RESEARCH ARTICLE

Comparison of faculty and student evaluations of the hybrid teaching of orthopedics during the COVID-19 pandemic

Karissa F. Genuino, Jose Ma. D. Bautista*, Patrick M. Dizon

*Corresponding author's email address: bautistajosema@gmail.com

Department of Orthopedics, Philippine General Hospital, University of the Philippines Manila, Manila, Philippines

ABSTRACT

Background: In the face of the COVID-19 pandemic and a country-wide lockdown, the University of the Philippines College of Medicine halted face-to-face teaching in exchange for online learning for its students. For the Learning Unit VI students, clinical rotations shifted to hybrid activities to continue learning activities while minimizing exposure risk. The Philippine General Hospital Department of Orthopedics introduced the following hybrid activities in its curriculum for Learning Unit VI students: 1) Online Lectures, 2) Online Departmental Conference, 3) Online Division Rounds, 4) Online SGDs, 5) Written Case, 6) Online Exams, 7) Preceptorship, Demo, Return Demo, and 8) Online OSCE. The department used a variety of platforms including synchronous sessions, asynchronous pre-recorded lectures, and face-to-face teaching, as appropriate.

Objectives: The study compared the faculty and student course evaluations of activities in the hybrid ORTHO 251 course.

Methodology: Faculty and students were asked to evaluate each activity according to the Course Evaluation By Students (CEBS), the standard questionnaire used by the college, to determine the overall rating of each activity as well as any differences between the two groups.

Results: The hybrid activities conducted in the ORTHO 251 course were rated as good or excellent by the faculty and students, with differences in a few activities. Consultants rated online exams as being less effectively integrated and that there was inadequate time allotment for online SGDs, written cases, and online exams. Meanwhile, students rated all activities higher in terms of stimulating self-directed learning.

Conclusion: With good to excellent outcomes, this study found that it has at least satisfactorily matched the learning platform to the learning component. While knowledge may be taught via asynchronous recorded lectures or reading materials, attitude and thinking processes are better formed through synchronous discussion. Skills in medical education, including Orthopedics, are still best taught via face-to-face demo-return demo. With this information, the department can investigate the causes of these differences and improve on the identified weaknesses.

Keywords: *hybrid teaching, orthopedics for medical clerks, Course Evaluation by Students (CEBS), University of the Philippines College of Medicine*

Background

Metro Manila was placed under lockdown – or Expanded Community Quarantine (ECQ) – on March 15, 2020, in the face of the looming COVID-19 pandemic. Public spaces, establishments, and schools were closed indefinitely. The academic year was finished expediently through self-study modules given online. Grades were descriptive; no student failed.

During the midyear break, the University of the Philippines College of Medicine (UPCM) and the Philippine General Hospital (PGH) transitioned to a new mode of education: hybrid learning, or the combination of distance with face-to-face learning. Online teaching tools were rolled out. The Department of Orthopedics adjusted its curriculum with the assumption that the first semester of classes would be purely online, and with the hope that some face-to-face

activities would be allowed by the second semester. The first semester was meant to fulfill cognitive learning while the second semester was targeted at developing students' skills.

By the start of the academic year in August 2020, the Department's curriculum was up and running. The University Virtual Learning Environment (UVLE) site hosted learning materials (*e.g.*, recorded lectures, manuals, and curated videos) on common orthopedic conditions. It also was the repository for submitted work (*e.g.*, written case discussions). Online meeting platforms (*i.e.*, Zoom) enabled synchronous Small Group Discussions. Online exam platforms (*i.e.*, Canvas) helped evaluate learning.

As limited face-to-face interaction was allowed during the second semester, the students had patient contact at the hospital's non-COVID-19 wards and operating rooms. They practiced splinting, casting, scrubbing, and gowning. They also attended online departmental conferences, division rounds, and daily endorsements. They were evaluated through an online Objective Structured Clinical Examination (OSCE) at the end of their rotation.

Organ System Integrated Curriculum

The UPCM implemented the Organ System Integrated (OSI) Curriculum in 2004 [1]. In contrast with the traditional medical curriculum, this curriculum focuses on "vertical" learning or integration of basic science knowledge with higher-level discussions and clinical skills. It emphasizes critical thinking and problem solving, favors small group discussions over lectures, and leans on complaint-based and community-based rather than disease-based and hospital-based discussion. Graduates have excelled in their licensure examinations and have branched out from the clinical track (*e.g.*, health policy, community practice, etc.), testifying to the curriculum's efficacy.

