

Evolving Perception Regarding Online Learning and Teaching in the COVID-19 Era of Graduate Students with diverse educational backgrounds enrolled in Master's Health Professional Education Program of a Pakistani University

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ABSTRACT

Objective: To analyze the evolving perception of graduate students of Masters in 'health professional education with diverse educational backgrounds regarding online learning and teaching.

Study Design: Mixed-method' study of Convergent Parallel Design.

Place and Duration of Study: Riphah University, Rawalpindi Pakistan, Dec 2021 to Feb 2022.

Methodology: Twenty-five graduate students of Masters in 'health professional education' with diverse educational backgrounds answered semi-structured questionnaires at the end of 2 online teaching sessions.

Results: The mean scores of 3 domains of 'student's perception of learning, 'contents and teaching strategies and 'educational environment' in 1st vs second online sessions were as follows, respectively: (4.37 0.42 vs 4.09, 0.45; *p-value* 0.04), (4.40 0.47 vs 4.29, 0.58; *p-value* 0.44) and (4.43 0.43 vs 4.23 0.69; *p-value* 0.36). The students agreed that the contents covered, teaching strategies and education environment were satisfactory, and the perception was not statistically different between the two sessions in these domains. In contrast, students' self-perception of learning was more satisfactory in the first online session.

Conclusion: The graduate students of Masters in 'health professional education' with diverse educational backgrounds were satisfied regarding the contents covered, teaching strategies and education environment in two online teaching sessions. In contrast, their perception of their learning depreciated in the second online teaching session.

Keywords: COVID-19, Graduate students, Online teaching, Medical education.

How to Cite This Article: Nadeem A, Rashid A, Yasmeen R. *Evolving Perception Regarding Online Learning and Teaching in the COVID-19 Era of Graduate Students with diverse educational backgrounds enrolled in Masters Health Professional Education Program of a Pakistani University. Pak Armed Forces Med J* 2023; 73(2): 539-544. DOI: <https://doi.org/10.51253/pafmj.v73i2.8124>

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INTRODUCTION

The COVID-19 era has changed the concepts of learning and teaching dramatically.^{1,2} The need to impart quality education to students globally caused almost every university to shift to online teaching.³ Online teaching and learning demands from the learners; a lot of commitment, self-discipline, motivation, incorporation of technology and self-directed learning. Similarly, the teachers need to step up their efforts to keep students engaged and focused, innovate for digital interaction, inculcate netiquettes, strengthen learners' autonomy and ensure ethical practices in a virtual education environment.^{4,5} For developing countries like Pakistan, it was an abrupt and unavoidable change for which most universities were unprepared.⁶ In Pakistan, online teaching and learning have many challenges. Technology-readiness, connectivity issues due to frequent load-shedding, students situated in remote areas, faculty training in online teaching and students' readiness to learn online.⁷ Many studies have

reported the dynamics of online learning and teaching.⁵⁻¹⁰ The graduate program of HPE is a unique program in which there is a diversity of students being enrolled with no age limit and diverse qualifications. Achieving the learning outcomes with a diverse group of students is challenging even in face-to-face interaction and requires careful planning of contents, teaching strategies and skilled faculty. The challenge of this task becomes many folds when the teaching has to be shifted to online. There are limited studies reported internationally in which the impact of online teaching and learning was explored in a group of students with significant diversity in their age and educational background. No local study has been reported yet in this domain.

In a developing country like Pakistan, shifting to online teaching was a novel and difficult task. It was even more difficult for this particular program in which the age range of students was from 24-67 years, and the educational background of students ranged from BDS to PhD. The present study explores the evolving perception regarding online learning and teaching in the COVID-19 era of graduate students of

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Received: 06 Feb 2022; revision received: 15 Apr 2022; accepted: 21 Apr 2022

diverse educational backgrounds enrolled in the Master’s program of ‘Health Professional Education’ at a Pakistani University.

METHODOLOGY

The ‘Mixed Methods’ study of ‘Convergent Parallel Design was conducted at Riphah University, Rawalpindi Pakistan, from December 2021 to February 2022 after IERB approval. The participants were selected by purposive sampling after informed consent.

Inclusion Criteria: The graduate students of either gender with an age range of 20-70 years enrolled in the Master’s program of health profession education were included.

Exclusion Criteria: The undergraduate students, graduate students of other programs and graduate students enrolled in other traditional degree programs were excluded from the study.

