Investigating Students' Perceptions towards the Effectiveness of Using Socrative as a Formative Assessment Tool Pre and During COVID19 Pandemic

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Abstract

The study aims at investigating students' perspectives towards the effectiveness of using Socrative in their learning experience pre and during COVID-19 pandemic. This tool provides immediate e-feedback for both students and teachers tracking students' progress towards learning goals over time. The experiment was conducted on undergraduate students studying English Language Course of an intermediate-level at the University College of Applied Sciences in Gaza, Palestine. The survey was implemented after Socrative was practiced two months before the pandemic and continued during it thorough the online learning. The findings showed that the majority of students have positive perceptions on using Socrative as it greatly promoted their effective learning experiences in both face to face classes and the online ones. Surprisingly, though the it was planned to implement this tool in the normal case of face to face classes, students expressed how they were lucky having been introduced and prepared using this technology before the COVID-19 lockdown, taking its advantage during it.

Keywords: Socrative, online quizzes, immediate feedback, formative assessment, COVID-19

Introduction

Enormously, before the arise of COVID-19, there was already high growth of adopting digital technology in education. However, COVID-19 pandemic has resulted in the largest "online movement" in the history of education (Li and Lalani, 2020). Basically, the digital education tools have been created for improving the academic process, encouraging collaboration, students' engagement, creating a dynamic fun educational environment and tracking students' progress in their learning. In this regard, using formative assessments regularly throughout lessons gives insights that students have achieved full comprehension, helps understand where students have trouble with the material, and gets them prepared to summative assessments. Fortunately, digital apps and software help making formative assessment better, particularly through the use of student response systems (Elmahdi et al., 2018). A Student Response System (SRS) is an online educational tool which facilitate interactions between the teacher and the students as well as between the students themselves. *Socrative* as a free (SRS) is a quiz-based, formative assessment tool with multiple features that can enrich teaching and learning. It enables teachers to construct quizzes, games and exercises easily that can be instantaneously answered by students. It provides immediate feedback for both the student and academic during a lecture, and helps reflect students' satisfaction with the learning materials and strategies (Socrative Home page). Irving (2015) asserted that such modern electronic technologies "assist in the formative assessment process by supporting classroom environments that allow students and teachers to assess learning and providing mechanisms to present information about student learning during instructional sequences" (p. 380).

How to use Socrative?

To use the system, Teachers can create a free account through registering on www.socrative.com after which they are granted a 'virtual classroom' with a specific name. They can log in using an e-mail address and a password. They can prepare limitless questions or quizzes.

On explaining a topic, and towards the end of the lecture, the teacher activates the quiz and asks students to access Socrative by using their

smartphones, tablets or laptops. The students do not need to create accounts. They simply sign into the teacher's room name and start to answer the launched quiz related to the topic taught. The teacher is able to monitor the students' progress via a live results table. While the students are answering the questions, the teacher can easily visualize students' performance from his/her mobile device or computer—how many students have answered, what they have answered, the percentages of right and wrong answers, and the final scores. For students, when they submit the answer for each question, they can see their mistakes, if they have any, with correction and explanation if available, and get their score at the end. When time is over, the virtual room is turned off and the teacher can get the report from Socrative in Excel format (Socrative Home Page).

Socrative options are various to use: "Space Race" to organize competitive group quizzes; "Quick Question" to launch quick questions during the lesson and receive every student's immediate answer; "Create Quiz" to create Quizzes; "My Quizzes" to reuse and launch already created ones; "Import Quiz" to use quizzes previously uploaded by other teachers. Finally, the option "Exit Ticket" allows teachers to get instant feedback from students at the end of a lesson (Socrative Home Page).

Worth mentioning, the researcher has been using this tool in her conventional classes since 2018 believing in the importance of integrating the digital technology in education; and it has been further accelerated during the pandemic time to be an integrated component of the online education.

Related Works:

A wide body of recent researches have covered the effects of using Socrative in the educational process. Over the last seven years, the popularity of Socrative has prompted educational research, which has resulted in the publication of a number of articles. The articles found that students appreciate Socrative as it has encouraged them to participate (active learning) in lectures (Pryke, 2020).

Cerqueiro and Harrison (2019) aimed at exploring the students' improvements through using Socrative app in the sessions of lectures,

collaborative reading tasks, and cooperative review games. The results showed that there is a significant increase in the extent to which Socrative is perceived to be an enjoyable and efficient tool of providing formative feedback and real time responses. Remarkably, involving Socrative gamified activities can further enhance students' engagement.