The OSI Curriculum remains the first of its kind in the Philippines where the top students from high school are taken in to complete medical education in seven years; these are the direct entrants to the Integrated Arts and Medicine (INTARMED) Program, commencing as Learning Unit I students. Those admitted with a baccalaureate degree refer to the lateral entrants and commence as Learning Unit III (Medicine Proper) students.

Learning Unit VI

Learning Unit VI is the sixth year of medical education for UPCM direct entrants and the fourth year for lateral entrants. Students from both direct and lateral entrants are combined to form blocks that rotate in different departments of PGH. The curriculum for each rotation is developed by the departments and overseen by the LU VI Committee. This year marks the students' full-time immersion in the hospital.

ORTHO 251

The Clinical Clerkship in Orthopedics (ORTHO 251) course is a two-week rotation in the Department of Orthopedics. The newly implemented teaching activities are detailed in Table 1.

Review of Literature

Electronic learning (e-learning or web-based learning) showcases the use of modern communication technology for learning; it complements conventional teaching methods [2]. It is useful and enjoyable [3,4] and mirrors the efficacy of traditional learning approaches [5]. In modern times, e-learning has become the predominant method of many institutions worldwide; guidelines have been published to guide teachers today [6,7].

Despite increasing adoption, some students remain unsatisfied, while faculty feel ambivalent towards e-learning as the sole method [8]. Face-to-face instruction is preferred by medical and dental students [9], and under-developed regions (due to technical issues) [10].

Significance of Study

Feedback is important in determining if the learning platforms are adequate in achieving the institution's learning objectives. There have been no published local reports of either students' or faculty's perceptions of a completed hybrid course taught during this pandemic.

The course will be improved based on the findings. The authors plan to continue the activities with high ratings and re-evaluate and modify those with low ratings. Integration by streamlining the activity with the objectives (*e.g.*, determining level appropriateness, weeding out irrelevant topics, etc.) can be improved. The authors will provide or direct the students to resources for self-directed learning and improve the guide questions for self-study. Time allotment will also be modified as deemed adequate or inadequate.

Objectives

The study compared the faculty and student course evaluations of the learning platforms in the hybrid ORTHO 251 course, as measured by the Course Evaluation by Students.

Table 1. *Clinical Clerkship in Orthopedics (ORTHO 251) Teaching Activities*

Activity	Duration and Frequency	Synchronous (Y/N)	Moderator or Platform	Description	Graded (Y/N)
Lectures	One hour Once/week	N	UVLE*	Students watch a recorded online lecture; they are permitted to submit questions.	N
Online Departmental Conferences	Two to three hours Once/week	Y	Consultants	Residents present operative cases done.	N
Online Division Rounds	Two to three hours Five days/week	Y	Consultants and Residents	Residents rotating in that division present their operations in greater detail, update on currently admitted patients, or give journal reports. Students are permitted questions.	N
Online SGDs	One to two hours Once/week	Y	Consultant	Students discuss a written patient case; they are given the history, physical examination, and laboratory findings, and they discuss their diagnosis and management plan.	Y
Written case		N	UVLE	This is a continuation of the SGD; students revisit their discussion, and finalize a written case paper to submit online.	Y
Online Exam	One hour Once at the end of rotation	Y	Canvas	Students take an exam. Content is determined by the Department committee for undergraduate education.	Y
Preceptorship, Demo, Return Demo	One hour Once in the rotation	Y/N	UVLE, Resident	Students watch demo videos online of orthopedic skills (i.e. splinting, casting, scrubbing, gowning). Then, during a face-to-face session, they return-demonstrate the skills.	N
Online OSCE	One hour Once in the rotation	Y	Consultant	This is a continuation of Preceptorship; The students return-demonstrate orthopedic skills via Zoom conference to a consultant.	Y

*UVLE = University Virtual Learning Environment

Methodology

Research Design

The study was a cross-sectional study. Students and faculty members who handled and completed the ORTHO 251 Course in the Academic year 2020-2021 were surveyed using the standard Course Evaluation form.

Sample Size

A total enumeration was done of all students and faculty members who handled and completed the ORTHO 251 Course in the Academic year 2020-2021. Students who did not complete the 1-week rotation in ORTHO 251 for any reason, and faculty who did not participate in all of the learning activities were excluded.

