

# IS THE PEN MIGHTIER THAN THE KEYBOARD? STUDENT ENGAGEMENT, LEARNING, AND SATISFACTION IN ONLINE TEACHING

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## ABSTRACT

**Objective:** This study was conducted to determine student engagement, learning, and satisfaction from online learning and teaching at Rehman Medical College (RMC), Peshawar, Pakistan.

**Materials and Methods:** A cross-sectional study was conducted using a convenience sampling of faculty members and students at RMC. An online closed-ended questionnaire, with a 5-point Likert scale, validated through a pilot study, was sent to faculty members and students about the students' engagement (3 questions), learning (6 questions), and satisfaction (3 questions) in online classes. Incomplete questionnaires were not included. Data analysis was done using SPSS-22 for descriptive statistics.

**Results:** A total of 64 students (43, 67.2% male, and 21, 32.8% female) and 32 faculty members (17, 53.1% male, and 15, 46.8% female) responded to the online questionnaire. The data were collected under three themes for online education: student engagement, student learning, and student satisfaction. A newly developed tool was used, with a Cronbach's alpha of 0.96 found through a pilot study. The highest disagreement was observed for Student Engagement (Attention 81.2%, Interaction 75%, Effort in Learning 68%) by faculty, with no significant difference between male and female members ( $p > 0.05$ ). Students also showed major disagreement with online engagement (Attention 59%, Interaction 54% and Effort in Learning 58%). No significant difference was found between male and female students ( $p > 0.05$ ). Faculty showed more disagreement across all three themes than students.

**Conclusion:** There are concerns of faculty and students for online student engagement, learning, and satisfaction, indicating a need for robust training, monitoring, and provision of online facilities.

**Keywords:** Medical Education, Online Teaching, Student Engagement, and Learning.

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## INTRODUCTION

The rapid advancement of technology has transformed educational delivery, bringing online and blended learning into mainstream higher education. This shift became particularly evident during the COVID-19 pandemic, when the adoption of online platforms ensured continuity of instruction worldwide and compelled institutions to reconsider traditional teaching models.<sup>1,2</sup> Compared to

conventional classroom settings, online education offers flexibility, autonomy, and accessibility, allowing students to participate from anywhere while also placing greater responsibility on them for managing their learning.<sup>3,4</sup> Student engagement, encompassing participation, involvement, and connectedness, remains central to the evaluation of learning effectiveness in these evolving modalities.<sup>5</sup>

Despite its benefits, online education is not without limitations. Learners often encounter challenges such as unstable internet connectivity, inadequate technical infrastructure, and reduced opportunities for meaningful interaction-issues that can compromise engagement and satisfaction.<sup>6,7</sup> In medical education, the inability to replicate authentic patient interactions and hands-on clinical skills training remains a particularly critical concern.<sup>8</sup> Nevertheless, evidence suggests that integrating well-structured

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online components with traditional approaches may enhance student learning experiences and provide valuable flexibility for both learners and educators.<sup>9,10</sup>

The integration of technology into medical education necessitates a systematic examination of its impact on student learning experiences. Although web-based education has gained global prominence, in Pakistan it remains a relatively nascent practice, predominantly restricted to synchronous lecture delivery via platforms such as Zoom, Microsoft Teams, or Google Meet. Rehman Medical College provides a distinctive context for studying this phenomenon, as it actively promotes blended learning and offers structured training and orientation in online teaching and learning. Within this evolving landscape, it becomes imperative to investigate student perspectives on engagement, learning, and satisfaction in online classes in order to generate evidence that may inform the effective advancement of digital education in the country.

**MATERIALS AND METHODS**

A cross-sectional questionnaire-based study was conducted amongst the faculty and students at Rehman Medical College during May 2023. A convenience sample size of 96, with 64 students and 32 faculty members, was taken. All participants had participated in online teaching and learning.

A newly developed questionnaire, developed by the team of researchers, was used with 12 closed-ended questions. Three themes were developed by the researchers with 03 questions for student engagement (Theme 01), 06 questions for student learning (Theme 02), and 03 questions for student satisfaction (Theme 03). The questionnaire was provided online via Google Forms, where incomplete responses were discarded.

