension capabilities. Thus, understanding, using, evaluating, reflecting on and engaging with the reading texts is necessary for developing EFL students' sustainable knowledge and personality so as to actively participate in the development of society.

As the world evolves and EFL students' attention spans change, engaging them in the learning process has become a new paradigm for teaching and one of the many goals that educators try to achieve in order to meet the changing needs of their students (Ahlfeldta, Mehta and Sellnowb, 2005). Engagement is a prerequisite component of learning (Sani and Hashim, 2016) influencing both the learning process and students' academic performance. Thus, student engagement is fundamental to success in life in general and at higher education in particular (Burgess, 2012). Consequently, engaging EFL university students in educationally productive performance builds the foundation and the dispositions of their skills that help them live a productive, satisfying life after college (Kuh, 2009). Engaged students show behavioral involvement in learning and positive emotional tone; they persevere in the face of challenge (Connell and Wellborn as cited in Fredricks, et al., 2011) and that is exactly what Egypt vision 2030 aims to achieve in the educational systems. Therefore, higher educational institutions must be diligent in enhancing and monitoring learning engagement.

Enhancing reading comprehension and learning engagement are major objectives of university education (Vlachopoulos &

Makri, 2017). Both reading comprehension skills and learning engagement help students to develop habits of the mind and affect that enhance their ability for life-long learning and personal improvement (Zhoc, Webster, King, Li, and Chung, 2019). That is why many researchers, educators, and policymakers consider learning engagement the key solution to most of students' problems: e.g., low achievement, boredom, alienation, and high dropout rates (Fredricks et al., 2011). Therefore, developing reading comprehension skills and increasing engagement has become crucial to improving university students' learning experiences, well-being and it returns in the investment of higher education (Christenson & Reschly, 2010, Maroco, Maroco, Campos and Fredricks, 2016). Additionally, students' active involvement and sustainable engagement are essential in transforming higher education institutions into sustainable enterprises.

Despite their importance, enhancing EFL students' reading comprehension and learning engagement are among the many challenges that face university staff especially EFL staff because of the changing needs of EFL students in particular and the Egyptian society in general. During teaching EFL methodology to 3rd year English majors at Suez Faculty of Education, the researcher noticed students' poor reading comprehension skills and their disengagement. To stand on the reasons of these problems, the researcher held structured interviews with a group of students to decide the problematic areas that affect their reading comprehension of the material as well as their learning engagement. The students revealed that they lost interest in the material after a while and their engagement decreased because there was a lack of an interesting instructional framework and continuous on-going support. They informed also that playing games and doing

chats or even accessing their facebook played a big role in disengaging them. On the part of the researcher, she noticed that the practical problem for the class teacher is how to monitor the individualized reading comprehension as well as the learning engagement of all the students within the class at the same time to check their comprehension and to facilitate pedagogical intervention to shape it towards effectiveness.

The researcher noticed that EFL students used to bring their electronic devices, especially mobiles and tabs, into the classroom and most of the times this situation turns into classroom conflicts because these devices distract students' attention and teachers try to avoid this through prohibition. On the other hand, evolving technologies have rapidly changed the ways in which students read and exchange information, both at home and schools. Recently, there has been increased interest in Electronic Students Response System (SRS) tools at the college level to better reach mobile-savvy students and increase their learning engagement (Lister, 2015). Thus, the researcher assumed that reading assessment for formative purposes blended with a Student Response System (SRS) tool like Socrative could be a promising intervention for addressing the challenges EFL students face in reading comprehension and learning engagement and at the same time meets mobile-savvy students' changing needs and expectations.

The researcher suggested Socrative SRS-based Assessment as a solution for students' poor reading comprehension as well as disengagement. The researcher assumed that adding game mechanics provided with socrative to classroom assessment with the support of technology may increase students' comprehension of the material and their engagement while providing them with a sense of enjoying active participation. As Socrative, an SRS tool, is a relatively new web-based software, research on its use in the English language classroom is limited and there is a lack of

clear empirical evidence on this issue. Furthermore, no guidelines or formal policy framework are currently recommended by governments or educational ministries and institutions on the integration of SRS in English language education. Thus, our responsibility as EFL university staff is to provide empirical evidence on how to integrate SRS-like elements in educational contexts, especially in universities. Consequently, this study is assumed to fill this gap by demonstrating the impact of Socrative-SRS based assessment integration in the EFL classroom.

II. Statement of the problem

EFL students at Faculty of Education, Suez University face many challenges in their reading comprehension and learning engagement. Therefore, this study aimed to enhance their reading comprehension skills and promote their learning engagement through Socrative SRS-based Assessment.

The problem of the study will be investigated through answering the following main question:

Can Socrative SRS-based assessment contribute to enhancing EFL students' reading comprehension and learning engagement?

