University Students Perception of Online Education: Is Engagement Enough?

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ABSTRACT

Background: Universities have halted non-essential services, with many restricting campus-based teaching, and continuing courses through online resources, including (controversially) lab-work. Such technologically enhanced approaches have been proven to have high levels of engagement among university students. Objective: This study focuses on the perception of quality of online learning by first-year university students, between two semesters, amidst the COVID-19 pandemic. Methods: A 24-item questionnaire was designed with Likert response scale. It consisted of general perception questions of academic life and questions specific to the quality of delivery of a specific class. Eighty one eligible students were asked to fill the same questionnaire for each semester. Students’ responses and their grades from the final exams in each semester were compared. Results: Out of 81 eligible students, 75.31% of students responded to the survey. They were less interested in their studies in the second “online” semester (p=0.05). Students expressed dissatisfaction with the quality of online classes (p=0.03). Academic life fulfillment was also affected (p=0.02). Students’ perception of the amount of free time they had between semesters did not change significantly (p=0.16). Students appeared dissatisfied with their active participation during the online class (p=0.007), even though they felt less stressed attending lectures from home (p=0.041). However, they found that workload was bearable and similar between semesters (p=0.83). Students also had significantly more trouble concentrating during online lectures (p<0.001). Students’ grades significantly improved by an average of 1.07 (out of 10) in the final exams at the end of the second semester (p<0.001). Conclusion: These unprecedented circumstances require innovation and cooperation on the part of university programs to maintain rigorous standards of higher education, taking into account students’ evolving perception and needs.

Keywords: education, university, COVID-19, online learning.

1. BACKGROUND

Apart from the shock in national and global economy, the Corona-Virus-19 Disease (COVID-19) outbreak and consequent preventive measures have profoundly affected higher education worldwide (1). Universities have halted non-essential services, with many restricting campus-based teaching, and continuing courses through online resources, including (controversially) lab-work. Such technologically enhanced approaches have been proven to have high levels of engagement among university students (2). Engagement alone however should not be the only desirable feature of higher education. The epidemic, despite the development of a vaccine, will continue to affect university education for years, pushing institutions towards the more cost-effective online lectures. The initial Greek national guidelines for the academic year 2020-21 included: online theoretical lectures (if more than 50 students were expected to attend), mandatory use of face mask everywhere on university campus, and laboratory sessions with a minimum number of students (no more than 30 per group). A second lockdown in November 2020 has rendered these guidelines obsolete, and all classes are held online, indefinitely.

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This study had originally been perceived as a means of evaluating and quantifying first-year students' satisfaction with the quality of studies by an online questionnaire. The sudden change in university function due to the pandemic led us to study the alterations in learning satisfaction as perceived by first-year students, between two semesters, a "normal" one and one affected by the pandemic.

2. OBJECTIVE

This study focuses on the perception of quality of online learning by first-year university students, between two semesters, amidst the COVID-19 pandemic.

3. MATERIAL AND METHODS

The Internal Committee of Ethics of Physiotherapy Department of University of Thessaly has approved this study (protocol number 3/603). A 24-item questionnaire was designed with Likert response scale questions. The questionnaire was designed specifically for first-year students attending the Kinesiology class for two main reasons. The first is that this class is basically divided in two parts (Kinesiology 1 and 2) between semesters with the same professor and the same textbook, and therefore difference in
University Students Perception of Online Education: Is Engagement Enough?

answers would depict differences between campus and online delivery of lectures. No other class had these characteristics. The second reason was that first-year students only experienced “university life” briefly prior to significant changes brought by the COVID-19 pandemic, compared to second-, third- or fourth-year students.

There were two types of questions, the first consisted of general perception questions (workload, free time, perception of quality of studies, interpersonal interactions with the faculty and other students) and the second type was specific to the class of Kinesiology (Tables 1-4). The second semester was entirely taught online due to the COVID-19 pandemic. Students were asked to fill the same questionnaire twice, for each semester (in early January and late June 2020), right before final exams. In the survey, the students were asked to self-assess on a 5-point Likert scale of agreeableness with specific statements. Students that did not attend either semester from the beginning were excluded from the study.

The questionnaire was developed as an online survey on Google Forms, an online platform that requires participants to be signed-in to a Google account to complete the survey, preventing multiple entries from individual respondents. These accounts were already set up and at-
tributed to students when they registered with the Department at the beginning of their academic studies. Results are delivered anonymously. It was sent to 81 eligible students.

We also sought to compare exam performance of students at the end of each semester. Grades could reflect changes in class delivery method. For the final exams at the end of each semester, students were evaluated with the use of multiple-choice questions (with negative marking). At the end of the second semester, exams took place online. Difference in students’ responses distribution was compared with the Wilcoxon Signed Rank Test on SPSS. Grades from the final exams in each semester were compared with paired samples Student’s t-test. Significance was set at p<0.05.

4. RESULTS

Out of 81 eligible students, 61 responded to the survey (75.31%). They consisted of 31 male students (50.8%) and 30 female students (49.2%). The vast majority (95.08%) of the students were in the 18-22 years old age group. 68 students took both first and second semester exams. Questions as appeared in the questionnaire and students’ different responses between semesters are depicted in Tables 1-4. Students’ grades significantly improved by an average of 1.07 (out of 10) (standard deviation 1.35) in the final exams at the end of the second semester (p<0.001).