Similarly, Abdulla (2018) found in his study that the use of online-based exercises through Socrative was positively received by medical students as an interactive classroom activity that also enhanced performance. He figured out that the exam performance of students in 2016 after the introduction of Socrative was higher by 14% compared to a previous year, 2014 where no Socrative activities were used.

Tirlea1, Muir, Huynh, and Elphinstone (2018) investigated the impact of deploying Socrative within a university environment capturing the participants' levels of academic engagement, perceived competence, autonomy and statistics anxiety. The findings showed that integrating Socrative into the statistics course changes the dynamics of the class and resulted in greater engagement, interaction and fun.

Awedh, etal (2014) observed in their study the benefits of using Socrative on the interactivity between the teacher and the students and among classmates, which positively influences collaborative learning and engagement of students in the class. They test these relationships experimentally in a community college class environment using data from a survey answered by students in information technology associate degree. The results of their study reveal that collaborative learning and engagement of students in the class improves their learning performance.

Kaya1 & Balt's paper (2016) deals with the attitudes of prep school students toward using Socrative in the classroom as a tool of response system in real time. They indicated in their study that Socrative is an appropriate tool that instructors can safely use in their English teaching classes to achieve better instruction.

In Dervan's study (2014), sixty-five 1st Year Sports students taking Contemporary Sports Management 2 at ITB were surveyed. The findings showed that the use of *Socrative* offers lecturers the opportunity to quickly and easily enhance the delivery of their lectures or tutorials in a way that

increases interaction with students leading to a better learning experience for them.

Mendez & Slisko (2013) figured out the effects of using Socrative and smartphones on the students. They indicated that they are feasible tools the help the students to understand concepts and they stimulate the discussion, arguments and the exchange of answers and opinions. In addition, *Socrative* is a no-cost tool, which makes feasible implementation of activities and tasks and fosters enjoyable learning.

Pedersen (2013) is his paper reports on his own experiences with the use of Socrative in a BA-course in politics. The study showed different ways in which such an online student response system can be used. Also, it aimed at exploring whether students that were low on extraversion would be more positive towards the use of Socrative than students high on extraversion. Results highlighted that Socrative should be considered an aid for relatively weaker students. The students generally agreed that the use of Socrative had made them more active, made the course more interesting, helped them understand theories and concepts, and overall worked really well.

Confirming similar results, Wash (2014), Dakka (2015) and Dervan (2014) signified in their studies that *Socrative* allows more interactions in the classroom and empowers well-comprehension of the concepts.

Hence, all the above-mentioned researches provided an evidence of the significant contribution *Socrative* in the learning and assessment process.

Rationale for the Study:

Though many previous researches highlighted the role of integrating Socrative in the teaching-learning process, studies on examining its value in such new challenge of moving radically from face-to face mode to online mode have been very rare. So, one top thing is that this experiment was applied in a mixed mode of normal classes and a sudden shift to e-classes. Though, the first phases of this study were conducted in normal conditions of face-to- face classes, the sudden overnight shifting to e-learning due to the massive outbreak of covid-19 in the mid of the semester has reshaped

dramatically the education setting. The participants continued practicing their learning through Socrative on online platforms. Therefore, it constituted as a proof of how this tool has bridged the gap caused by the sudden absence of face-to-face interaction. Moreover, till writing this research, no studies have been conducted in this area in the Palestinian educational institutions. Most importantly, the education sector in Palestine abundantly suffers from challenges that need educators inevitably get benefit from exploiting some forms of EdTech in both face-to-face classes and online ones. Some of these challenges are:

- Handling the educational process during crisis time and keeping it going.
- Maintaining students' interactivity and active learning especially in their virtual learning
- Monitoring students' performance especially in large face-to-face classes is one of the problems in the educational sector that the Palestinian universities have been grappling with. According to Piatek (2014), a student response system like *Socrative* makes it possible to teach interactively in large lecture halls.
- Lack of continuous formative feedback for both teachers and learners much limits learners' achievements and negatively affects classroom performance
- Difficulty in giving a huge scale of paper-based assignments, exercises, quizzes, etc., to a large number of students so as to measure whether the learning outcomes are attained or not
- Difficulty of marking a huge number of students' scripts and providing feedback on time
- One of the major drawbacks is that a large share of students will be reluctant to answer questions in front of their classmates which may make them less actively involved. (Pedersen, 2013)
- Sometimes student finds online teaching to be boring and unengaging**. So,** students' engagement in online learning is crucial at this stage. **(**Dhawan, 2020)

- Researches have also shown that university students are receptive to approaches incorporating digital tools (Trees & Jackson, 2007) and such these tools have become inevitable with rise of e-learning

There appears to be a great need as well as an emerged interest of the researcher for finding out to what extant incorporating such SRS tools into teaching-learning practices in the Palestinian educational institutions will enhance students' engagement and active learning and get them adapt to the changing situation. This study is sought to investigate students' perspectives towards the effectiveness of using Socrative in their learning experience and shed light of its impact during the time of pandemic. The main research question guided this study is:

HOW using *Socrative* as a formative assessment tool is effective in enhancing the learning experience from the perspectives of students at UCAS?