This main question leads to the following sub questions:

1. What is the current level of reading comprehension skills and learning engagement of EFL students?
2. What is Socrative SRS-based assessment intervention for enhancing the reading comprehension and learning engagement of EFL students?
3. To what extent is Socrative SRS-based assessment effective in developing EFL reading comprehension and learning engagement?

Significance

The present study is significant for the following:

1. It adds to the knowledge about the importance of SRS-based assessment and its empirical effects on English education in general.
2. It provides curriculum designers with a practical implementation scheme to blend SRS – based assessment using Socrative tool in teaching and assessing EFL courses in order to enhance reading comprehension skills of EFL students.
3. It provides English teachers and staff with empirical evidence on the significant importance of Socrative SRS-based assessment in enhancing students' reading comprehension and learning engagement.
4. It provides tech-savvy EFL students with more interesting and engaging way of assessing their comprehension and meeting their technological passion in the classrooms to break up the dullness of traditional EFL classroom settings while learning English.

Literature Review

The relationship between teaching, learning and assessment has long been recognized (Black, 2009). Assessment plays an important role in the development of both teaching and learning (Black, 2009) as it closes the gap between learners' performance and the target performance. For teachers, assessment in classroom, especially formative assessment, serves to gather evidence of students' comprehension and engagement in learning and these data are used by teachers to inform their pedagogical decisions

(Dakka, 2015). On the part of students, it gauges their learning engagement and understanding of the material along the class (Evolving Ed, 2018).

In the information age, technological devices are becoming an integral part of English language classrooms (Alzaid & Alkarzae, 2019), and this rapid change of technology reached the assessment community by developing new and different ways of assessments (Dakka, 2015). A new innovative trend appeared in the media that aimed to enhance students' active participation in classroom tasks and promote specific behaviors of them, is called a gamified Student Response System (SRS) tools (Bicen and Kocakoyun, 2018).

SRS tools are considered a useful addition to university classrooms because they (a) increase students' participation (Aljaloud, Gromik, Billingsley, Kwan, 2015; Blasco-Arcas, Buil, Hernandez-Ortega, and Sese, 2013; Han and Finkelstein, 2013), (b) add interactivity to the learning environment (Abdel Fattah, Abd El Haq, Ali, 2020; Aljaloud, Gromik, Billingsley, Kwan, 2015, Caldwell, 2007), (c) increase students' level of engagement with course content (Aljaloud et al., 2015), and finally (d) enhance students' comprehension of the reading texts (Hung, 2017, Lee and Oh, 2014, Yu and Yu, 2017). SRS use prompts instructional design change (Han and Finkelstein, 2013) and boost collaborative learning (Blasco-Arcas et al., 2013), both of which in turn have led to improved academic performance.

As for reading comprehension, several researchers (e.g., Hung, 2017; Lee and Oh 2014; Yu and Yu, 2017) have reported the positive impact of integrating SRS on EFL reading classrooms. SRS can help readers (a) actively

participate in the reading task, (b) strengthen their critical thinking skills, (c) collaborate with their peers through discussion, and (d) receive more accurate guidance from the instructor due to the immediate feedback (Boyle and Nicol, 2003; Draper, 2009; El Shaban, 2017; Sprague, 2016). In short, SRS creates a learning community where readers are engaged with a text and receive immediate feedback that reveals gaps in their knowledge or comprehension of the subject at hand (Draper, 2009).

The specific SRS technological software that this paper investigates is called Socrative. Socrative is a free, gamified, and user-friendly online Student Response System (SRS) that empowers students to answer questions posed by instructors using devices connected to the internet (e.g., laptop or smartphone) (Tirlea, Muir, Huynh and Elphinstone, 2018). It is a free feedback and assessment tool that is very simple to access and navigate. This tool was emerged in 2010 by Boston-based graduate students to enhance and improve response formative assessment (El Shaban, 2017).

Socrative adds game like elements to tasks and activities so as to encourage active participation and engagement (Amin, Quora, El Sheikh, 2017, and Jurenec, 2018), and to create a game-like environment in a non-game context (de-Marcos et al., 2014, Dominguez et al., 2013, Hanus and Fox, 2015). Game elements in Socrative tool represent the inclusion of rewards, badges, leaderboards, levels and immediate feedback in a task (Flores, 2015).

Theoretical Perspectives of Socrative SRS- based Assessment .

Three main theories put the bases for Socrative SRS-based Assessment: behaviorism, cognitivism and constructivism (Margarida, Veloso, Papastergiou and Kordaki, 2010).

Firstly, as for behaviorism, Socrative SRS-based assessment provides EFL students with stimulus (questions) and positive or negative reinforcement (teacher or peer feedback) (Pitarch, 2018). Here, the learning process happens when there is a change of reaction between the stimulus (question) and the reinforcement (feedback). Socrative SRS-based assessment provides the classrooms with the stimuli that involve students in an environment in which they do not care about mistakes, risks or prevention to participate or to make part of their own learning process. In most cases, Socrative SRS-based assessment helps EFL students live simulated learning experiences that make learning more contextual leading them to experience knowledge, not just describe it (Rivas, 2017).

