

Original Article

Training Future Doctors on Screen a Hit or a Miss During Covid

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Objective: Research was conducted amongst undergraduate medical students to compare how their scores and performance differed when assessed online with various tools like Socrative and Zoom and at the bedside in real time.

Methods: Data was collected from exam records of 48 students retrospectively and results were compiled.

Results: It was observed that 62.5% students scored above 70% in the socrative scoring and a gradual decrease was observed in as 39.6% scored above 70% by zoom scoring while only 2.1% in real time scoring system.

Conclusion: We concluded that bedside teaching and clerkship is a significant contributor to student performance. E-learning, while has revolutionized teaching in covid times, needs to be modified in ways to accommodate this aspect.

Keywords: E learning, Clinical skills, medical education.

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Introduction

As the world goes through the second summer in the pandemic, it is vital to discuss how learning and teaching patterns have undergone a massive change over the last 15 months or so since the global COVID-19 crisis began.¹ Education is undergoing a historic moment² where teaching has moved from classrooms and lecture theatres to the computer screens of the students at their homes. In the case of undergraduate medical education, a very important aspect of training especially in their final year MBBS as they embark upon their medical journey and officially become doctors, ready to practice, is Bedside Teaching that involves demonstration of real-life cases and patients' profiles.³

The main purpose of the medical curriculum is to ensure that students acquire knowledge, clinical skills and the correct attitudes for their practical role in the community.⁴ They also need to develop interpersonal skills to be able to gather from and transfer information to their patients while working as a part of a medical team.⁵ As the first wave of COVID 19 hit in March 2020 in Pakistan, all educational institutes were closed down according to the Governments' Directive and teaching was shifted to e-learning including social media platforms like Facebook and YouTube Live lectures and other modalities like Zoom meetings and Google class-

rooms which was a completely new experience for both the faculty members as well as the medical students.⁶

Alongside imparting knowledge during these online classes, we had to come up with methods to assess their learning by conducting regular daily tests, end of rotation clinical tests that would usually be done on the bedside in real life situations and during a very brief period when classes were allowed physically on campus with strict SOPs, students were assessed in conventional ways.⁷

During the teaching sessions, students were tested on Socrative cloud-based student response system that allowed creation of simple quizzes that they were able to take quickly on laptops.⁸ While Socrative remained a tool for formative assessment, monthly quizzes on Zoom Meeting were also carried out where questions were shared live by the examiner and students asked to answer in the premeditated time frame as a means of summative assessment.⁹

Rationale: The purpose of this study was to compare the student scores on all of these various testing platforms and the difference in overall performance.

Methods

The study was conducted over a span of 8 months,

from April '2020 to November' 2020 at Akhtar Saeed Medical and Dental College, Bahria town, Lahore (ASMDC).

We compared 48 students of final year MBBS who were taught by 3 different consultants in the department of medicine, ASMDC, mostly on the platform of online classes via e-learning and for a short time during real time classes conducted within the hospital premises. They were examined with all 3 modalities of assessment including Socrative quizzes, Zoom interactive quiz sessions and bedside tests. The competencies assessed included Laboratory Data interpretation including blood biochemistries, blood gas analysis, etcetera. Understanding of investigations like ECG, X ray and CT scans was also assessed. Clinical skills, student confidence and communication abilities were assessed by the examiners during the bedside tests.

During evaluation, it was ensured that Examiners' bias was overcome by randomly allotting students to the three examiners during their zoom and bedside tests. Socrative was a computer-based quiz with no live interaction with any examiner.

Results

A total of 48 students were analysed in this study showing highest mean grading socrative score as 68.67±18.23 followed by zoom score as 59.44±19.06 with real time as 53.48±16.57 as shown in Table 1.

Table 1: Mean Grading Scores by Category

Category	Mean	Standard Deviation
Socrative %	68.67	18.23
Zoom %	59.44	19.06
Real Time %	53.48	16.57

Paired sample test was used to observe the difference among groups and a significant difference was observed (p-value <0.05) among all groups where scores in socrative grading remained highest and significantly high (p-value <0.05) in socrative grading as compared to zoom and real time grading scores. Zoom grading scores also remained significantly high (p-value <0.05) as compared real time scores as shown in Table 2.

