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Positive Trend Shifting to Online Assessments: A Review of Using Socrative in Medical College, Its Advantages and Challenges Faced

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Abstract

Background: Information technology, web-based software and applications are being used in the modern education system in many parts of the world. This trend although new, is welcomed by many but has also many drawbacks as well as benefits. To find out what students perceive about this shift of traditional paper-based assessment system to web-based assessment system, surveys should be carried out. These surveys will not only help us discover the point of view of direct users but would also help change and improve educational programs and policies in education.

Objective: We aimed to evaluate undergraduate medical students' perception about online assessment systems in medical education.

Methods: A new online assessment system "Socrative" was introduced for Pathology assessments among undergraduate medical students of year three and four MBBS (Central park Medical College Lahore Pakistan). Students were informed about this new application and online assessments were done. Students were given a questionnaire to find out what they perceive about this new assessment system, and its advantages and disadvantages.

Results: 208 students participated in the survey. Most of the students (60%) stated that it is convenient for them to read questions on screen and the diagrams given with the questions were very helpful during assessment. 46% students stated that web based assessment is easier to attempt as compared to written one and most students were satisfied with the features of Socrative online application. Despite all the positive reviews about online assessment, only 13% of the participants agreed that they will choose online assessment over written while attempting multiple choice questions and short answer questions.

Conclusion: Undergraduate Medical students were happy with this new online assessment but were not ready for a rapid shift and complete elimination of paper-based assessment system. Further studies should be done to find out teachers as well as students' perception about introduction of new assessment systems in health education.

Keywords: MEDICAL EDUCATION, ONLINE ASSESSMENT SYSTEM, PAPER BASED ASSESSMENT, SOCRATIVE

Journal of Medical Education Summer 2018; 17(3):160-167

Introduction

Over the last thirty decades, our world got

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familiarized with computers and information technology. The extensive use of this technology has currently become the soul of almost all activities. People own their personal mobile phones, laptops, and digital devices that carry extensive computing power (1). In addition to facilitating daily domestic and business activities and providing entertainment, these

digital devices and computer software have helped us improve our education system also. Information technology system and internet have changed the typical image of education, taking it out of the traditional class room and making it approachable, dynamic and more affordable by all socioeconomic classes (2). Online or computer-based education systems mainly comprise online educational credit courses offered by universities, online professional training and certification courses and online assessment systems for students. In the early 1900s, electronic learning was introduced as an innovative technique and involved web-based learning, distributed open access learning to everyone and virtual learning (3).

The shifting trend of education from traditional classroom learning and assessment to web based online learning led the Government of Pakistan to introduce online assessment for matriculation in the province of Punjab recently. A huge number of students appeared in this new assessment method, understood it clearly and also welcomed this new technique (4). This computer-based assessment system has also been introduced in medical education of Pakistan recently. The college of physicians and surgeons has changed the written assessment system to online system recently. The online assessment system needs special software applications. With the development of online web based education, thousands of applications have been developed by engineers. "Socrative" is one of the newly developed software utilized for assessment which is platform independent and can easily be used on Android devices, iphone operating system and desktop computers.

Socrative is an online application which allows the student and teachers to instantly connect to one another. This application allows teachers to quickly assess students' 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

teacher develop and design new instructional approaches which best suit the students (5). In Central Park Medical College Lahore, the pathology department introduced this new system and took multiple assessment tests on this application. We designed this study to find out students and teachers' perception about this web based assessment method, their reservations and suggestions regarding this new application and how well they understand the web-based assessment system.