The enrolled students had very diverse educational backgrounds ranging from PhD qualified faculty members, Heads of Department of basics and clinical departments, Principals of medical colleges, and clinicians to as young as fresh medical and dental graduates. The study sample size was 25, calculated with the help of an online sample calculator.¹¹ The students had two face-to-face contact sessions, but due to the COVID-19 situation, the next two contact sessions, ten days each, were held as online teaching through ‘Zoom’ during which; the use of ‘Socrative’, ‘Kahoot’ and ‘Padlet’ software were included as well. The teaching strategies were also modified accordingly.

A semi-structured self-report instrument was formulated and validated by five subject specialists. It was administered twice to the enrolled subjects at the end of each 10-day online session. It comprised a 17-item questionnaire evaluating students’ perception of online learning and teaching. Items 1-11 were scaled on a Likert scale with a range of scores from 1-5 (strongly disagree, disagree, neutral, agree and strongly agree). Items 12-18 were open-ended and non-directional and required subjects to offer their own opinion in their own words to the questions asked.

The quantitative data obtained from items 1-11 were analyzed using Statistical Package for the Social Sciences (SPSS) version 25:00. The scores were on the Likert scale of 1-5 for each item for items 1-11, and mean scores for each item were calculated. These themes were titled ‘Students’ perception of learning’ (items 1,2,4,5,11), ‘Contents & teaching strategies’ (items 3,6,8) and ‘Educational environment’ (items 7, 9,10)

domains.¹² In addition, the mean scores for three online learning and teaching themes were calculated. The qualitative data was obtained from items 12-17 of the questionnaires as narrative answers to open-ended questions. Next, the text data was transcribed manually and counter-checked by all authors. Finally, the data was analyzed manually, following the steps for qualitative analysis by all authors independently and then validated to ensure analytical triangulation.

The themes analyzed from qualitative data were compared with those obtained from qualifying quantitative data. To draw the inference, the results from qualitative data were then directly compared with those from quantitative data to find whether qualitative themes were supported by statistical trends or not.

RESULTS

The age range of all the participants was 26-65 years. All the participants were enrolled graduate students of HPE. The response rate after the first online session was 96% and 87.5% after the second online session. The characteristics of the participants are shown in Table-I.

Table-I: Study Participants’ Characteristics (n=25)

Participants	Graduate Students HPE	
	1st Online Teaching Session	2nd Online Teaching Session
Gender		
Male	7(29%)	6(30%)
Female	17(71%)	14(70%)
Male : Female ratio	1:2.4	1:2.3
Age groups (in years)		
25-35	10(42%)	09(45%)
36-45	08(33%)	06(30%)
46-55	05(21%)	04(20%)
>56	01(4%)	01(5%)
Basic Sciences n(%)	08(33%)	06(30%)
Clinical Sciences n(%)	16(67%)	14(70%)
Bachelor’s Degree		
MBBS n(%)	14(58%)	11(55%)
BDS n(%)	10(42%)	09(45%)

The mean score for the first domain, ‘student’s perception of learning’ was found to be 4.37 0.42 for the first online session and 4.09 0.45 for the second online session (On Likert scale: 5.0 maximum score for each item), indicating that overall, students ‘agreed’ that their learning was enhanced. However, the satisfaction was greater in the first and second online sessions as depicted statistically (*p-value* 0.04). ‘contents and teaching strategies’ mean score was 4.4 0.47 for the first and 4.29 0.58 for the second online session (*p-value*=0.44). The ‘educational environment’ mean score

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was 4.43±0.43 for the first and 4.23±0.69 for the second online session (p -value=0.36). The students agreed that the contents covered, teaching strategies and education environment were satisfactory, and the perception was not statistically different between the two sessions.

The students' perception of learning had three subthemes based on the analysis of transcribed data; effective interaction, task-based learning and peer learning. The 'contents and teaching strategies had three subthemes; 'organized contents', 'use of new technologies' and 'excellent faculty'. The 'educational environment' theme had two subthemes namely; 'use of new technology' and 'relaxed environment'. The comparison of these themes with quantitative data is shown in Table-II.

quantitative data, the students were more satisfied in the first online session (Mean: 4.37±0.42) compared to the second online teaching session (Mean: 4.09±0.45). This is supported by analysis of transcribed qualitative data.

Regarding recommendations, the students in the first online session suggested that reading material be provided by the teachers a day or two earlier for better preparation by students rather than given on the spot just before assigning tasks. The suggested contents included in future sessions were SPSS, standard settings, research methodology and medical writing.