Secondly, cognitivism refers to the cognitive active participation of the students in the learning process. Socrative SRS tool requires the students' active engagement to learn, this involves both memorization and problem solving.

thirdly, Socrative SRS-based assessment involves learning by doing, which implies structuring and interpreting knowledge and using it in the virtual world according to the learner's knowledge and experiences (Pitarch, 2018). In constructivism, learners try to be active in constructing knowledge whilst trying to understand their learning experiences (Perkins, 1991). The constructivist approach highlights the importance of the context

of learning (Duffy & Jonassen, 1991), and emphasizes that knowledge acquisition can be achieved through the active participation in meaningful activities. Integrating technology in the EFL classroom can help create optimum learning conditions from a constructivist perspective (Kaya, 2015). In this vein, Ghasemi and Hashemi (2011) claim that, through using technology, language learners can assess, select and interpret information, evaluate their work, improve their efficiency, gain confidence and become independent.

Rationale

Socrative SRS-based assessment is aimed to support and monitor EFL students' reading comprehension and learning engagement. Socrative provides mechanisms that enable students to read and review content, while competing with their peers or teams to solve quizzes. Thus, it facilitates deeper understanding through processes which are freely accessible by the students, consequently, increasing reading comprehension and learning engagement with the subject matter (Donovan, 2017; Hung, 2017).

Socrative SRS-based assessment maintains and achieves continued interest in reading comprehension as it provides room for EFL students involvement in meaningful tasks and competitive quizzes. The game elements used with Socrative such as points, leaderboards, and badges (Barata, Gama, Jorge and Goncalves, 2013), immediate feedback, ranks, levels, competition, and time pressures (Deterding, Dixon, Khaled, and Nacke, 2011) motivate and engage students within an educational setting and thus providing the most potential for effectiveness (Lister, 2011). Such effectiveness is shown in a wide variety of tasks such as completing quizzes, attending lectures, taking part in class exercises, solving puzzles, creativity

in assignments (Charles et al., 2011; O'Donovan, Gain, & Marais, 2013). For example, badges or achievements are symbolic awards presented to learners when correctly completing any type of activity, task or achievement (Abramovich, Schunn, and Higashi, 2013) to let others such as peers, parents, or outside world know of their achievement (Abramovich, Schunn, and Higashi, 2013). Students have access to review the badges they have earned and to review the requirements to obtain new badges (Hanus and Fox, 2015).

Thus, contemporary EFL students, who have been tagged as EFL digital natives, the people born in 21st century who have grown using digital technology (Prensky, 2001), are assumed to be taught and motivated by Socrative SRS-based assessment pedagogical practices and quizes. It improves the way the assessment is conducted, involving students in reading tasks that improves EFL students' reading comprehension and learning engagement (Menezes and De Bortolli, 2016).

The Main Features/Characteristics of Socrative SRS-based Assessment

Socrative SRS-based Assessment has many features that help enhance the reading comprehension and learning engagement of EFL students. Meaningful feedback is the first feature. For feedback to be meaningful it has to be obvious, individualized, comes at the right time, motivates students to continue with the activity, and gives students the chance to revisit their mistakes (Jurenec, 2018), just like in Socrative based assessment. The quick, clear and relevant feedback presented by Socrative tool helps students adopt this feedback into learned

knowledge, correct the knowledge, and fully understand what they are reading (Freeman and Tashner, 2015).

A second feature is its availability. Socrative availability as a free tool for teachers and students facilitates its incorporation into EFL classroom assessment, especially in Higher Education settings (Harrison and Martin, 2019). It provides educational support through a real-time question/answer system and other educational exercises that can guide the focus of the reading tasks as well as generate discussions with students (Tirlea, Muir, Huynh and Elphinstone, 2019) to facilitate comprehension and engagement.

Why Socrative?

Among several free, cloud-based, currently available tools, Socrative (http://www.socrative.com) was chosen for this study as it is broadly recommended in higher education settings (Rae and O'Malley, 2017). It is related to the two dependent variables of the study; reading comprehension and learning engagement. The researcher chose Socrative because it has the advantage of engaging students with the reading text and enables her to gauge her participants' level of comprehension (Tirlea, Muir, Huynh and Elphinstone, 2019) and that is exactly what the study aimed to.

Its availability as a free tool for both the researcher and the participants facilitates its incorporation into EFL classroom practices, especially in Higher Education settings (Harrison and Martin, 2019). Also, Socrative is an effective tool in EFL classroom settings because it gauges classroom interactions with the opportunity to gather students' feedback anonymously (Kim, 2019). It provides instructors with a flexible software to involve students in classroom activities using any available technological

tool such as mobile phones, laptops, or tablets (El Shaban, 2017). Also, students do not need to create an account in order to participate. All they need is to get an access to the instructor's classroom code (El Shaban, 2017). It is cost-effective and does not require administrators' decisions to use them (El Shaban, 2017).

