

EVALUATION OF ONLINE STUDENT RESPONSE SYSTEM: SOCRATIVE APP TO FACILITATE STUDENTS IN ACTIVE LEARNING OF PHARMACOLOGY

Saba Batool^{1*}, Bushra Shaheen², Noaman Ishaq³, Filza Ali⁴, Qurat ul Ain Mehdi⁵, Sana Shah⁶

ABSTRACT

Background: Use of Information technology, web-based software and smartphone's applications are being incorporated in the current education system in various medical institutions of the world. In Pakistan, Medical educationists have also introduced modern trends to improve our teaching methodologies and assessment modalities. To explore what learners perceive about the change of traditional to web-based teaching strategies, surveys should be conducted. So, we can find out the benefits and drawbacks of these softwares and upgrade our strategies in medical education.

Objective: The study was designed to evaluate the perception and understanding level of students regarding online student response system based Socrative application for active learning.

Methods: During the 50 minutes of our Pharmacology class/ tutorial, the first 40 minutes were specified for interactive session, and the last 10 minutes were utilized for Socrative App. After concluding the session, students were asked to attempt some quizzes available on Socrative App installed on their mobile phones. By the end of the module, students were directed to fill feedback forms and their responses were assessed. Data was analyzed by the SPSS-20 for frequency and percentages.

Results: Ninety eight students participated in the survey. Most of the students (90%) were of the opinion that they enjoyed solving questions on Socrative. Eighty percent students stated that web-based learning is more effective than traditional lectures. About 85% of our students responded in favor of this application; 85% considered themselves to be more actively participating, and 96% felt more encouraged and motivated. Furthermore, 97% of the participants were of the opinion that this software improved their understanding skills.

Conclusion: Students were pleased with blending of conventional and online facilitation. Incorporation of mobile based applications made the learning environment more interactive as compared to the conventional teaching methods.

Keywords: interactive learning, medical education, smartphone, Socrative application

INTRODUCTION

Information technology has become a pivotal element in the practice of medicine¹. In addition to its use in diagnostics and interventions, its utilization in medical education is broad and still not fully acknowledged. We can improve our teaching

modalities using e learning with the use of various applications that facilitate active learning and enhance students' engagement and critical thinking skills². Emerging technologies are likely to have gross impact on teaching, learning and creative inquiry in medical education³.

Digital devices, computer software and smartphones applications are helping us to transform our traditional class room to online modern class room. Likewise, these modalities are improving our educational system to become more approachable, dynamic and cost effective for all socioeconomic groups⁴. Recent studies are showing that the use of smart phones offers new opportunities for medical education improving the participation and performance of medical students. Several institutes, universities and medical education worldwide have adopted this latest trend in the use of mobile applications to enhance the learning of medicine in undergraduate students⁵. With the development of online web-based education, different applications have been developed. In Medical Education, “Socrative”, a recently developed software is now being extensively used to assess learning patterns and can be effectively used on digital devices like smartphones, laptops and desktop computers⁶. Socrative, initially named as an audience response system, an online application which allows the learner and facilitator to instantly connect to one another. By the use of this application, a facilitator can design quizzes that comprise of different types of questions, for example, multiple-choice (MCQ), true/false, closed-ended, and open-ended, and then share these tests with the pupils or other facilitators⁶. Teachers and facilitators can quickly assess students’ responses and activities with just one click and get an immediate insight into students’ perception and understanding of the topic. The results are automatically arranged at the end of the assessment session and help the facilitator to compile the results and design new instructional approaches for future⁷. In CMH Multan, Institute of Medical Sciences, the Pharmacology Department introduced this new online system and took multiple formative assessments by the end of lecture on this application. We planned this study to find out students valuable feedback about the perception of this online teaching and assessment tool, their concerns and suggestions regarding this application and how well they

acknowledge the web-based sessions and assessments.

METHODS

This cross-sectional study was carried out in Pharmacology Department of CMH Institute of medical sciences, Multan. Third year MBBS students were enrolled in this study. The survey was performed from January to March 2021. The class had strength of 102 medical students including both male and female students however 98 students have participated in the survey. Participation was voluntary and anonymous. The context of the study was General Pharmacology during 1st module that comprised of 12 lectures/tutorials of 50 minutes duration each. The lecture halls had the facility of free internet connections, and students were directed to install the Socrative Student app to their mobile phone devices before the start of the module. The instructors, too, installed the version of this application specifically designed for Teachers. After the completion of registration protocols, a class code number was shared with the instructors. All the students were given a full orientation of the software. For every topic discussed during lecture, we designed short online quizzes consisting of multiple choice question (MCQs), true/false, and short answer questions in the Socrative application. All students were asked to sign into their Socrative accounts at a fixed time and tests were ended after a fixed period of time. Only the facilitator could initiate or decline the test. Students had been briefed that the marks secured in these quizzes would not be considered in the modular assessment. Towards the end of the module, a survey-based questionnaire was distributed to obtain student’s feedback on incorporation of Socrative into the lectures. The objective of the research was explained to the participants and consent was taken. The items were analyzed using a Likert scale which read from one (strongly disagree)

to five (strongly agree). The circulated questionnaires were in accordance with those used by other

researchers ⁷. Ten minutes were given to fill the questionnaire. Responses were entered and analyzed.