Methodology:

Participants:

The sample was comprised of undergraduate students who enrolled in the English Language Course of an intermediate-level and registered in the two semesters of the academic year 2019/2020 within the classes of the researcher-who is a full time English instructor at University College of Applied Sciences (UCAS).

It is worth mentioning that during the face-to-face classes, the students were subjected to a substantial number of Socrative-quizzes and exercises on their smart phones practicing a variety of questions, such as multiple choice, short answer questions and true/false questions. The instructor explained the lesson then introduced some questions or situations on Socrative in order to assess the conceptual learning of the students. The students were supposed to answer them individually or in groups through *Space Race* which is a gamified option on Socrative for making a kind of an enthusiastic competition in atmosphere of fun among students. After the outbreak of COVID-19 and the suspension of the face-to-face classes, students continued using Socrtaive in their virtual learning.

Instrument

The survey was made up of 25 items on a five-point balanced Likert scale *strongly agree / agree /neutral / disagree / strongly disagree* and an open-ended question to reflect on freely their experience towards using *Socrative* and about their perceived disadvantage if there is any.

Validity of the Instrument

To ensure the validity of the instrument, the researcher used two techniques: the content validity and internal validity:

***Content Validity*:** The content validity of the instrument was assessed by colleague fellows in the English department at UCAS. Their comments were used to improve the questionnaire for data.

Internal Consistency Validity: This type of validity indicates the correlation of each item degree with the main question it belongs to. The survey items were validated using a focus sample of 30 students. The researcher computed the internal consistency by using Pearson formula and computed the correlation coefficient of each item with the main question it belongs to.

Table 1. ***Correlation Coefficient & Significance Level***

No.	Items	Correlation coefficient -R-	Significance level
1.	Using Socrative enhanced my interaction during both face-to-face and online classes	.777**	.000
2.	Socrative made the classes more interactive	.600**	.000
3.	Socrative is very easy, straightforward & friendly to use	.448**	.013
4.	Immediate feedback from Socrative helped me understand where I had difficulty	.801**	.000
5.	I got the quiz score immediately	.477**	.008
6.	It provided a stress-free quiz so it positively changed my negative view towards quizzes	.867**	.000
7.	It helped my comprehension of the course concepts	.607**	.000
8.	Socrative was useful because it introduced a bit of fun into classes	.746**	.000

9.	I found it a quick tool that helped me check my understanding of each point easily and immediately	.556**	.001
10.	It gave me more numerous opportunities to check-in content concepts more than the paper-based quizzes	.673**	.000
11.	I became more attentive in class	.724**	.000
12.	It helped me adjust smoothly the transition from f-2-f to online classes	.705**	.000
13.	The big easily- made number of Socrative quizzes raised my responsibility towards learning greatly	.782**	.000
14.	I got the score discretely, which can avoid embarrassment	.790**	.000
15.	I liked the idea of not being trapped when I made mistakes	.443**	.014
16.	It made the learning democratic rather than just those who are nominated or who put up their hands to participate in face-to-face classes.	.766**	.000
17.	It helped me reviewing the information to see how much I remember	.545**	.002
18.	I did not need to have an account	.631**	.000
19.	I found no worries if I didn't not have my own device in face-to face classes	.417**	.022
20.	It's easy as raising my hand	.754**	.000
21.	Accessible via different devices either computer/laptop or smart phones	.564**	.001
22.	It increased my self-motivation towards online learning during COVID-19 pandemic	.790**	.000
23.	It helped me gauge my current level	.833**	.000
24.	It helped me track my progress over a period of time	.574**	.001
25.	It introduced and prepared me well before the COVID-19 shutdown.	.635**	.000

The data calculated in Table 1 indicate that the described correlation coefficients of each item with its question are significant at (0.05); so all the items included are valid for measurement.

Reliability of the Instrument:

To determine the reliability of the instrument, Cronbach's Alpha Coefficient was calculated in this regard. The results show that the value of Cronbach's alpha coefficient for the instrument as a whole is (944.) This indicates that the reliability coefficients of the items are strong.

Thus, the validity and reliability of the instrument were ensured for conducting the study.