A pilot study was conducted on 10% of the target population to determine the reliability of the questionnaire. A Cronbach’s Alpha of 0.96 was obtained, showing excellent reliability.

Data analysis was done using SPSS 22. For descriptive and comparative statistics, the Independent Samples t-test was used to compare means between male and female groups, and a Chi-square Test was used for comparing categorical variables like agreement/disagreement across gender or groups. The data includes percentages of agreement, neutrality, and disagreement for the

different items that were discussed in the questionnaire.

**RESULTS**

The questionnaire was sent to 4th (n=100) & 5th (n=100) professional students and RMC faculty (n=70). 96 (35.5%) completed questionnaires within a period of a week were received (response rate of 32% (n=64) for students and 45.7% (n=32) faculty).

Table 1 and Table 2 both show that the majority of the respondents were Male in both groups, with faculty being predominantly lecturers (n=17) and students mostly 5th professional (n=39).

Table 3 shows the faculty responses to questions under the 03 categories selected for online education. The highest disagreement is for student engagement, at 68.7%, 81.2%, and 75,% respectively. The average disagreement in student learning was 50%, whereas 71% of the faculty stated that students were not satisfied with online education.

Table 4 shows the means and standard deviation of male and female responses to Student engagement, student learning, and student satisfaction. The average mean/SD range of (2.03+/-0.96 to 3.00+/-1.0) was observed for both male and female. Male faculty with a mean & SD of 3.06+/-0.899 and 3.24+/-1.14 showed more agreement with student learning than female faculty; the rest of the variables had a major shift towards disagreement, showing that both genders did not render online education very effective in student engagement, learning, and student satisfaction, with p>0.05 showing an insignificant difference in overall responses for gender.

Table 5 shows the % of students in agreement, disagreement, and neutral, for online education. The disagreement of students with the effectiveness of online education in terms of engagement, learning, and satisfaction was less than that of faculty. Both groups showed the highest disagreement with students’ engagement, 81% & 59% respectively.

Table 6 shows the means and SD of the responses for the 03 main categories of variables. There was no significant difference (p>0.05) between male and female respondents, except for females having more agreement (3.05+/-1.23) for students taking advantage of online education.

**Table No 1: Faculty Ranks and Gender-wise distribution responses**

Faculty Rank	Frequency	Percent	Gender	Frequency	Percent
Lecturer	17	26.6	Male	17	53.1
Assistant Professor	4	6.3	Female	15	46.8
Associate Professor	5	7.8	Total	32	100.0
Professor	6	9.4	-	-	-
Total	32	100.0			

**Table No 2: Professional Year and Gender-wise distribution responses**

Professional Year	Frequency	Percent	Gender	Frequency	Percent
4th Professional	25	39.1	Male	43	67.2
5th Professional	39	60.9	Female	21	32.8
Total	64	100		64	100

**Table No 3: Faculty responses in percentages to the questions under 3 categories: Student engagement, Student Learning, and Student Satisfaction**

Themes	Student Engagement			Student Learning						Student Satisfaction		
	Student put forth more effort in online classes than on-site classes	Students listen attentively in online classes.	Students interact more efficiently in online classes than on site classes	Students take advantage of online resources provided to them.	Online educational system is student centered	The online classes are beneficial for students learning.	Online classes Are good in developing interpersonal skills.	Every topic can be taught online.	Online education builds confidence in students.	Students participate more in post lecture evaluation in online setup	The students' feedback in online lecture is fair	The students are satisfied with online education.
Agree	18.75%	9.30%	9.30%	68.70%	40.60%	21.80%	28%	34.30%	12.50%	15.60%	28%	15.60%
Neutral	12.50%	9.30%	15.60%	0	25%	31.20%	18.70%	6.20%	34.30%	43.70%	37.50%	12.50%
Disagree	68.70%	81.20%	75%	31.20%	34.30%	46.80%	53.10%	59.30%	53%	40.60%	34.70%	71.80%

