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An online medical course during the COVID-19 pandemic: A mixed methods analysis

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Abstract

Introduction: An evaluation of the online medical course was conducted to assess student readiness, engagement, and satisfaction at the San Beda University College of Medicine in Manila during the COVID-19 pandemic.

Methodology: A convergent mixed methods approach was done with a quantitative online survey and a qualitative thematic analysis of focus group discussions (FGD) with medical students. A total of 440 students participated in the survey while 20 students participated in the FGDs.

Results: The medical students were sufficiently equipped with computers and internet connections that allowed them to access the online medical course from their homes. The 5 themes identified during the study that were relevant to education were: Student readiness for online learning, Learning Management System (LMS) and internet connectivity, teaching and learning activities, the value of engagements, and teaching effectiveness of the faculty. The combined quantitative and qualitative analysis revealed vital issues that affect student learning. This included the need for students to interact with fellow students and to be engaged with their faculty. The issues that affect teaching included the need for continuing faculty training and management skills in delivering the full online course.

Conclusion: The success of online education rests heavily on the interactions of the students, the teachers, and the knowledge. Student interactions, managerial and skills training for the faculty, and providing students with a mix of synchronous and asynchronous activities are the most effective means to ensure the effective delivery of online medical courses.

Keywords: *Medical Curricular Revision, Formative Evaluation, Student Engagement, Synchronous and Asynchronous Online Learning, Cognitive Overload*

I. INTRODUCTION

The COVID-19 pandemic necessitated a shift to online teaching and a revision of the medical curriculum with synchronous and asynchronous online activities. Medical schools worldwide adapted teaching strategies utilising Video Conferencing and Learning Management Systems.

This program evaluation of the online medical course aimed to evaluate the effectiveness of instruction using the various components of online learning. The study centered on the perspectives of students using a mixed methods design (Fitzpatrick et al., 2011). The study focused on the interplay of digital capabilities, students'

perceptions and satisfaction with the interactions and engagements during the online course.

II. METHODS

The mixed methods research protocol was approved by the Institutional Ethics Board of San Beda University. The study utilised a convergent mixed method design with a quantitative online survey that was conducted on 440 respondent students representing each of the four-year levels of the medical school. Six focus group discussion (FGD) sessions were conducted on 20 students. All student participants provided a signed informed consent form to participate in the survey and in the FGDs. The 25-item online survey questionnaire included a 5-point Likert scale for items on readiness for

the online course, overall satisfaction, and engagement. The online FGD sessions were conducted using an open-ended questionnaire guide on student capabilities for the online course, student satisfaction, and student engagement.

The FGD recordings were transcribed and subjected to thematic analysis to identify major themes. Quantitative and qualitative data were analysed simultaneously through a joint display of the two sets of results. A joint display using pillar integration was done to demonstrate the themes where the data corroborated or validated each other. The conceptual framework, data collection tools, the data results, and the pillar integration table are posted in a data repository file for this study can be accessed through a repository at:

<https://doi.org/10.6084/m9.figshare.16682569.v2>
(Atienza & Atienza, 2021).

III. RESULTS

The survey revealed that students were adequately equipped with the necessary computers and smartphones needed to access the online course. Only 50% of the

students were taking the online course from their homes within the same city as the medical school. While 72% encountered internet connectivity problems, 88% of students were successful in the use of the LMS and the videoconferencing platform to access the course and take online examinations.

Seventy-eight percent of students found online student-to-student and faculty-to-class interactions to be beneficial to student learning. Among the synchronous activities, 63% of students preferred live online lectures. Among the asynchronous activities, 52% of students preferred uploaded video lectures. Overall, around 52% of students experienced being overloaded with study requirements while 48% of students felt there was sufficient time for independent study.

The results of the survey and the thematic analysis of the FGDs were organised into themes and subthemes. These themes were generated from the integration of the quantitative and qualitative data. The schematic diagram (Figure 1) demonstrates how the themes are related to the effectiveness of learning based on the perspective of the students.

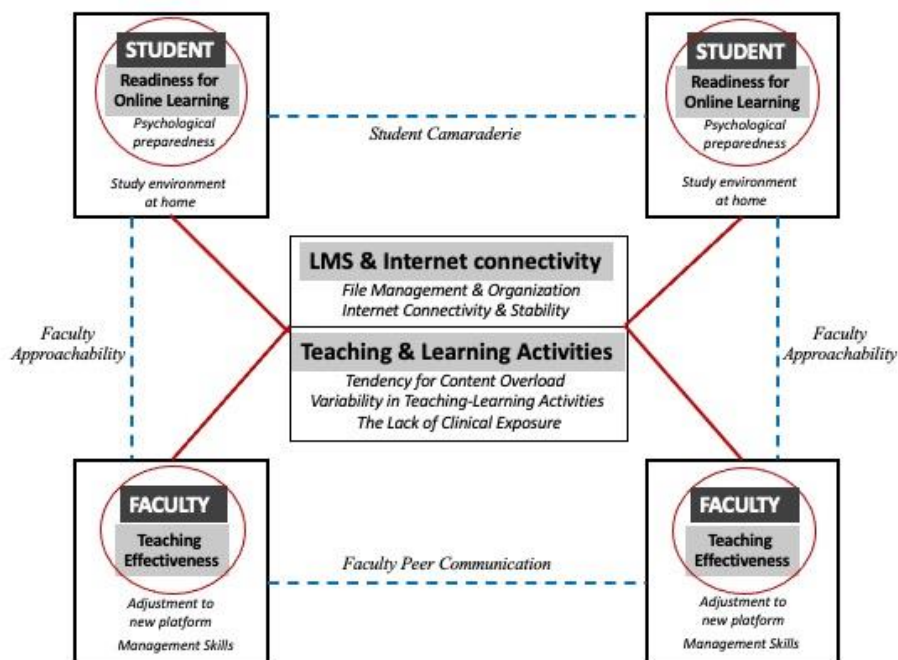


Figure 1. Schematic diagram of themes and subthemes identified in a mixed methods analysis of a fully online medical course at SBU-COM during the COVID pandemic

A. Student Readiness

The first theme that surfaced from the results was Student Readiness to engage in online learning. Students found their readiness to be dependent on two subthemes:

1) *Study environment at home*: Students expressed that the sudden shift to studying from home required that they designate sufficient time and space for studying. Students recognised that responsibilities at home and to the family could be distractions if not managed properly.