Materials and Methods

This was a cross-sectional study conducted in the department of Central Park Medical College, Lahore. Socrative is being used in the Pathology Department since January 2017. We conduct monthly multiple choice questions using Socrative. Students were given a full orientation of the software and then tests were uploaded on the software. All students were asked to sign into their Socrative accounts at a fixed time and tests were ended after a fixed time period. Only the teacher was able to start or stop the assessment. We designed a questionnaire including queries regarding web-based assessment methods, Socrative application, how well the students and teachers understand the system, and drawbacks and advantages of online assessment systems. Undergraduate students of third and fourth year MBBS were selected for this study (only Pathology Department was using this system at the time of survey therefore only the concerned students were included in the study). A pre-designed questionnaire (Annexure 1) was distributed to students. The objective of the research was explained to the participants and consent was taken. All the participants were assured that their identity would remain confidential. 15 minutes were given to the participants to fill the questionnaire. Responses were entered and analyzed using SPSS 23.0 and Univariate analysis was performed. The survey was carried out in the month of March 2018.

Results

In this study, 208 students participated. All the students had used Socrative software at least 3 or more time in college. The responses of students were recorded using percentages. On asking whether it was convenient for students to read the questions on the computer or phone screen while using Socrative, most (60%) students agreed to the statement. Only a small percentage of students 6.7% mentioned that it was not convenient for them to read questions on their digital screens. During tests, diagrammatic illustrations were provided with some questions to improve the students' understanding. On asking whether these illustrations help them in the better understanding of questions, none of the students disagreed with the statement, 66.7% and 26.7% agreed and strongly agreed to the statement respectively, showing that students found these diagrams very helpful. Students showed mixed responses when asked to draw comparison between written and online assessment. 46% of the students stated that web-based assessment is convenient than written assessment and

40% of the participants had opposite view. Socrative application allows the students to skip a question and leave it for later attempt. More than half of the participants (53.3%) strongly agreed that this tool is very helpful and only a minimal percentage of 13.3% strongly disagreed that this aspect of application is helpful at all. (Figure 1)

All students were given a complete orientation of this online assessment program before starting the test. On asking the participants on whether they were able to completely understand the application at first stance, 46.7% of the participants mentioned that they were not able to understand it completely at first point and 43% stated that they completely understood how to use the application after first use. Most of the time our department carries out assessments consisting of 60 to 65 multiple choice questions per test and one minute is given for each question. At the end of this time period teacher logs out and end the assessment session for his or her account. Students have to be online during all this time (they can log out if they have finished the test early) and stare at the screen for continuously 60 to 65 minutes in order to read and attempt questions. We asked

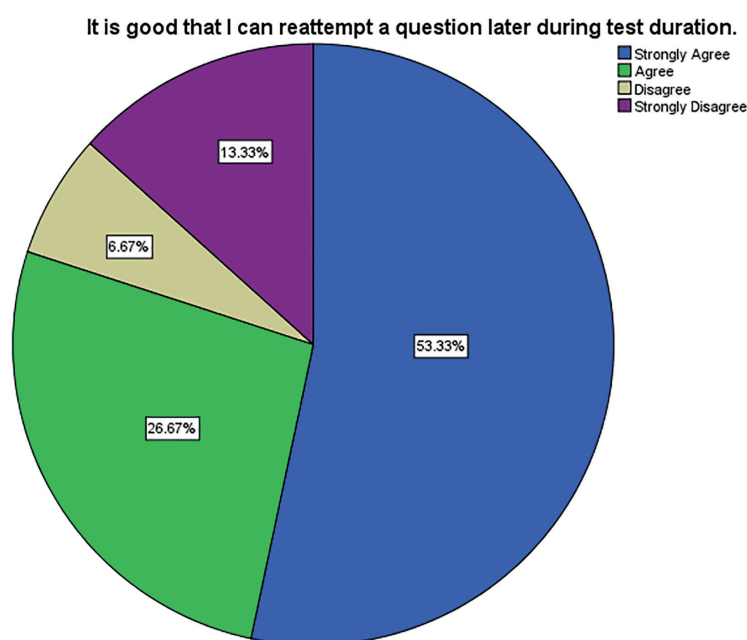


Figure 1: Students' view about option in online system to attempt questions later during test

the participating students whether it was uncomfortable for them to stare at the screen during all this time. 80% of the participants strongly agreed or agreed to the statement that looking at the screen continuously for 60 minutes causes discomfort for eyes. 66.7% of the participating students agreed that Socrative provides user help if any problem occurs during test conduction.