In a second online session, the students suggested introducing the hybrid model permanently for contact sessions, including online teaching sessions and face-

Table-II: Advantages of E-learning Perceived by Participants in two Online Sessions (n=25)

Quantitative & Qualitative Data Interpretation						
1st Online Teaching Session		Mean±SD	2nd Online Teaching Session		Mean±SD	(p-value)
Students' Perception of learning	Effective interaction	4.37±0.42	Learning new technologies	4.09±0.45		
	Task-based learning		Asynchronous learning			
	Peer learning		Self-directed learning			
Contents & Teaching Strategies	Organized contents	4.40±0.47	Organized contents	4.29±0.58	0.44	
	Use of new technologies		Effective small group discussions			
	Excellent Faculty		Excellent Faculty			
Educational Environment	Technology based	4.43±0.43	Feasibility	4.23±0.69	0.36	
	Relaxed environment		Relaxed environment			

The students had their share of disadvantages too. The limitations opined included technical glitches, fast-paced teaching, difficult concepts, and less focused and varied learning styles to name a few. The themes and sub-themes with excerpts are shown in Table-III.

The overall satisfaction regarding enhancing learning by online approach with teachers' interaction and activities was inquired (Item 11). All participants (100%) agreed in unison about the improvement of learning in the 1st contact session, whereas 81% of the same participants agreed that the blended e-learning approach is a good learning environment.

Comparing the advantages of two consecutive e-learning sessions through quantitative data, the statistical difference was not significant between the two themes, namely, 'contents & teaching strategies' and 'education environment' (p -value=0.44 & 0.36 respectively). It indicated that graduate students were satisfied in these two domains throughout these sessions. The satisfaction level based on the Likert scale has already been mentioned above in the quantitative result section as mean values. However, the 'students' self-perception of learning' varied between the two online teaching sessions (p -value= 0.03). Analyzing

to-face after catering for technical glitches. Some students opined that the duration of contact sessions needs to be reduced to manage cognitive load. In addition, difficult concepts are recommended to be revised, especially research methodology. A few students (12% & 9% in the first session & second session, respectively) chose to leave the suggestions open.

DISCUSSION

The present study highlights the advantages, limitations and recommendations regarding online teaching sessions from graduate students' perspective conducted due to the lockdown of institutions during the COVID-19 era. The unique feature of this study was the significant diversity of the participants in age, educational background and professional appointments; all being enrolled in a graduate program of a reputed university in Pakistan and analyzing their perceptions. These MBBS/BDS graduate students' perceptions were analyzed and compared at the end of two online teaching sessions for Masters in HPE.

According to the participants, an online teaching session, though adopted as an emergency plan, is a welcome change and can be included as a choice in the hybrid model of this graduate degree. This teaching

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Table-III: Limitations of E-learning Perceived by Participants in Two Online Sessions (n=25)

Qualitative Data Interpretation				
Themes	1st Online Teaching Session		2nd Online Teaching Session	
	Sub-themes	Excerpts	Sub-themes	Excerpts
Students' perception of learning	Varied Learning styles	"Medical education is such a volatile subject, you need to rehearse it over and over again". "I prefer e-learning on blended learning. I can get lecture recordings later on".	Less-Interactive	"Getting your voice heard is a big problem while asking a question when other people are not paying attention to the concept of taking turns". "Less opportunity to asked queries related to research"
	Less Focused	"Just please make sure balance of unrelated questioning during lecture as most of time important topics remain unexplained"	Cognitive Load	"Continuous cognitive load as well as eye straining while looking at computer screens" Apply cognitive load theory to session duration, both on daily basis and on overall length of contact session days".
Contents & teaching strategies	Difficult Concepts	"In coming session if students would be given a little bit more scaffolding by worthy teachers to develop difficult concepts then it would reduce cognitive load of the students".	Difficult Concepts	"Research intro and basics should have given more time and in this section specifically we need help as we are new in research especially Qualitative".
	Fast-paced Teaching	"While teaching difficult concepts teachers should ensure adequate understanding of the students about basic concepts before assigning individual tasks".	Fast-Paced Teaching	"Detailed slow paced component on "bio-statistics" should be added as this is one thing in which most of us are deficient".
	Self-Directed Learning Strategies Issues	"Provision of reading material should be a day ahead of class so that students can go through it before coming to class which will make understanding of concepts much better".	Long Duration of Sessions	"The length of the sessions makes the sessions hard to tolerate as the screen time on computers tire me more than other activities. The after lunch session if made shorter or totally removed would make these much bearable".
Educational Environment	Technology glitches	"The most serious problem was related to glitches in IT"	Technology Glitches	"Issues related to IT including sound distortion especially at participants end would have to resolved at individual members end".
	Ineffective Participation	"No individual group should dominate the sessions and all the learners should get the chance to speak and convey their opinions. All the teachers should make the entire batch involved and encourage them to voice their concerns".	Less Conducive	"Whole session should be face to face to address the social context of learning, peer learning and having a focused learning environment that is free of distractions".