Data Collection:

The participants of this study were asked to complete the online survey after practicing Socrative for a whole semester whether in face-to face classes before the occurrence of COVID-19 pandemic or during the online learning due to the complete closure of the university. Out of 230 registered students, 210 responses were obtained.

Results and Discussion:

Results are stated according to the students' perceptions which were assessed through 25 statement items addressed in the survey asking them: (Thinking about HOW *Socrative* helped enhancing your learning, please provide your response to EACH statement below)

Also, they were asked in an open-ended question to express freely how Socrative helps them in enhancing their learning experience and to record any perceived disadvantage. The results in this free question is qualitatively analyzed. For manipulating and analyzing the data, the researcher used the following statistical analyses were used:

Means, standard deviations, and percentages of items. The following table illustrates this.

Table 2. ***Means, standard deviations, and percentages***

NO.	Items	Mean	Standard Deviations	Percentages	Rank
1.	Using Socrative enhanced my interaction during both face-to-face and online classes	4.576	.646	[91.52%	3
2.	Socrative made the classes more interactive	4.571	.730	91.42%	4
3.	Socrative is very easy, straightforward & friendly to use	4.571	.696	91.42%	4
4.	Immediate feedback from Socrative helped me understand where I had difficulty .	4.571	.864	91.42%	4
5.	I got the quiz score and feedback immediately	4.642	.671	92.84%	1
6.	It provided a stress-free quiz so	4.342			

	it positively changed my negative view towards quizzes		.850	86.84%	18
7.	It helped my comprehension of the course concepts	4.385	.811	87.7%	15
8.	Socrative was useful because it introduced a bit of fun into classes	4.566	.661	91.32%	5
9.	I found it a quick tool that helped me check my understanding of each point easily and immediately	4.504	.733	90.08%	7
10.	It gave me more numerous opportunities to check-in content concepts more than the paper-based quizzes.	4.500	.720	90%	8
11.	I became more attentive in class	4.461	.739	89.22%	9
12.	It helped me adjust smoothly the transition from f-2-f to online classes	4.452	.764	89.04%	11
13.	The big easily- made number of Socrative quizzes raised my responsibility towards learning greatly	4.528	.713	90.56%	6
14.	I got the score discretely, which can avoid embarrassment	4.323	.963	86.46%	20
15.	I liked the idea of not being trapped when I made mistakes	4.409	.854	88.18%	14
16.	It made the learning democratic rather than just those who are nominated or who put up their hands to participate in face-to-face classes	4.495	.727	89.9%	10
17.	It helped me reviewing the information to see how much I remember	4.438	.775	88.76%	13
18.	I did not need to have an account	4.309	.919	86.18%	21
19.	I found no worries if I didn't not have my own device in face-to face classes	4.361	.969	87.22%	17
20.	It's easy as raising my hand	4.381	.895	87.62%	16

21.	[[Accessible via different devices either computer/laptop or smart phones	4.333	.817	86.66%	19
22.	It increased my self-motivation towards online learning during COVID-19 pandemic	4.500	.727	90%	8
23.	It helped me gauge my current level	4.461	.789	89.22%	9
24.	It helped me track my progress over a period of time	4.447	.800	88.94%	12
25.	It introduced and prepared me well before the COVID-19 shutdown.	4.628	.773	92.56%	2

A cursory look at Table (2), the overall results score high percentages ranging between (92.8% - 86.2%) which indicate very positive perceptions toward using Socrative as an efficient formative assessment tool.

The item stating "*I got the quiz score and feedback immediately*" takes the highest rank as it scores the highest percentage (**92.8%).** This indicates that one of the main advantages of online quizzes is the immediate score and dynamic feedback given to students after they finish a quiz, task or activity. In this way, the results are more efficient and meaningful because the mistakes and false responses of the students can be corrected more quickly, right at the moment allowing students to reduce the distance between their current performance and desired performance. Meanwhile, it allows them to know what they did wrong immediately, why their answers were incorrect so as to clear their doubts, what they need to focus on, and how to improve their performance.

Likewise, going from manual paper-printout quizzes to smartphone ones, it gives the instructor an overview of scores and automated feedback tracking the progress and the learning gaps, with graphical representation to make the analysis easier to grasp especially when the class size is very large. Such real time data improves the formative assessment process. Thus, both students and instructors can see the progress over time as they see the online quiz scores.

As evident from the figures in Table (2), the statement "*It introduced and prepared me well before the COVID-19 shutdown*" scores the second rank and accounts for (92.5%). The result reveals that the students' previous knowledge and practice of such online tool before the COVID-19 lockdown had a major positive impact on the student's view towards overcoming the critical pandemic period of COVID-19 . This an overwhelmed indicator implies how it was a useful tool for preserving students' interest during the pandemic and facilitating their learning.