Inclusion Criteria

- Learning Unit VI students who completed ORTHO 251 course from AY 2020-2021
- Department of Orthopedics faculty who participated in ORTHO 251 course

Exclusion Criteria

- Learning Unit VI students who did not complete all the learning activities in the ORTHO 251 course from AY 2020-2021
- Department of Orthopedics faculty who did not participate in the ORTHO 251 course

Data Collection

All participants answered a modified version of the Course Evaluation by Students (CEBS), encoded in a Google Form, prefaced by the Informed Consent, which participants signed by affixing their name and initials. It consists of the following domains: 1) Objectives, 2) Teaching Strategies and Methods, 3) Evaluation, and 4) Overall Evaluation.

The activities listed under Teaching Strategies and Methods were modified to reflect the new teaching activities of ORTHO 251 (Table 1). Each activity's effectiveness is evaluated based on the following characteristics:

1) Effectively integrated – the activity and its topic align with the course's objectives, and make sense in the context of other activities and topics;
2) Stimulated self-directed learning – encourage the student to read on the topic independently by providing guide questions, resources, and self-study periods; and,
3) Adequate time allotment – there is enough time to prepare for and conduct the activity.

Each item is scored between 1 to 4, from lowest to highest agreement with each statement. All statements are positively worded hence a higher score means that the activity is evaluated as more effective. A score of 3 is considered a good outcome while a score of 4 is considered excellent. An effective activity translates to good integration, self-directed learning, and an adequate time allotment.

Data Analysis

A dataset from MS Excel was imported in STATA 16 (StataCorp, Texas, USA) and exhaustively checked for completeness, accuracy, and consistency before analysis. There were no missing data observed per variable. Categorical variables were summarized in frequencies and percentages and were compared using Fisher's exact test. This test was used when more than 20% of the cells had an expected value of less than five (5). The data were non-normally distributed, and both means (with standard deviation), and medians (with interquartile range) were presented. The nonparametric perception scores were summarized using medians and interquartile ranges and were compared using a two-sample Wilcoxon rank-sum (Mann-Whitney) test. The Shapiro-Wilk test was used to test for data normality before performing the Mann-Whitney test. A p-value of less than 0.05 was considered significant for all tests.

Results

Data were collected from twenty-six (n=26) of the department's faculty and thirty-one (n=31) Learning Unit VI students who had participated in the ORTHO 251 course. A total of 57 unique observations were available for analysis.

This study gathered a low response rate from the students (16% of the LU VI population) despite adequate dissemination and repeated reminders to complete the evaluation form.

As for the faculty, one faculty who was on sabbatical leave during the year that this course was implemented was excluded. Two other faculty were not able to answer the survey, one of whom had difficulty finding time to answer the survey, and the other one had technical trouble with the online nature of the survey form.

Most of the respondents were students (54.39% of all respondents). Among the students, males and females were around the same in number (F = 43.8%, M = 56.3%), while among the faculty, the majority were males (96.0%), owing to the larger number of male consultants overall. In general, students had higher median evaluation scores than the consultants (Table 1). Both groups rated the clarity of objectives with a median score of 4 (highest).

There was no difference between the two groups' overall evaluation of lectures, and online exams. Students gave higher scores for online departmental conferences, online division rounds, online SGDs, written case, preceptorship, and online OSCE (Table 2).

Students gave significantly higher scores in the evaluation of effective integration for lectures, online departmental conferences, online division rounds, online SGDs, written cases, preceptorship, and online OSCE. Both groups rated online exams similarly in terms of effective integration (Table 3).

Students consistently rated all activities higher in terms of stimulating self-directed learning (Table 4).

Students rated a higher time allotment for online departmental conferences, online division rounds, preceptorship, and online OSCE.

Table 2. *Demographic Data*

	Group A Consultants n=26	Group B Students n=31	Total n=57
Sex M F	 24 1	 18 14	 42 15
Rotation* (for students only) 1st 2nd 3rd 4th 5th 6th 7th 8th 9th		 3 2 3 2 1 5 5 2 7	

*Rotation: The sequence in which the student rotated in ORTHO 251, i.e., ORTHO 251 was their 1st rotation, 2nd rotation, etc.