2) *Psychological preparedness*: The students also expressed the value of psychological preparedness as essential in dealing with stress and fatigue resulting from the unexpected shift to the online learning mode.

B. LMS and Internet Connectivity

The second theme highlights the importance of having computers and a stable internet connection as major determinants of student satisfaction with the online course. The introduction of an LMS for the medical course required immediate training for both the students and the faculty. While 81% of the students had the necessary gadgets and a good internet signal, 17% experienced major connection problems that disrupted up to 50% of live lectures and offline recorded videos. Student satisfaction with online learning was dependent on how timely and how organised the learning materials were uploaded into the LMS.

C. Teaching and Learning Activities

The third theme refers to the blend of online and offline activities for the different courses. The major subthemes included cognitive overload, variability of teaching and learning activities across courses, and the lack of clinical exposure.

1) *Cognitive overload*: Students had a perception of being overloaded by the volume of information delivered through the online course. The introduction of new forms of assessments such as video assignments, group reports, and research outputs contributed to the perceived cognitive overload.

2) *Variability of teaching and learning activities*: The variability in the blend of online and offline activities across the different courses required varying degrees of adjustments from the students. The students expressed their preference for live or recorded lectures over small group discussions and live laboratory demonstrations.

3) *Lack of clinical exposure*: Students in the 3rd and 4th year levels were apprehensive about the lack of clinical exposure in the actual medical environment due to the restrictions brought about by the pandemic. They recognise that they may not have the necessary skills training needed for internship.

D. The Value of Engagements

Unexpectedly, the fourth theme that students found important in the shift to online learning was the value of engagements.

1) *Student-to-student online interactions*: Up to 78% of students found support through interactions with other students. These interactions were useful not only for sharing the academic workload but also for mental and

emotional support highlighting the value of student camaraderie despite being limited to virtual interactions.

2) *Faculty-to-class interactions*: Up to 80% of students expressed appreciation for the efforts of the faculty to get student feedback, answer clarificatory questions, and provide explanations when necessary. The students also expressed greater satisfaction with courses delivered online. Both faculty interactions with the class and with individual students were recognised as *faculty approachability*.

E. Teaching Effectiveness of The Faculty

The fifth theme *Teaching* pertains to the ability of the faculty to manage the online platform for teaching.

1) *Faculty management skills*: Teaching effectiveness is facilitated by the ease by which the faculty manages virtual teaching.

2) *Faculty peer communication*: Students recommend that the faculty within and across different courses coordinate their activities so that students can more easily manage their time and learning.

IV. DISCUSSION

The experience of delivering the medical course online has been very limited in the past. The teaching and learning strategies for medical courses to be delivered fully online require extensive preparation of the three main points in the transaction of learning: the learners, the teachers, and the course content. Learner readiness entails a clear delineation of the study environment in terms of time and space for study. Proper orientation to the online learning environment and psychological support should be made available to the students before the course begins. An inventory of the students' computers and internet connectivity should also be done to ensure readiness for the course.

Delivering the course online necessitates faculty training on teaching and learning strategies for synchronous and asynchronous delivery as well as the proper navigation of the LMS and its available features. The faculty must maximise the benefits of technology as well as pedagogy in the online learning environment.

This study showed that in the shift of medical education to an online mode during the pandemic, student learning relies heavily on interactions between the learners, the teachers, and the course content. In an online course that relies so much on technology as a means of course delivery and integration, teaching and learning success depends on how well the interactions are established among these three points (Ifinedo & Rikala, 2019).

The design of courses must facilitate student-to-student interactions while faculty-to-class interactions using both synchronous and asynchronous activities would provide a good learning experience for students (Rhim & Han, 2020; Seymour-Walsh et al., 2020).

V. CONCLUSION

To succeed in the delivery of the online medical course, sufficient time must be given for faculty-to-student interactions during synchronous sessions and after the online classes. The faculty must demonstrate approachability by being open to continuing interactions with students outside the synchronous sessions. The coordination of faculty members within and across different courses must be enhanced to reflect efficiency in delivering their respective courses.

This study was performed during the early phase after the shift to full online delivery of the medical course. While the study is based on the perceptions of the students, the results of this study may be valuable in planning for continuing the online delivery of the medical course. The results of this study may be more robust with the inclusion of faculty perceptions and indicators of student academic performance.

Notes on Contributors

Dr. Maria Isabel Atienza conceptualised, designed, and implemented this study. She conducted the focus group discussions, prepared the thematic analysis, and wrote the manuscript for this study.

Dr. Noel Atienza helped in the design and conduct of the online survey and was involved in the data processing and data analysis of the survey. He was also involved in the preparation and editing of the final manuscript.

Ethical Approval

The research protocol SBU-REB # 2020-028 for this study was reviewed and approved by the San Beda University Research Ethics Board on November 28, 2020.

Data Availability

Data collection tools and research data are available and can be accessed by any interested reader through a repository at:

<https://doi.org/10.6084/m9.figshare.16682569.v2>. The data in the repository may not be copied or cited without written permission from the authors.

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Declaration of Interest

There are no conflicts of interest in this study.

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