**Table No 4: Means of Male and Female faculty for the three categories**

Online education Categories	Questions	Male (n=17)	Female (n=15)	Total (n=32)	p Value
Student Engagement	Student put forth more effort in online classes than on-site classes.	1.07-/ +2.18	1.38-/ +2.07	1.21-/ +2.12	>0.05
	Students listen attentively in online classes.	0.96-/ +2.06	1.00-/ +2.00	0.96-/ +2.03	>0.05
	Students interact more efficiently in online classes than on-site classes.	1.07-/ +2.18	0.961-/ +1.93	1.0-/ +2.06	>0.05
Student Learning Online	Students take advantage of online resources provided to them.	0.89-/ +3.06	1.03-/ +2.93	950.-/ +3.00	>0.05
	Online educational system is student centred.	1.14-/ +3.24	1.28-/ +2.93	1.201-/ +3.09	>0.05
	The online classes are beneficial for students learning.	1.10-/ +2.71	1.18-/ +2.60	1.12-/ +2.66	>0.05
	Online classes Are good in developing interpersonal skills.	1.36-/ +2.65	0.99-/ +2.47	1.19-/ +2.56	>0.05
	Every topic can be taught online.	1.22-/ +2.41	1.34-/ +2.67	1.27-/ +2.53	>0.05
Student Satisfaction	Online education builds confidence in students.	1.34-/ +2.24	0.96-/ +2.27	1.16-/ +2.25	>0.05
	Students participate more in post lecture evaluation in online setup.	1.10-/ +2.71	0.79-/ +2.93	1.06-/ +2.66	>0.05
	The students' feedback in online lecture is fair	1.11-/ +2.88	0.79-/ +2.93	0.96-/ +2.91	>0.05
	The students are satisfied with online education.	0.84-/ +2.29	1.12-/ +2.40	0.97-/ +2.34	>0.05
	All Categories	13.2-/ +30.61	12.8-/ +30.13	13.05-/ +30.21	>0.05

**Table No 5: Student responses to the questions in the 03 selected categories for online student learning & engagement**

Questions	Student Engagement			Student Learning						Student Satisfaction		
	Student put forth more effort in online classes than on-site classes	Students listen attentively in online classes.	Students interact more efficiently in online classes than on site classes	Students take advantage of online resources provided to them.	Online educational system is student centered.	The online classes are beneficial for students learning.	Online classes Are good in developing interpersonal skills.	Every topic can be taught online.	Online education builds confidence in students.	Students participate more in post lecture evaluation in online setup	The students' feedback in online lecture is fair	The students are satisfied with online education.
Agree	25%	21.*%	29.60%	32.80%	31.20%	23%	18%	26.50%	20.30%	31%	28%	26.50%
Neutral	17%	18.75%	15.60%	28%	21.80%	25%	26.50%	17.10%	25%	20%	28%	23%
Disagree	58%	59.30%	54.60%	39%	46.80%	50%	53%	53%	54.60%	46.80%	43.70%	50%

**Table No 6: Means of Male and female students for the three categories**

Online education Categories	Questions	Male (n=43)	Female (n=21)	Total (n=64)	p Value
Student Engagement	Student put forth more effort in online classes than on-site classes.	2.33+/-1.19	2.67+/-1.42	2.44+/-1.27	>0.05
	Students listen attentively in online classes.	2.26+/-1.23	2.43+/-1.32	2.77+/-1.25	>0.05
	Students interact more efficiently in online classes than on-site classes.	2.51+/-1.35	2.57+/-1.32	2.31+/-1.25	>0.05
Student Learning Online	Students take advantage of online resources provided to them.	2.64+/-1.24	3.05+/-1.23	2.67+/-1.38	>0.05
	Online educational system is student centred.	2.57+/-1.19	2.75+/-1.29	2.53+/-1.33	>0.05
	The online classes are beneficial for students learning.	2.33+/-1.30	2.85+/-1.18	2.59+/-1.38	>0.05
	Online classes Are good in developing interpersonal skills.	2.40+/-1.12	2.50+/-1.05	2.56+/-1.26	>0.05
	Every topic can be taught online.	2.50+/-1.38	2.45+/-1.14	2.63+/-1.29	>0.05
Student Satisfaction	Online education builds confidence in students.	2.40+/-1.23	2.55+/-1.23	2.48+/-1.22	>0.05
	Students participate more in post lecture evaluation in online setup.	2.62+/-1.36	2.76+/-1.44	2.41+/-1.28	>0.05
	The students feedback in online lecture is fair	2.48+/-1.22	2.90+/-1.30	2.48+/-1.10	>0.05
	The students are satisfied with online education.	2.60+/-1.30	2.57+/-1.28	2.44+/-1.30	>0.05
	All Categories	29.64+/-15.11	32.03+/-15.2	30.31+/-15.31	>0.05