Table 3. *Summary of Analysis of Course Evaluation By Students (CEBS) per Question*

Questions	Group A Consultants Mean (standard deviation) Median (interquartile range)	Group B Students Mean (standard deviation) Median (interquartile range)	Total Mean (standard deviation) Median (interquartile range)	p-value
Q1 Were the objectives clearly stated, Yes	3.58 (0.64) 4.00 (1.00)	3.71 (0.46) 4.00 (1.00)	3.65 (0.55) 4.00 (1.00)	0.5337
Lecture	3.15 (0.63) 3.33 (0. 67)	3.41 (0.51) 3.33 (1.00)	3.29 (0.58) 3.33 (0. 67)	0.1417
Online Departmental Conferences	3.09 (0.75) 3.00 (1.00)	3.66 (0.46) 4.00 (0.67)	3.40 (0.66) 3.67 (1.00)	**0.0015**
Online Division Rounds	2.92 (0.70) 3.00 (0.67)	3.55 (0.55) 4.00 (1.00)	3.26 (0.70) 3.00 (1.00)	**0.0007**
Online SGDs	3.41 (0.52) 3.5 (1.00)	3.71 (0.45) 4.00 (0.67)	3.57 (0.50) 3.67 (0.67)	**0.0116**
Written Case	3.17 (0.73) 3.17 (0.67)	3.56 (0.51) 3.67 (1.00)	3.38 (0.65) 3.67 (1.00)	**0.0232**
Online Exams	3.38 (0.48) 3.33 (1.00)	3.63 (0.38) 3.67 (0.67)	3.52 (0.44) 3.67 (1.00)	0.0522
Preceptorship, Demo, Return Demo	3.08 (0.75) 3.00 (1.33)	3.76 (0.40) 4.00 (0.33)	3.45 (0.67) 3.37 (1.00)	**0.0001**
Online OSCE	3.18 (0.70) 3.00 (0.67)	3.63 (0.64) 4.00 (1.00)	3.43 (0.70) 3.67 (1.00)	**0.0028**
Degree of sequencing of course	3.08 (0.56) 3.00 (0.00)	3.68 (0.54) 4.00 (1.00)	3.40 (0.62) 3.00 (1.00)	**0.0001**
Awareness of evaluation scheme, Yes	23 (88.46%)	31 (100.00%)	54 (94.74%)	0.089
Appropriateness of methods of evaluation	3.38 (0.57) 3.00 (1.00)	3.64 (0.55) 4.00 (1.00)	3.53 (0.57) 4.00 (1.00)	0.0657
Results of the student's performance given Late Not at all Timely	 (19.23%) (11.54%) (69.23%)	 (9.68%) (12.90%) (77.42%)	 8 (14.04%) 7 (12.28%) 42 (73.68%)	0.624
Feedback of performance is beneficial, Yes	22 (84.62%)	31 (100.00%)	53 (92.98%)	**0.038**

Mean (standard deviation); Median (interquartile range); p-value in bold = significant

Students gave a higher rating for the question "To what degree did the sequencing of course content contribute to your understanding of the subject matter?" There was no significant difference in the responses to the questions "Were you made aware of the evaluation scheme used in the course", "Were the methods of evaluation used appropriately based on the objectives of the course", and timeliness of student performance (p=0.089, p=0.0657, and p=0.624, respectively). There was a significant difference in the evaluation of the effectiveness of performance feedback ("Was the feedback of your performance beneficial?", p=0.038).

Discussion

The hybrid ORTHO 251 course was favorably viewed by faculty and students; they rated all the activities as good or excellent in terms of effective integration, self-directed learning, and time allotment. There were, however, some differences regarding specific activities.

Both reported that the objectives were clearly stated, which establishes the goals of learning. These guide the integration of the activities and topics.

Students, more than the consultants, perceived that the activities were more effectively integrated. Students were exposed to all the activities and have a good sense of how they come together (*e.g.*, they apply their learnings from the rounds and conferences to their SGDs). Consultants were involved in all activities, but some they moderated singly (*e.g.*, SGDs) and thus did not witness other consultants' conduct of the same, which may explain why they feel less