Socrative as an SRS tool can be used as an assessment tool inside and outside the classroom confines. The whole purpose of Socrative is to track comprehension and engagement. Teachers can use it to monitor the performance of the class as a whole not only those who put their hands up. As a platform, Socrative worked wonders with students who feared conferencing and provide the teacher with everyday evaluation (El Shaban, 2017).

Additional benefit of Socrative, the tool used in the present study, is its versatility regarding the types of questions that can be generated. Various types of questions can be constructed using socrative: (a) multiple choice, (b) short answer and (c) True/False. Moreover, there is no limit for the number of questions per activity or quiz.

Learning Engagement

Engagement has become an important issue in educational circles over the last decades (Kahu, 2013). It fulfills the main objectives of Egypt's vision 2030 that calls for the sustained interaction and continued practice, which can then have an impact on student learning/achievement (Irvin, Dukes, and Meltzer, 2007).

Engagement refers back to the participation-identification model (Finn, 1989). This model defines engagement as a construct that have both a behavioral component, called participation, and an emotional component, named identification (Finn and Voelkl, 1993). It refers to students' active involvement during learning (Keene, 2018).

Learning engagement is defined as students' active participation in routine school activities, such as attending classes, submitting required assignment, and following teachers' directions in class (Nystrand and Gamoran 1992). Therefore, learning Engagement is Actually fulfilled when students are actively engaged in their learning as tested by formative assessment.

In the present study, learning engagement is operationally defined as the quality of cognitive, behavioral and emotional effort students devote to educationally purposeful reading comprehension activities that contribute directly to enhance their reading comprehension skills.

Dimensions of Learning Engagement

Reviewing the literature on Learning engagement, there are three interrelated aspects/dimensions of student engagement: cognitive, behavioral, and affective (Fredricks, Blumenfeld and Paris 2004, Handelsman, Briggs, Sullivan, and Towler, 2005). Cognitive engagement represents the necessary mental effort provided by students in the learning tasks for comprehending and mastering complex ideas and difficult skills. Behavioral engagement indexes student's involvement in classroom tasks, conduct, and school-based extracurricular activities (Carter et al. 2012 and Sheppard, 2011). As for affective engagement, it is the level of students' investment in, and their emotional reactions to the learning tasks reflecting both the positive and negative reactions to teachers' instructions, and classmates, perceptions of school belonging, and beliefs about the value of schooling (Mandernach, 2015).

In view of above, learning engagement is often conceived as a three- component construct that has a behavioral component (e.g., positive conduct, participation, and effort) and an affective component (e.g., interest, identification, belonging, positive considerations about learning) (Marks, 2000 and Willms, 2003) and a cognitive component (e.g., self-regulation, learning goals, investment in learning) (Fredricks, Blumenfeld, & Paris. 2004).

Recent Research

The following studies are found to be related to the effect of using Socrative as an SRS tool in developing different English language skills.

Faya Cerqueiro and Martin-Macho (2019) conducted a study where Socrative was used with a group of first-year university students to aid collaborative reading tasks. The results showed that first-year university students had positive attitude towards the use of clickers tools. Results proved that Socrative was an effective means of providing feedback and saving time during lessons.

Kent (2019) conducted a quasi-experimental study to investigate the effectiveness of integrating Student Response System (SRS) with formative assessment provided by teacher and peers on Korean EFL students' engagement and reading in EFL reading classrooms. Results revealed that SRS-integrated intervention can create a digitally interactive learning environment that can support the improvement of reading comprehension skills. This study show also how Socrative is an effective means of providing formative feedback and can perfectly save time during lessons. Participants believed that Socrative has a positive impact on engagement and participation in class, and they felt that Socrative facilitated learning.

El Shaban (2017) describes the benefits of SRS in supporting ESL students' active learning. It investigated the effect of integrating Socrative as an SRS tool with active learning activities on second language learners' (ESL) perceptions of the use of this tool. The results revealed that integrating SRS with active learning increased the level of students' engagement, enhanced their critical thinking, and promoted their collaboration. It was concluded that the student response system (SRS) is an effective technological tool that can be integrated in English language classrooms to enhance students' active participation.

In 2015, Dakka conducted a study about the impact of using Socrative SRS technology in teaching and learning for engineering modules in higher education contexts. The SRS using Socrative software was used to get an immediate student feedback on short quizzes. The questions vary from multiple choice, true or false, and short answer questions. The experiment of the study was implemented through the second semester of yearlong engineering module. The results indicated that student paced assessment using Socrative enhanced students' performance. Results indicated positive impact of this technology in teaching and learning for engineering modules in higher education.

In Lee and Oh's (2014) quasi-experimental study, the effect of using clickers (ARS systems that allow instant responses to questions) on EFL reading was investigated. 87 Korean undergraduates were assigned either to a clicker-assisted reading and writing course or a traditional reading and writing course. Results revealed that students in the clicker-assisted class had better class performance than those in the traditional class. They demonstrated increased engagement and satisfaction.