Table 2: Comparison of Grading Categories using Paired Sample Test

Pair Description	Paired Samples Test						t	df	p-value Sig. (2-tailed)		
	Paired Differences				95% Confidence Interval of the Difference	t				df	p-value Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean								
Socrative % - Zoom %	9.22917	17.39802	2.51119		4.17731	14.28102	3.675	47	.001		
Socrative % - Real Time %	15.18750	20.88026	3.01381		9.12450	21.25050	5.039	47	.000		
Zoom % - Real Time %	5.95833	19.79250	2.85680		.21119	11.70548	2.086	47	.042		

Pearson correlation was also done to observe the difference of scores with each other among all grading systems and a significant difference (p-value <0.05) was observed in 2-tailed correlation as shown in Table 3.

A grading system was defined as A (≥70% scores), B

Table 3: Pearson Correlation of Scoring Systems with Each Other

		Correlations		
		Socrative Grading	Zoom Grading	Real Time Grading
Socrative Grading	Pearson Correlation	1	.493**	.404**
	Sig. (2-tailed)		.000	.004
	N	48	48	48
Zoom Grading	Pearson Correlation	.493**	1	.357*
	Sig. (2-tailed)	.000		.013
	N	48	48	48
Real Time Grading	Pearson Correlation	.404**	.357*	1
	Sig. (2-tailed)	.004	.013	
	N	48	48	48

** . Correlation is significant at the 0.01 level (2-tailed).
* . Correlation is significant at the 0.05 level (2-tailed).

(51%-69% scores) and C (≤50% scores) and it was observed that 62.5% students remained in A grade by socrative scoring and a gradual decrease was observed in as 39.6% in A grade by zoom scoring while only 2.1% in real time scoring system and vice versa in B and C grades as shown in Figure 1.

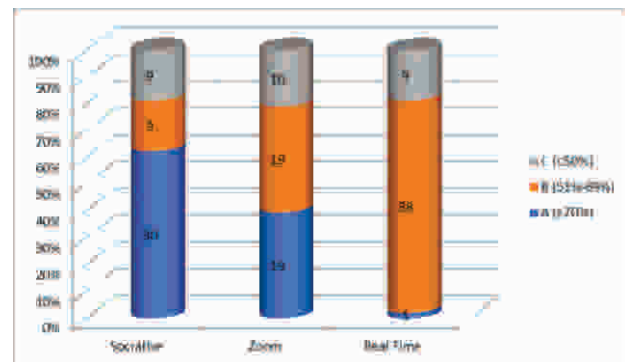


Figure 1: Comparison of Grades in Scoring Systems

Discussion

Clinical skills assessment includes the student's interaction with real life patients who have abnormal physical findings, that need to be identified by the candidate as well as interpreted in the light of his/her medical knowledge to reach a probable diagnosis and formulate a management plan.^{10,11} The entire interaction with the patient relies on the student ability to effectively communicate with his/her patient.¹² This is an extremely vital competency tool that is assessed for all medical students especially in their final year of undergraduate training before they emerge as doctors and start practicing and serving to their profession.^{13,14} The limitation of both Socratic and Zoom assessments was the fact that these modalities were unable to evaluate the students in this regard. When students were tested at the patient's bedside in real time, the examiners were able to judge their clinical and communication skills as well as their patient interaction. The results then reflected that the online mode of teaching as well as evaluating the students showed a significant difference in the student performance, which was the weakest in the real time group. A very important aspect of examiner bias¹⁵ also needs to be factored in that when the examiners got a chance to physically observe the students on the bedside, the results differed. This was augmented by the nervousness and the anxiety that students experienced while facing the examiner.¹⁶ Students have seemed to perform the best when there was no or some interaction with the examiner as in the Socratic and Zoom tests but both only focusing on testing theoretical knowledge while when they were tested on their patient interaction skills, their scores significantly dropped.

Limitation of both Online tests was poor connectivity and technical difficulties that the students faced that prevented them from effectively participating in their assessments.¹⁷

Several studies have been conducted in the past year or so evaluating the impact of E-learning methods and use of various teaching tools to improve delivery of undergraduate medical education with an aim to make up for the compromised bedside learning.^{18,19}

Conclusion

Online teaching gained popularity in a short span of time, and provided an initial insight into new and innovative ways of teaching for medical education,²⁰ undergraduate training may perhaps be incomplete without exposing these students to real life situations for them to be able to really learn the art of medicine, which starts with a good interview²¹ from the patient about his illness and then correlation of his physical findings and his investigations.²² Implementation of Clerkship

in the covid-19 era may be a challenge but remains a vital component of the medical education and training. Therefore, methods must be devised to include bedside teachings during the penultimate years of medical training.²³

Conflict of Interest

None

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