Table 4. *Summary of Effective Integration per Activity*

Activity: Effectively integrated	Group A Consultants Mean (standard deviation) Median (interquartile range)	Group B Students Mean (standard deviation) Median (interquartile range)	Total Mean (standard deviation) Median (interquartile range)	p-value
Lecture	3.00 (0.69) 3.00 (0.00)	3.45 (0.62) 4.00 (1.00)	3.25 (0.69) 3.00 (1.00)	0.0120
Online Departmental Conferences	3.19 (0.80) 3.00 (1.00)	3.71 (0.53) 4.00 (1.00)	3.47 (0.71) 4.00 (1.00)	**0.0079**
Online Division Rounds	3.04 (0.82) 3.00 (1.00)	3.48 (0.72) 4.00 (1.00)	3.28 (0.79) 3.00 (1.00)	**0.0295**
Online SGDs	3.31 (0.74) 3.00 (1.00)	3.74 (0.44) 4.00 (1.00)	3.54 (0.63) 4.00 (1.00)	**0.0161**
Written Case	3.00 (0.89) 3.00 (1.00)	3.58 (0.62) 4.00 (1.00)	3.32 (0.81) 3.00 (1.00)	**0.0053**
Online Exams	3.31 (0.62) 3.00 (1.00)	3.55 (0.51) 4.00 (1.00)	3.44 (0.57) 3.00 (1.00)	0.1455
Preceptorship, Demo, Return Demo	3.08 (0.74) 3.00 (1.00)	3.81 (0.48) 4.00 (0.00)	3.47 (0.71) 4.00 (1.00)	**<0.0001**
Online OSCE	3.15 (0.78) 3.00 (1.00)	3.61 (0.67) 4.00 (1.00)	3.40 (0.72) 4.00 (1.00)	**0.0100**

p-value in bold = significant

integration. This was consistent with Moralista's findings that Filipino faculty members were ambivalent about online learning, probably because they feel that there is a high degree of depersonalization [8]. The topics and learning objectives should be reviewed and integrated across the different platforms. Some topics and objectives may be better suited to either online or face-to-face.

Online, asynchronous learning requires that students are fully engaged in self-directed learning. All the activities were rated higher by students in terms of stimulating self-directed learning; we believe no changes are needed in this regard. Important skills in this aspect include being able to acquire, validate, and apply reliable information from various information resources. Multimedia resources better stimulate students' interest, innovation, and creativity during the learning process. By going at their own pace, the student's learning is individualized and can lead to better involvement and performance [4,10].

Students rated a higher adequate time allotment for online departmental conferences, online division rounds, preceptorship, and online OSCE. Interestingly, only the online OSCE is directly moderated by the consultants with the students; the conferences and rounds were directed towards the residents. Consultants may have felt that the students could have benefitted from more time to prepare, present, or answer these activities. The time allotment or duration of the course may have to be reviewed.

Both groups rated similarly on the awareness of the evaluation scheme, appropriateness of methods of evaluation, and timeliness of performance feedback. However, more students than consultants felt that feedback on performance was beneficial. In light of the changing learning environment, feedback on the course is important, both for the students' academic performance and for the teaching methods, to promote growth and improve the learning experience [7].

Limitations and Recommendations

The results of this study may be skewed by the disparate response rate between the faculty and students, and the measurement bias from its survey tool. Survey fatigue and excess familiarity with the original CEBS may have discouraged the students from participating, or carefully choosing their answers. On the other hand, the novelty of the CEBS among the faculty may have piqued their interest and resulted in a relatively higher response rate. It is recommended that the institution modify the CEBS to reflect the new hybrid learning environment, especially the following topics: 1) ease of use and navigation with online platforms, 2) the students' access to computers and internet and how this affects their learning, and 3) comparing evaluation between a face-to-face session and an online session.

The difference in how each group experiences the activity (*i.e.*, as moderator and as listener, as implementer

and receiver, etc.) also affects how they answer the questionnaire. The institution may also consider a separate evaluation tool or modality catered to the faculty (*i.e.*, an equivalent Course Evaluation by Faculty).

Many of the faculty were also involved in the development of the new curriculum; this may make their evaluation to be more favorable. On the contrary, we found that this was not the case. Students rated all items equal or higher than the consultants did. One explanation may be that while consultants moderated some activities (e.g., SGDs), they did not see the activities moderated by others. This may skew their evaluation especially in terms of integration (since they do not see how the activities integrate with each other) and time allotment.

The study did not investigate the participants' reasons behind how they rated the hybrid curriculum. Important qualitative information that could help further our understanding of the responses may have been left out. It would be beneficial to hear more in-depth insights and recommendations from participants.