Socrative proved to be effective for other language areas such as phrasal verbs (Vurdien, 2020). Vurdien (2020) explored

how the use of Socrative as a Student Response System could arouse students' interest in learning phrasal verbs. The study examined to what extent students were motivated to acquire that lexicon through quizzes. The findings indicated that the general attitude of the students was positive. Thus, it was concluded that Socrative could be seen as a reliable educational tool to enhance phrasal verbs' learning.

Maesaroh et al. (2020)'s study aimed at investigating the effectiveness of socrative and kahoot to teach grammar to students with different interest. The results of this study revealed that socrative is effective for students with high and low interest (79.17 and 57.50) and kahoot is also effective to students with high and low interest (85.50 and 62.86).

Adding to the above, Socrative proved effectiveness in other subjects such as engineering (Mishra, Chew, Ostrovska, and Wong, 2020), physiology (Al Sunni and Latif, 2020), clinical pharmacy (Guarascio, Nemecet, and Zimmerman, 2017).

Hypotheses of the Study

1. There would be a statistically significant difference between the mean scores of the control group and the experimental one on the post test of EFL reading comprehension.
2. There would be a statistically significant difference in the mean scores of the experimental group on the pre and post test of EFL reading comprehension.
3. There would be a statistically significant difference between the mean scores of the control group and the

experimental one on the post administration of learning engagement scale.

4. There would be a statistically significant difference in the mean scores of the experimental group on the pre and post administration of learning engagement scale.

Methods

Design

The current study is a quasi-experimental one, following the two groups (control and experimental) pre-post test design. The experiment lasted for 3 months during the first term of 2019-2020 academic year. In this design, the dependent variable (reading comprehension as well as engagement) is measured before and after the experiment for both groups. Therefore, before the experiment, all the participants were pretested in reading comprehension skills as well as learning engagement. During the experiment the participants in the experimental group were exposed to Socrative SRS-based assessment, while the control group were taught using the traditional method. After the experiment, all the participants were post-tested in reading comprehension skills and learning engagement.

Participants

Eighty EFL students, chosen on purpose from the English language department, Faculty of Education, Suez University, during the first term of the 2019-2020 academic year, participated in the study. They were divided into two equivalent groups: a control group (N=40) and an experimental one (N=40). All participants spent at least 12 years learning EFL.

Instruments

A pre-post EFL reading comprehension test was designed by the researcher to measure the participants' level of reading comprehension before and after the experiment. The test was designed to measure ten reading comprehension sub-skills: finding the main idea, previewing (using prior knowledge), Predicting (setting up expectations based on their prior knowledge), locating specific details, asking questions about the text, guessing meaning from context, inferring information from context, drawing conclusion, suggesting a title, recalling information. To achieve test validity, a jury of 10 TEFL experts validated the test's components. Their suggestions and recommendations were put into consideration.

Assessing learning engagement in higher education contexts is still a challenge because of the lack of unified definitions to define the scope, intent and parameters of engagement (Bowen, 2005). After reviewing many engagement scales (e.g., the University Student Engagement Inventory (USEI) (Maroco, Maroco, Campos, and Fredricks, 2016), The National Survey of Student Engagement (NSSE), The Community College Survey of Student engagement (CCSSE), the researcher adapted a dynamic scale that mandates a multi-faceted approach to learning engagement assessment and that captures the interactive nature of the behavioral, affective and cognitive dimensions of learning engagement.

Establishing Validity of Students Engagement Scale

To ascertain face validity of the scale, the items were given to a jury of faculty members to check whether the items represented the construct of engagement with its three components;

cognitive, affective, and behavioral. The faculty members were also requested to comment on the readability of the items. Based on their suggestions, 12 items were deleted because of repetition thus, the final items were reduced from 42 to 30 (ten items for each dimension). Each item was rated on a 5-point Likert type scale varying from1 (Strongly Disagree) to 5 (Strongly Agree). In order to examine test-retest reliability, the instrument was administered on a group of 25 respondents (out of the sample of the study). The test-retest reliability scores of behavioral, cognitive and behavioral engagement were 0.83, 0.81 and 0.79, respectively. These findings showed high test-retest reliability for different sub-components of engagement.