modality was flexible, feasible, and resource-convenient, with a relaxed and conducive learning environment. These findings are per the other studies reported in the literature.^{13,14} Mukhtar *et al.* studied online teaching in COVID-19 through focal group discussion with 12 faculty members and 12 undergraduate medical students at a medical college in Mar-Apr 2020. The advantages reported were comfort, accessibility and remote learning, per our findings.⁴

In our study, the students appreciated the opportunity of asynchronous learning as they could easily access the recorded lectures with uploaded learning materials which catered for the varied learning styles of the diverse students; the fact supported by other studies.¹⁵ Other advantages reported included self-

directed learning at own time and pace appropriate for adult learners. Self-directed learning improves metacognition and is a hallmark of adult learning.¹⁶

However, the participants viewed the long duration of sessions, inability to remain focused, facing frequent technical glitches, cognitive load and difficulty grasping complex concepts as limitations of this teaching model. These findings are reported in the literature as well.^{16,17} In both sessions, online connectivity issues have been repeatedly highlighted and reported in the literature as well.¹⁷

One interesting finding was the perception of one dominant group of students who overshadowed others. This resulted in the discernment of unequal opportunities to participate in the online interactive

session. Though this can happen in face-to-face sessions, too, in online scenarios, it may have been overlooked or difficult to troubleshoot due to the fast-paced session.¹⁸

When evolving perception of students was analyzed, the students were more satisfied in the first online session than the second based on quantitative data in the domain of 'students' perception of learning'. The analysis of transcribed qualitative data revealed that the major contributing factor was the inclusion of research methodology and the development of the original research question in the syllabus of the second online session. Despite a wide range of students in age, teaching experience and educational background, more than half of the participants did not have any experience in research. Even a few participants did not have a theoretical background in research. This hampered their learning and increased their stress level due to increased cognitive load [*Participant #11-2nd online session: "Research intro and basics should have given more time and in this section specifically we need help as we are new in research especially Qualitative"*] Other contributing factors included the fast-paced teaching and cognitive load, which has been reported in other studies as well.^{7,18} However, regarding the perception of contents covered, teaching strategies and education environment, there was no statistical difference between the two online sessions.

The recommendations by the students reflect the need to step up the technical support for students in the form of a robust internet connection with backup. Moreover, the duration of sessions can be reduced, or the whole session can be split with a break of two days in between.

LIMITATIONS OF STUDY

The number of participants was limited as all the enrolled students of Masters in HPE of a single university, and not many, were included to ensure the exposure of the students to identical education environments. However, the study's findings can only be generalized to some of the regional HPE programs. Moreover, faculty members' perspective was not included due to time constraint.

RECOMMENDATIONS

It is recommended that further studies are carried out exploring the faculty's perspective regarding the benefits, challenges and recommendations of online teaching to graduate students of HPE. Moreover, a comparison of face-to-face contact sessions and online teaching sessions and the impact of online teaching on

learning outcomes can be carried out from the perspective of all stakeholders, especially the HPE graduate students with diverse educational backgrounds and teaching experiences.

CONCLUSION

This study highlights the evolving perception of graduate students. It concludes that graduate students are increasingly satisfied with two consecutive online teaching sessions regarding a conducive educational environment, educational strategies and contents covered. However, due to the inclusion of complex concepts, fast-paced teaching, and diverse educational backgrounds, their perception of learning depreciated in the second session. Therefore, combined online teaching is effective for graduate students with diverse educational backgrounds.

Conflict of Interest: None.

Author's Contribution

Following authors have made substantial contributions to the manuscript as under:

AN & AR: Data acquisition, data analysis, data interpretation, critical review, approval of the final version to be published.

RY: Conception, study design, drafting the manuscript, approval of the final version to be published.

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