Conclusion

The hybrid activities conducted in the ORTHO 251 course were favorably rated by the faculty and students, with differences in a few activities. Students rated all activities, except online exams, as effectively integrated. Likewise, students rated all activities as more highly stimulating self-directed learning. Students rated online conferences, division rounds, preceptorship, and online OSCE higher on having adequate time allotment. Students rated the degree of sequencing and benefit of feedback performance as higher.

Further qualitative data should be gathered to gain students' insights into their experiences with remote learning. The evaluation tool also must be tailored for points more relevant to the new learning platforms.

The department may integrate these hybrid activities by matching the topic to the platform. Consultants may “sit in” on other sessions and give feedback to help make everyone's experiences more uniform and easier to evaluate. Time allotments (especially for preceptorship and online OSCE) should be increased.

Disclosure

The corresponding author is a member of the faculty involved in the implementation of the ORTHO 251 course being evaluated. The authors disclose no other conflicts of interest in the conduct of this study.

Ethical Considerations

The study was screened by the Institutional Review Board. Ethical considerations were approved by the Research Ethics Board. Voluntary informed consent was secured from all participants. They were informed of the title, authors, objectives, and duration of the study, then invited to participate. They were also assured of the privacy and confidentiality of the information gathered, and that they were free to withdraw at any time. They were assured that there is no coercion in answering the survey – it is not a requirement, and it has no bearing on their grades for ORTHO 251. They were also informed of the expected benefits to the education community and its possible utilization in policy making. The investigators were direct educators of the students involved in the study. The students who participated were reassured that participation will have no bearing on their academic standing, and that they were free to withdraw at any time. The investigators adhered to the Data Privacy Act of 2012 to maintain the privacy of the participants' information.

Competing Interests

The authors have no competing interests to declare.

References

1. Dioquino-Dimacali CTC. (2017) The University of the Philippines College of Medicine: Pioneer in Medical Education Innovations in the Philippines. Acta Med Philipp. 51(4):360-365. doi:10.47895/amp.v51i4.526
2. Zehry K, Halder N, Theodosiou L. (2011) E-Learning in medical education in the United Kingdom. Procedia - Soc Behav Sci. 15:3163-3167. doi:10.1016/j.sbspro.2011.04.265
3. Warnecke E, Pearson S. (2011) Medical students' perceptions of using e-learning to enhance the acquisition of consulting skills. Australas Med J. 4(6):300-307. doi:10.4066/AMJ.2011.73
4. Halim H, Sulaiman N. (2020) Students' Perceptions of Using Information and Communication Technology as an E-Learning Method. J Phys Conf Ser. 1529(5). doi:10.1088/1742-6596/1529/5/052093
5. Ifediora CO. (2019) Online Medical Education for Doctors: Identifying Potential Gaps to the Traditional, Face-to-Face Modality. J Med Educ

Curric Dev. 6:2382120519827912. doi:10.1177/2382120519827912
6. Bao W. (2020) COVID -19 and online teaching in higher education: A case study of Peking University. Hum Behav Emerg Technol. 2(2):113-115. doi:10.1002/hbe2.191
7. Dong C, Lee DWC, Aw DCW. (2020) Tips for medical educators on how to conduct effective online teaching in times of social distancing. Proc Singapore Healthc. Published online 2020. doi:10.1177/2010105820943907
8. Moralista RB, Oducado RMF. (2020) Faculty perception toward online education in a state college in the Philippines during the coronavirus disease 19 (COVID-19) pandemic. Univers J Educ Res. 8(10):4736-4742. doi:10.13189/ujer.2020.081044
9. Abbasi S, Ayoob T, Malik A, Memon SI. (2020) Perceptions of students regarding e-learning during covid-19 at a private medical college. Pakistan J Med Sci. 36(COVID19-S4):S57-S61. doi:10.12669/pjms.36.COVID19-S4.2766
10. Adnan M. (2020) Online learning amid the COVID-19 pandemic: Students perspectives. J Pedagog Sociol Psychol. 1(2):45-51. doi:10.33902/jpsp.2020261309