RESULTS

In this study, 98 students voluntarily participated. They were encouraged to use the application in their own devices. The responses of the participants were tabulated using percentages. On asking whether they liked using Socrative to answer questions during session, most (90 %) students agreed to strongly agreed to the statement. However, few of them

mentioned that it was not convenient for them to answer the question during session. On asking whether they have found this learning experience more effective than the traditional mode of lectures or not, most of them (88%) were agreed and strongly agreed to the item. Most of them (91 %) were happy and satisfied with the use of Socrative online application. Table-1

Table 1: Student' experiences in using socrative

No.	Item's statement	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
1	I liked using Socrative to answer questions during session.	73	17	6	2	1
2	It made the learning experience more effective compared to traditional lectures.	67	21	9	2	0
3	It allowed me to stay interested during session.	63	29	7	1	0
4	I felt more actively engaged in sessions.	62	23	10	3	1
5	It encouraged me to participate more in session.	76	20	3	1	0
6	It motivates me to be more prepared for session.	81	16	2	1	0
7	focus on knowledge during session	49	44	5	2	0
8	It enhances my understanding in this module	57	40	2	1	0
9	recommend the use of Socrative to others.	70	17	8	4	0
10	Satisfaction level.	79	12	9	0	0

DISCUSSION

Smartphone technology is an emerging mode of interactive learning and can be applied as a method for teaching and assessing medical students⁸. The use of this web-based application can increase the involvement of students during lectures and encourages their learning behaviors by engaging them in solving clinical case scenarios related to Pharmacology. In this survey, most of the students gave a valuable response towards this new teaching innovation. Most study participants liked to answer queries by the use of Socrative application on their mobile phones. This convincing response of students towards a mobile-based SRS is supported by the literature presented by Batool et al (2018)^{1,4,9}. Students experienced greater interactive participations, were more engaged and maintained a higher interest level throughout the lectures. Moreover, it emphasized them to focus more on the conceptual knowledge delivered by their instructors. Our findings are also supported by recent studies that portray greater student involvement, interactive atmosphere, and focus with the use of online tools². The results of our study are in accordance with Abdallah¹⁰, who reported that 85% of students were convinced that the use of Socrative App in lectures motivated them to participate more and hence resulted in enhanced understanding and better learning outcomes.

As facilitators, we found that Socrative App was user-friendly, and there were no complications with registration protocols, login, formatting quizzes, analysis and interpretation of scores. We are of the opinion that that the 'Instant Feedback' option available on Socrative was time saving and a paperless feature, as it calculated the students' scores right after they submitted. The students who chose the incorrect answer, we were able to explain the correct one due to quick response. Moreover, by assessing the options our students had chosen, we could assess the level of understanding of our pupils, and then arrange discussions and improve their concepts in remaining lectures of the module accordingly.

Smartphone technology can improve learning behaviors and can be used as a means for assisting in interactive teaching methods and assessment of medical students¹¹. The use of this web-based application can increase the interest level of students and improve their learning outcomes by making them solve clinical case scenarios related to Pharmacology. This tool is also convenient, reliable, self-sufficient and valid regarding planning and conduction of both summative and formative assessments. Our results are consistent with work of Yağci and Unal¹². Cui and his colleagues presented a randomized controlled trial carried out in China. In their work, the performance in online testing system and paper-based written testing system was compared. It was found that both systems had comparable and valid effectiveness of difficulty coefficient, distinguishing coefficient and reliability¹³. Moreover, online assessments improved the feedback of both teacher and the facilitator¹⁴. We also found that students have enjoyed this way of engaging during teaching sessions. However, socrative App requires uninterrupted internet access to every student during conduction of assessments¹⁵. Secondly, its reliability is dependent on the users that how they use it. Proper teacher and student training is mandatory for complete understanding of this web based application¹⁶. In view of our study, facilitators should encourage the use of mobile-based applications during their sessions. Probably such innovation in the delivery mode will make students' learning more active, effective and economical.

CONCLUSION

Technology can enhance learning and the use of mobile applications like Socrative can be used for teaching. Most of the students who were a part of our study gave a positive response for the utilization of such methods in their education and felt it did help learning and participation.

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