Table 1. Means, Standard Deviations and Cronbach Alphas of Different Scales

Scale	**Mean**	**SD**	**N.of items**	**Cronbach Alphas**
Cognitive	25.49	4.5	10	0.83
Behavioral	35.88	5.6	10	0.81
emotional	38.22	5.9	10	0.79

Table 2: Correlation of Various Items of Cognitive Engagement with Its Total Score

No.	**Cognitive Engagement Items**	**Mean**	**S.D.**	**correlation**
1	I exert the necessary efforts for the comprehension of complex ideas during learning.	5.9	0.91	.77*
2	I self monitor my reading and learning.	5.8	0.92	.79*
3	I seek help from external resources.	6.1	0.95	.76*

No.	Cognitive Engagement Items	Mean	S.D.	correlation
4	I respond passively with little mental investment to difficult learning tasks.	4.9	0.88	.87*
5	I self-regulate my learning.	5.6	0.98	.67*
6	I can make choices when I encounter a difficulty.	6.0	0.78	.79*
7	I desire personal efficiency.	5.9	0.93	.78*
8	I go beyond the requirements	4.8	0.94	.79*
9	I relish challenge.	5.3	0.91	.87*
10	I exert the necessary efforts for mastering difficult skills.	5.6	0.94	.77*

*P‹.005

Table 3: Correlation of Various Items of Behavioral Engagement with Its Total Score

No.	Behavioral Engagement Items	Mean	S.D.	correlation
1	I attend class regularly.	6.9	0.95	.75*
2	I participate in classroom tasks.	5.9	0.82	.71*
3	I participate in school-related extracurricular activities	6.1	0.91	.86*
4	I focus my attention while in class.	5.9	0.78	.77*
5	I do my homework.	5.9	0.78	.87*
6	I prepare for class.	6.0	0.78	.89*
7	I adhere to classroom rules,	6.9	0.83	.79*
8	I am late for classes.	6.8	0.92	.79*
9	I volunteer for class activities.	6.3	0.95	.87*
10	I drop out from classes	6.6	0.94	.87*

*P‹.005

Table 4: Correlation of Various Items of Emotional Engagement with Its Total Score

No.	Emotional Engagement Items	Mean	S.D.	correlation
1	I react positively towards class activities.	6.9	0.95	.75*
2	I show interest in class activities.	5.9	0.82	.71*
3	I feel belonging.	6.1	0.91	.86*
4	I have positive reactions to teachers' instructions	5.9	0.78	.77*
5	I have positive reactions to classmates	5.9	0.78	.87*
6	I have positive reactions to class.	6.0	0.78	.89*
7	I value school.	6.9	0.83	.79*
8	I feel boredom while being at class.	6.8	0.92	.79*
9	I am proud of my success.	6.3	0.95	.87*
10	I feel anxious at class.	6.6	0.94	.87*

*P‹.005

It is observed from the previous tables that there is a significant and positive correlation between all the individual items of engagement and its total score

Materials

The material used for reading was EFL Methodology digital book and was offered over the first semester of 2019/2020. This course was intended for students to achieve competencies in the subject of EFL teaching methods.

The Intervention

The intervention was implemented in Faculty of Education, Suez University, during the first term of 2019-2020 academic year.

Before initiating the experiment all the participants in the control and the experimental groups had taken the reading comprehension pre test and the engagement scale.

Socrative-SRS based Assessment

Socrative SRS-based assessment consisted of different sessions where Socrative SRS-tool could be implemented to enhance EFL students' reading comprehension and learning engagement in a course on EFL methodology. The in-class Socrative SRS-based assessment was divided into three subsequent steps:

A. Providing Students with the reading Input

The book provided the reading content for the participants, consisting of from 4 to six paragraphs per topic, about 30 multiple choice questions as well as 10 short answer questions for each reading topic. The reading content used was made available to students in print form in addition to being digitally displayed in the classroom alongside the questions presented by Socrative platform. The textbook and the digital display of the EFL reading material were used to present and check content being read by participants. Before the participants could initiate Socrative-based activities, they received a reasonable amount of suitable reading. Consequently, the main aim of such a step is providing participants with the reading input. The researcher asked participants to read the allocated part of the lesson and try to use the suitable reading strategies to better understand as much as possible to be ready for the second step.

B. Processing the reading input using Socrative SRS based assessment

The main aim of this step was to assess the participants' comprehension of the material read using Socrative. Participants' reading comprehension was assessed through student responses to the multiple-choice type questions as well as short answer questions coming from the class textbook. All the participants' responses were recorded utilizing socrative in a digitally interactive manner. After receiving the reading input, the researcher provided the participants with the code of Socrative-based quiz to answer it. Some quizzes were performed individually, and other quizzes were performed in groups according to the nature of the quiz. This step helped participants to monitor their reading comprehension and consequently interiorize the new information. The researcher saw all participants' answers immediately after they answered and their answers were projected on the data show.

C. Feedback and Reinforcement

This last step aimed at identifying reading comprehension problems and then addressing them with the participants to help them read better and use reading strategies appropriately to comprehend the material. At this step, Socrative helped the researcher as well as the participants to monitor their comprehension of the material read and thus improving their reading comprehension. Participants knew their errors and mistakes in comprehending the reading material and learned from them. They also became more engaged with the reading material.

After finishing they started another reading and repeated the previous steps till they finished the whole session.

Post Testing

After finishing all the sessions, all the participants in the control group and the experimental one took the reading comprehension post test as well as the engagement scale. The difference between the participants' pre and post tests' mean scores on the reading comprehension and learning engagement was calculated.