APPENDIX A. Tables

Table 5. *Summary of Stimulating Self-directed Learning per Activity*

Activity: Stimulated Self-Directed Learning	Group A Consultants n=26	Group B Students n=31	Total n=57	p-value
Lecture	3.00 (0.69) 3.00 (0.00)	3.48 (0.57) 4.00 (1.00)	3.26 (0.67) 3.00 (1.00)	0.0066
Online Departmental Conferences	2.77 (0.99) 3.00 (2.00)	3.58 (0.56) 4.00 (1.00)	3.21 (0.88) 3.00 (1.00)	0.0010
Online Division Rounds	2.62 (0.80) 3.00 (1.00)	3.48 (0.63) 4.00 (1.00)	3.09 (0.83) 3.00 (1.00)	0.0001
Online SGDs	3.35 (0.69) 3.00 (1.00)	3.77 (0.50) 4.00 (0.00)	3.58 (0.63) 4.00 (1.00)	0.0071
Written Case	3.08 (0.93) 3.00 (1.00)	3.71 (0.46) 4.00 (1.00)	3.42 (0.78) 4.00 (1.00)	0.0029
Online Exams	3.26 (0.67) 3.00 (1.00)	3.61 (0.50) 4.00 (1.00)	3.46 (0.60) 4.00 (1.00)	0.0465
Preceptorship, Demo, Return Demo	3.04 (0.87) 3.00 (1.00)	3.81 (0.40) 4.00 (0.00)	3.46 (0.76) 4.00 (1.00)	0.0001
Online OSCE	3.19 (0.75) 3.00 (1.00)	3.65 (0.66) 4.00 (1.00)	3.46 (0.76) 4.00 (1.00)	0.0064

Table 6. *Summary of Adequate Time Allotment per Activity*

Activity: Adequate Time Allotment	Group A Consultants n=26	Group B Students n=31	Total n=57	p-value
Lecture	3.46 (0.76) 4.00 (1.00)	3.29 (0.74) 3.00 (1.00)	3.37 (0.75) 4.00 (1.00)	0.2999
Online Departmental Conferences	3.31 (0.74) 3.00 (1.00)	3.68 (0.48) 4.00 (1.00)	3.51 (0.63) 4.00 (1.00)	0.0496
Online Division Rounds	3.12 (0.86) 3.00 (2.00)	3.68 (0.48) 4.00 (1.00)	3.42 (0.73) 4.00 (1.00)	0.0104
Online SGDs	3.58 (0.50) 4.00 (1.00)	3.61 (0.62) 4.00 (1.00)	3.60 (0.56) 4.00 (1.00)	0.5752
Written Case	3.42 (0.76) 4.00 (1.00)	3.39 (0.76) 4.00 (1.00)	3.40 (0.75) 4.00 (1.00)	0.8365
Online Exams	3.58 (0.50) 4.00 (1.00)	3.74 (0.44) 4.00 (1.00)	3.67 (0.48) 4.00 (1.00)	0.1920
Preceptorship, Demo, Return Demo	3.12 (0.82) 3.00 (1.00)	3.68 (0.54) 4.00 (1.00)	3.42 (0.73) 4.00 (1.00)	0.0038
Online OSCE	3.19 (0.75) 3.00 (1.00)	3.65 (0.66) 4.00 (1.00)	3.44 (0.73) 4.00 (1.00)	0.0064

APPENDIX B. Questionnaire

Last name:	
First name:	
Middle initial:	
For students	
Student number:	
Block:	

For items that are ranked, 1 represents the lowest score and 4 the highest score

Objectives	LOWEST			HIGHEST
Were the objectives clearly stated?	1	2	3	4

Teaching Strategies and Methods	Effectively Integrated					Stimulated self-directed learning					Adequate time allotment			
Lectures	1	2	3	4		1	2	3	4		1	2	3	4
Online departmental conferences	1	2	3	4		1	2	3	4		1	2	3	4
Online division rounds	1	2	3	4		1	2	3	4		1	2	3	4
Online SGDs	1	2	3	4		1	2	3	4		1	2	3	4
Written case discussions	1	2	3	4		1	2	3	4		1	2	3	4
Online exams	1	2	3	4		1	2	3	4		1	2	3	4
Preceptorship, demo, return demo	1	2	3	4		1	2	3	4		1	2	3	4
Online OSCE	1	2	3	4		1	2	3	4		1	2	3	4

	LOWEST			HIGHEST
To what degree did the sequencing of course content contribute to your understanding of the subject matter?	1	2	3	4

Evaluation		
Were you made aware of the evaluation scheme used in the course	Yes	No

Were the methods of evaluation used appropriate based on the objectives of the course	LOWEST			HIGHEST
Exams	1	2	3	4

When were the results of student performance given?			
Exams	Timely	Late	Not at all