The Pathology Department of Central Park Medical College allowed the students who were not able to attend the assessment due to medical or emergency reasons to participate in the test while sitting at home by simple logging in the application at the beginning of test. All the students found this aspect of the application very useful because they were able to appear in the test from anywhere in case of medical emergency or special circumstances. Almost half of the students (53.3%) did not feel confident about the security of their responses and identity while attempting test online. Students did not prefer web-based online assessment system over traditional written assessment and 60% disagreed that they will choose online assessment over written while attempting multiple choice questions and short answer questions (Figure 2)

Discussion

In our survey, undergraduate students gave a positive response towards this new assessment system. Most of the students accepted and welcomed this new change of online assessment system. The web based educational programs can also be helpful in improving students overall academic performances. Many studies have been conducted all over world to assess the effectiveness of web-based assessment program. Bebell and coworker compared the performances of students studying in different schools. One group of schools offered laptop programs in schools and the other group had the old traditional educational and assessment system. They discovered that the students who were participating in online educational programs on their laptops showed improvement in grades when compared to the students studying in the schools not offering any such online education. The group of students who were using laptops in their schools utilized their digital gadgets in internet browsing, presentation making, doing homework or taking tests. On the other hand the control group having no laptops or web-based educational program had no such

I will prefer online assessment system over traditional written one both in multiple choice questions and short answer questions

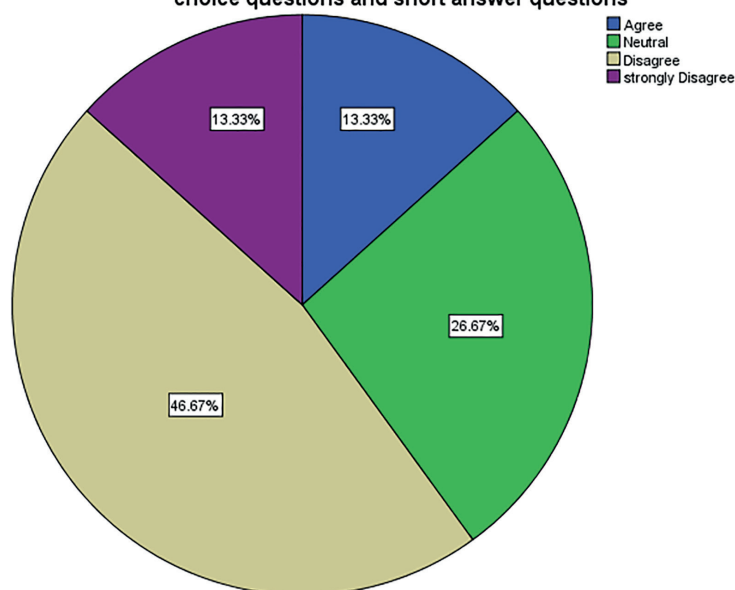


Figure 2: Students' preference of mode of assessment

opportunities. The teachers using laptops or having access to internet had innovative teaching techniques as compared to the instructors having no internet access (6).

In 2015 a randomized controlled trial was performed on clinical nurses in China. Their performance in online testing system and paper-based written testing system was compared. It was found that both systems had valid and comparable quality in terms of difficulty coefficient, distinguishing coefficient, and reliability. The candidates appearing in online assessment spoke highly of its effectiveness. The research suggested that online tests can be used as a dependable replacement for traditional paper-based assessment (7). In another study the researchers examined the students' performances using online versus paper-based testing system. The results of this study indicated that testing procedure did not affect performances of students in tests or study efforts to prepare for tests (8).