Results of the Study

Results for Reading Comprehension

The independent samples t-test was used to test the first hypothesis of the study stating that "There would be a statistically significant difference between the mean scores of the control group and the experimental one on the post test of reading comprehension."

Table 5. Comparing the performance of the control and experimental group on the post test of EFL Reading comprehension

Group	N	Mean	St.deviation	DF	t-value	Sig.
Control	40					
Experimental	40	0.949	1.829	39	21.595	0.000
		7.182	1.667	39		

As shown in Table 5, there is a statistically significant difference in the mean scores of the control and experimental group on the post test of reading comprehension in favor of the experimental group ($t=21.595$, $p\leq0.05$). Also, the effect size of that difference, using Cohen's formula (1988) of the effect size

for independent samples, was large in favour of the experimental group (d=2.53, d>0.8) as shown in the following table:

Table 6. The Level of Effect Size of the Socrative SRS-based assessment on the Reading Comprehension of the Experimental Group

Group	N	Mean Gain Score	S D	σ_{pooled}	*d*	Level
Control	40	5.8102	3.2216	1.84	2.53	large
Experimental	40	16.800	5.484			

Therefore, it was concluded that Socrative SRS-based assessment significantly improved the reading comprehension of the experimental group. In light of this statistical result, the first hypothesis was accepted.

The second hypothesis of the study was that there would be a statistically significant difference in the mean scores of the experimental group exposed to Socrative SRS-based assessment on the pre and post test of reading comprehension". Paired samples T-test was used to test this hypothesis.

Table 7. Comparing the performance of the Experimental Group on the Pre and Post Test of EFL Reading Comprehension

Test	**Mean**	**St.Deviation**	**DF**	**t-value**	**Sig**
Pre	9.682	1.762	39	27.525	0.000
Post	19.860	3.120			

As depicted in the previous table, Paired samples t-test revealed a statistically significant difference in the mean scores of the experimental group between the pre and post test of reading comprehension in favour of the post test (t=27.525, p≤0.05).

Through using Eita Square, the practical effect caused by Socrative SRS-based assessment was calculated. It was found that Socrative SRS-based assessment yielded a large and substantial effect size (d=7.7, d>0.8) as shown in the following table:

Table 8. The Level of Effect Size of the Socrative SRS-based assessment on the reading comprehension of the Experimental Group

Independent variable	Dependent variable	t-value	df	η^2	*d*	Effect size level
Socrative SRS-based assessment	Reading Comprehension	27.525	39	2.957	7.7	large

This result suggested that the participants of the experimental group achieved significant improvement in their reading comprehension skills during the period of the study. Consequently, it was concluded that Socrative SRS-based assessment was effective in developing the reading comprehension of EFL students at Faculty of Education, Suez University. Therefore, the second hypothesis was accepted.

Results for Learning Engagement

To investigate the third hypothesis of the study stating that " There would be a statistically significant difference between the mean scores of the control group and the experimental one on the post administration of learning engagement scale" the independent samples t-test was used as shown in the following table:

Table 9: Comparing the performance of the Control and Experimental Group on the Post Administration of Engagement Scale

Group	N	Mean	St.deviation	DF	T-value	Sig.
Control	40	3.94	2.32	39	25.220	0.000
Experimental	40	7.18	4.66	39		

As shown in Table 9, there is a statistically significant difference in the mean scores of the control and experimental group on the post administration of the engagement scale ($t=25.220$, $p\leq0.05$) in favour of the experimental group. Also, the effect size of that difference, using Cohen's formula (1988) of the effect size for independent samples, was large in favor of the experimental group ($d=3.13$, $d>0.8$) as depicted in table 10.

Table 10. The Level of Effect Size of the Socrative SRS-based Assessment on the Learning Engagement of the Experimental Group

Group	N	Mean Gain Score	S D	σ_{pooled}	*d*	Level
Control	40	5.8102	3.2216	3.80	3.13	large
Experimental	40	16.800	5.484			

Therefore, it was concluded that Socrative SRS-based assessment significantly promoted the learning engagement of the experimental group. In light of this statistical result, the third hypothesis was accepted.

Table 11. Comparing the performance of the experimental group on the pre and post administrations of engagement scale

Learning Engagement	N	Mean	St.deviation	DF	T-value	Sig.
pre	40	3.94	2.32	39	21.509	0.000
post		7.18	4.66	39		

In table 11, the paired samples t-test yielded a statistically significant difference in the experimental group mean scores on the pre and post administration of engagement scale ($t = 21.509$, $p<0.05$), in favor of the post administration. Therefore, it was concluded that Socrative SRS-based assessment raised the experimental group students' learning engagement.

From the previously shown tables, it was concluded that Socrative SRS-based assessment was significant in enhancing EFL students' reading comprehension and learning engagement.