Next to it is the statement "*Using Socrative enhanced my interaction during both face-to-face and online classes*" which scores the third rank with a percentage of (91.5%). Profoundly, having interacted with Socrative quizzes and contests, the participants have been more likely engaged and attentive. Luckily, under the sudden transformation to remote learning, such tool succeeded in bridging the gap between the conventional learning contexts and the virtual one. In this sense, it boosted an interactive non-dull online environment and facilitated actively their engagement through online exercises.

Next statements *"Socrative made the classes more interactive", "Socrative is very easy, straightforward & friendly to use" and "Socrative was useful because it introduced a bit of fun into classes*" score 91.4% which is very close to the percentage of the above previous one. Surely, quizzes and activities should first and foremost track students' progress but fortunately, Socrative proved to be fun, flexible and unique too. Its friendly layout and simple straightforward usage attract the students as well as it breaks the routine of introducing activities. A fun way the students have experienced through Socrative was hosting "Space Race." *A Space Race* is a competitive format for quizzes. It can be played as a team or individual activity. Each correct answer moves a rocket ship across the screen. The first person or team to get their rocket across the screen wins.

Going to next rated statements, they score also high percentages above 90 which are close to the percentage of the above one. They are respectively: "*I found it a quick tool that helped me check my understanding of each point easily and immediately", "It gave me more constant*

opportunities to check lesson concepts more than the paper-based quizzes" and *"It increased my motivation towards learning".*

Then these responses highlight that Socrative provided the students with numerous opportunities of constant checking their comprehension of the content. This is a stark contrast to traditional styles of teaching, where students are expected to sit passively and absorbing information presented by the instructor without any kind of formative reflection. Students learn more when they participate in the process of learning and that raise their motivation towards learning.

As it is conspicuously seen in Figure (2), the rest statements score not less than 86% which reflects how Socrative is powerful tool in enhancing the students' interactivity and raising their responsibility towards learning. Notably, the students found it stress-free as they didn't feel negatively about having wrong answers as can happen in front of the class. This creates a very safe non-threatening learning environment that is ideal for real improvement. Likewise, they indicated how the learning process is democratic rather than just nominating who put up their hands to participate in class. Besides, the participants showed how it serves as an ice-breaker in their learning for having enormous opportunities to apply knowledge instead only testing this in front of the class or in summative exams. It can be indicated that the students had a whole opportunity to assess how they performed to attain the outcomes of a specific topic.

Open-Ended Responses in Evaluation:

Evidently, open-ended responses supported the statements given in the survey, which emphasized the positive impression towards using of Socrative as it is conspicuously clear in some of the comments below:

- *Cool tool that activated my learning!*
- *It's easier than paper and makes English language easier to learn*
- *It stimulated my motivation of language learning and kept me attentive every class*
- *I got the opportunity to evaluate my comprehension and know my strenghts and weaknesses*
- *It has been a great experience that made me love English more*
- *It made online learning dynamic and interactive.*

- *It well- prepared me to online tools before the COVID-19 lockdown*
- *It broke the ice for interacting in the class*
- *Very creative to have a quiz on my phone*
- *Waiting for the quiz every class*
- *It broke the routine and made me overcome my fear towards learning English language.*
- *It enhanced new skills and I loved getting my score directly and getting feedback immediately.*
- *It helped me a lot in revising the material class by class*
- *I love the contests on Space Race on Socrative*
- *Super fun & interactive app.*
- *Upgrade my level in learning English*
- *I felt more confident in communicating in English in front of the class*
- *I felt that I had freedom to participate in my own learning experience*
- *I hope to use it in the coming semesters & other courses*
- *Very effective for capacity building and langauge development*
- *Keeping me up moving forward under the new conditions*

The only limitation recorded was about the technical issue as the network sometimes might not work or it might be poor. However, the teacher managed to give more than one chance to overcome this challenge as much as it could be possible.

Conclusion:

To sum up, the majority of students have positive perceptions on the use of *Socrative* especially it smoothed the unexpected transition from the conventional learning environment to adapt the virtual one. The overall results indicate that students found their learning more interactive, useful and dynamic. In this sense, providing valuable immediate feedback to the students, one on one, enabled them assessing to what level they accomplished the intended learning outcomes in real time, helped them to work on their personal growth as well as improved their academic achievements. Further, the respondents ' high preference of more use of such tool confirms what has been noted by most studies showing the benefits of using Socrative in education. It assures how it is important for educators to put their efforts creating meaningful vibrant convenient learning environments through exploiting such EdTech tools in different synchronous and asynchronous activities.

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