Yağci and colleague published a paper in 2014 on how to design and implement an online adaptive examination system. They concluded that the online examination system helped set questions automatically and more interactively for each student. In online systems difficulty index of questions can be measured, require less time and is more flexible in nature. They stated that online adaptive assessment systems are self-sufficient in terms of planning, test repetition, result compilation and helps the students enroll in distant learning programs (9). Many studies have been conducted worldwide to evaluate student inclination towards computer-aided assessment system. A recent study was conducted in South Africa to find out the benefits of online formative assessment (10). This study revealed that most of the students praised computer based assessments and students find online discussion forms informative. The students participating in this study stated that computer aided assessments are flexible, involve improved student commitment and have a faster feedback (10). Another study conducted in Pakistan involved

various students from different universities to investigate their perception regarding computer based assessments. The authors concluded that students had a high inclination towards online assessment system and among all participants, female students showed more positive attitude towards online exams as compared to male participants. The students stated that computer-assisted assessment system is time saving, interesting and gives unbiased results (11). A study exploring different factors affecting the use of technology among teachers and students revealed that both teachers and students were inclined towards the use of technology in lesson planning and assessments (12).

Some researchers in the University of Westminster London explored undergraduate and postgraduate students' views on integration of information technology with face-to-face teaching. The students enrolled in this study expressed that online methods of teaching must compliment face to face classes. They stated that online teaching approaches led to greater learning stimulation, give more opportunity to think and are extremely helpful to shy students who could not ask questions directly in class (13). An Arab study conducted to assess the use of mobile technologies among students revealed that students were highly interested in the utilization of mobile technologies for performing their task and also used mobiles to evaluate their instructors as per the university policy (14). Another study concluded that students having higher appraisal of their competence were more inclined towards used of information technology during studies as compared to the students with lower level of competence (15). The students stated that online study material were more readily available and computer based assessment and learning is more attractive and allows easier contact with teachers (15).

Online assessment system in medical education has many advantages and disadvantages. While talking about advantages it gives instant results at the end of assessment, teachers can monitors students' performances more

effectively and it saves time, man power and paper/ink consumption. On the other hand some of the disadvantages are high cost of software applications and reliance on internet access and technology which is sometimes unreliable (16). Traditional paper-based assessment systems can be replaced by web-based assessment but it requires more studies to find out whether the advantages outweigh the disadvantages. Students' and teachers perceptions about different assessment systems is also important because this new system may be liked by many but a rapid shift from written assessment to web-based will not be accepted if introduced immediately. Proper teacher and student training are also important to give them orientation and complete understanding of online system. In our survey, students were able to understand online Socrative assessment application and liked many aspects of online system but they did not prefer online over written assessment.

Conclusion

In paper-based testing system paper arrangements, printing and checking assessments by respective subject teacher is required which involves man power and time. Conducting assessment through online assessment applications like Socrative will not only save time and paper but also help teachers manage work load in other constructive academic activities. Online assessments and online classroom system will help break education barriers and also promote distant learning in areas with no access to education. Orientation programs to improve awareness regarding use of online assessment system among teachers and students in medical colleges should be arranged so that this methodology can be introduced in medical schools as soon as possible.

Conflict of Interest

The author declares no conflict of interest.

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ANNEXURE I:**Questionnaire Socrative****Student Name:** _____**Class:** _____**No of times I have used Socrative:** _____**Date:** _____

		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	It is convenient to read (4-6) lines of questions on computer screen					
2	Images provided with questions help to increase understanding					
3	It is convenient to attempt a MCQ by mouse click rather than paper based assessment					
4	It is good that I can reattempt a question later during test duration.					
5	The step-by-step working of socrative is easy to understand at first use and later					
6	Looking at screen for upto 60 min causes discomfort					
7	Socrative provides Help/Guidelines if a problem occurs					
8	It is more useful that I can attempt assessment from anywhere (under special conditions)					
9	I feel confident about the security of my response and result					
10	I will prefer online assessment system over traditional written one both in multiple choice questions and short answer questions					