Discussion

The quizzing nature of Socrative SRS-based assessment is one of the main explanations of the previously mentioned results. Socrative SRS-based quizzes was used as a means to promote participants' engagement and to assess active learning results in an EFL reading classroom while undertaking textbook-based formative assessment activities. A digitally interactive learning environment was established using Socrative quizzes to collect participants' responses through an active learning method. The motivating factor of participating in the quizzes encouraged the participants to strive hard to read and re-read the allocated texts and try to comprehend it very well. Socrative-based quizzes fostered the participants' comprehension by focusing readers' attention on the allocated texts and fostering their cognitive engagement with meaning and metacognitive monitoring of their understanding. Socrative enables teachers to create quizzes and other educational exercises that guide the participants to focus on a particular reading text as well as to improve the comprehension of such reading text. Moreover, participants had found the live on-line quizzes based on the reading texts enjoyable and entertaining, particularly because they were able to compete against themselves and their peers via the 'Space Race' option

on Socrative. This explanation is consistent with a finding in the study of Chan, Wan and Ko (2019).

Another explanation is related to the engaging and funny feature of Socrative that turned the reading process into a funny and an engaging process. Reading was no longer that anxious and apprehending activity. Participants practiced reading in order to join the user-friendly, available, and gamified learning environment provided by Socrative. For example, some activities ask participants to read an allocated on-line text then join a race about answering a Socrative quiz asking about the reading strategies that helped them understand the text better. Participants were eager to compete not only with themselves, but also their peers, which boosted their reading comprehension as well as learning engagement. Moreover, the gamification feature of Socrative tool make participants more ambitious and motivated to read and engage in the learning tasks and activities (Bicen And Kocakoyun, 2018). The game-like environment provided by Socrative SRS-based assessment created a sense of novelty and helped to engage the participants who are technology savvy as it catered to their needs and interests. This explanation concurs with the study of Faya Cerqueiro and Martin-Macho (2019) where the use of Socrative had an impact on students' motivation to complete the learning tasks and actively participate in the classroom activities.

Turning the reading class into a collaborative learning environment by using Socrative SRS-based assessment is an additional explanation. The teacher interaction and peer-interaction techniques provided the participants with the chance to discuss their responses as well as peer responses to questions with the teacher and the classmates before providing a rationale for the correct response. This leads to increased teacher-student and student–student engagement and discussion. these techniques had made the reading class more interactive and, in

turn, improved participants engagement. Peer-focused reading had also promoted reading achievement. The team versus team competition feature of Socrative promoted reading and engagement as teammates helped each other recall the texts upon which the Socrative SRS-quizzes were based (Iaremenko, 2017).

The meaningful, immediate, individualized feedback provided by Socrative on the reading exercises motivated participants to continue and persisted with the difficult tasks for more comprehension and engagement of the reading material. Real-time responses ensured an interactive atmosphere between participants and with the teacher. Socrative gave the participants the opportunity to revisit their mistakes, and thus monitor their comprehension. Consequently, the participants benefited from the advantages of immediate formative feedback which was one of the main assets of this tool. This explanation is in agreement with the study of Vurdien (2020) where Socrative was perceived as a valuable platform as it guarantees immediate formative feedback, which helps both the teacher to monitor students' learning engagement and the students to assess their own knowledge.

Using Socrative-SRS based assessment encouraged even those hesitant participants to respond and participate without the fear of embarrassment or intimidation in case their answers were not right with the feature of setting up students' responses as anonymous. So, the non-prohibiting atmosphere provided by Socrative SRS-based assessment was also an explanation of the results of the study.

Conclusion and Educational Implications

Within the delimitations of the study as well as the results reached, the researcher concluded that Socrative SRS-based assessment was effective in developing the reading comprehension of EFL students and enhanced their learning engagement. Consequently, the results of this study add a new dimension to the growing body of research regarding SRS-based assessment. It adds to the literature on how to apply SRS-based assessment using Socrative in university contexts as a new platform for language teaching and assessment. It provides an empirical evidence on the implementation of Socrative SRS-based assessment for educators to reference as a resource. It can be helpful for educational developers and policy makers to reorient existing assessment tools to develop reading comprehension and to enhance learning engagement. It also encourages EFL teachers to apply Socrative as a pedagogical SRS assessment tool to increase learning engagement in EFL classrooms. It provides tech-savvy learners with an innovative tool to enhance their reading comprehension and interest in reading, and raise their learning engagement. Finally, Socrative can be seen as a reliable educational tool to enhance English language learning (Vurdien, 2020).

Suggestions for Further Research

Further research about the impact of other SRS tools such as kahoot, quizzlet,--- etc on the speaking performance of EFL students becomes apparent.

1. The impact of gamified SRS tools in fulfilling the vision of English

language learning in 2030 agenda should be overstudied.

2. The impact of Socrative integrated flipped classroom on the listening comprehension of secondary EFL students should be researched.
3. A study on the effect of Kahoot on the speaking proficiency of EFL university students should be investigated.

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