**DISCUSSION**

This study demonstrates lower levels of engagement, learning, and satisfaction with online education among both faculty and students, echoing global concerns regarding the limitations of digitalized teaching models. While the rapid digital shift during COVID-19 created opportunities for educational continuity, it also exposed challenges in maintaining meaningful engagement.<sup>12,11</sup> Our findings at RMC, where 81% of faculty and 59% of students reported difficulties in maintaining attention during online classes, are consistent with existing literature on reduced interaction and participation in online environments.<sup>12,13</sup>

Student satisfaction in our study was notably low, with 73.3% reporting disagreement or neutrality regarding satisfaction, contrasting with Hani et al., who found 65.5% of students satisfied or neutral.<sup>14</sup> Other studies similarly report diverse outcomes, influenced by contextual factors such as preparedness, faculty involvement, and cultural differences.<sup>9,15-18</sup> Importantly, our findings highlight no significant gender differences, aligning with earlier research that questioned the role of demographic variables in online learning outcomes.<sup>17,18</sup>

Faculty perceptions were particularly concern-

ing, with over 80% expressing disagreement or neutrality across all variables of engagement, learning, and satisfaction. These outcomes suggest that online education remains insufficiently equipped to address the unique challenges of medical education, where the acquisition of practical and clinical skills requires direct patient interaction and experiential learning.<sup>7,8</sup> Although online platforms provide flexibility and student-centered learning, they lack the authenticity of face-to-face clinical experiences, as noted in prior studies.<sup>19,21</sup>

Addressing these concerns requires a comprehensive approach. Literature supports that technology-enhanced learning can be effective when implemented with robust training, reliable infrastructure, and interactive designs that stimulate engagement.<sup>6,11,22,23,10</sup> However, a “one-size-fits-all” approach is inadequate; tailoring programs to the needs of learners and educators is essential for sustainable outcomes.<sup>15,16</sup>

The study was conducted using a survey questionnaire and could not provide in-depth information about the reasons for disregarding online education in the selected categories. Also, a bigger sample size, as the response rate was low, would provide better information. Future study in more than one institute and a mixed method design could provide better insight.

## CONCLUSION

This study underscores significant gaps in online education at RMC, with both faculty and students expressing reservations regarding its effectiveness in engagement, learning, and satisfaction. While the rapid integration of digital platforms and AI-enhanced tools marks progress in medical education, the results highlight the need for structured faculty training, curriculum redesign, and investment in technological infrastructure. Strengthening blended learning models—integrating the flexibility of online platforms with the irreplaceable value of face-to-face patient interactions—offers the most promising pathway forward. As technology-enhanced learning becomes a norm in medical education, future research should focus on mixed-method approaches across multiple institutions to better capture the complexities of online learning and to inform contextually relevant strategies for its improvement.

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Following authors have made substantial contributions to the manuscript as under

Authors	Conceived & designed the analysis	Collected the data	Contributed data or analysis tools	Performed the analysis	Wrote the paper	Other contribution
Shah MI	✓	✓	x	x	✓	x
Qamar A	✓	x	✓	✓	✓	x
Israr AE	✓	✓	x	x	x	✓
Hamad Z	✓	x	✓	✓	✓	x
Naseem S	✓	✓	x	x	x	✓
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Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

**Ethical Approval:**

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