Results from the first, general part of the questionnaire on the students’ perception of academic life, showed that students appear to be less interested in their studies in the second semester, due to the lockdown and consequent changes. Fortunately, satisfaction rates remained high (“I am interested in my studies”: agree + strongly agree=90.1% in the first semester vs 85.2% in the second, p=0.05). When asked about overall studies quality, students’ responses were significantly different between semesters, quantifying increasing concern and dissatisfaction with the quality of courses being delivered online (“I am doubtful about the quality of my studies”: disagree + strongly disagree = 85.3% in the first semester vs 73.8% in the second, p=0.03). This suggests minor dissatisfaction with the delivery of courses. Academic life fulfillment has also been affected (satisfaction 62.2% in the first semester vs 47.6% in the second, p=0.02). Perhaps, young adults, more than the previous generation, have become unhappy and agitated because they feel as if their life is “on hold” and are unable to “party”. This has been previously stated on a recently published study (13), reflecting the thoughts of tutors rather than trainees. Students’ perception of the amount of free time they had during both semesters did not change significantly (p=0.16). An increase in free time was expected during the second semester since fewer commutes to the campus were required and less outdoor activities were permitted. However, constant email exchange with tutors and administration may have increased workload outside academic hours. Finally, perception of interpersonal relationships remained unchanged (Table 1).

As far as results from questions specifically designed for the class of Kinesiology between semesters are concerned, students were less satisfied with the degree of their active participation in the second semester during online lectures (54.1% in the first semester vs 39.3% in the second semester, p=0.007), even though they felt significantly less stressed attending lectures from home (p=0.041). However, they found that workload was bearable and similar between semesters and that the professor’s efforts were satisfactory in both semesters. Another issue rose in terms of available time between lectures, since students found that there was significantly less time for questions and answers (“Q&A”) at the end of lectures taking place online during the second semester, although agreement remained high (“There was sufficient time to complete each lecture and have Q&A session at the end”: agree + strongly agree = 82% in the first semester vs 63.9% in the second semester, p=0.02). Even though online learning has been generally rated as efficient, in the present study students answered that their ability to concentrate declined significantly during online lectures from home (“The professor had my full attention and I could easily concentrate during lectures”: agree + strongly agree = 82% in the first semester vs 46% in the second, p<0.001), and that they lost focus easier during online lectures due to fatigue or boredom (“I often felt tired or bored during the lecture and as a result I lost focus”: agree + strongly agree = 26.2% in the first semester vs 42.7% in the second, p=0.02). Overall, students felt that they grasped the basic elements of the course, despite becoming less satisfied with the quality of the delivery of the course in the second semester (“I was satisfied by the overall quality of the course of Kinesiology”: agree + strongly agree = 80.3% in the first semester vs 68.8% in the second semester, p=0.001). No gender inequality was perceived by students (Tables 2-4).

Finally, the significant improvement of grades in the second semester could be attributed to online learning, although this conclusion clashes with students’ answers. Therefore, the scenarios of either students “cheating” due to less effective online supervision, or the professor subconsciously devising “easier” questions to help students in distress due to the pandemic are more likely, and create additional departmental issues.

5. DISCUSSION

Results of the present study most likely reflect the difference in perception of higher education when online delivery of education was utilised. An effort was made to blind potential answers by not directly referring to the COVID-19 era in any of the questions worded in the questionnaire and by not stating the purpose of the questionnaire. We used the same population, and the same course, taught by the same faculty and the same questions between semesters, in an effort to investigate different perception owed to long-distance education. Surprisingly, although an abundance of articles has been published on how the recent pandemic has affected higher education, very few articles utilise scientific methodology and report actual results from the students’ perspective, as in this study. The majority of articles are opinion pieces or editorials (3-12).
Teachers and students had initially been excited with the notion of transition to the online lesson delivery approach. As time went by, the faculty became increasingly overwhelmed with preparing lesson plans to deliver online teaching. Technical problems arose among older faculty members not quite adjusted to online delivery of lessons and not everyone was able to cope with the increased workload. Furthermore, domestic computers and relevant equipment are now in heavy demand from parents, children, and other relatives who have to work from home. Thus, working at home has become a puzzling task for both the faculty and students. Many universities might not have had enough time and resources to improve existing facilities and infrastructure to facilitate online teaching with immediate effect. Another serious issue is students with limited resources who might not own a personal computer and are confined at home, where circumstances might also be difficult due to domestic violence. Moreover, the quality of clinical, practical or art courses that require hands-on laboratories comes into question and tutors are put on the spot to help such students. Some laboratory courses, including fine arts, clerkship, dance, art, and music, might not be taught properly online.

One must not overlook certain sensitive subgroups of students that might be affected to a greater extent. For example, final-year students are faced with worse conditions, since many of their classes will never be completed and they may graduate late, not to mention that they will have to cope with a global economy in recession. As a result, their confidence and adaptation from academic to professional life will be deeply affected. International students staying far from home are not only worried about their health, safety, and education, but they also have a huge amount of concern for the wellbeing of their families. Students are concerned amid widespread fears that the outbreak will adversely affect their exam performance, although this was not depicted in the present study. Our department, after reviewing the results of this study is placing an emphasis on mental health support by updating the health guidelines and providing online guidance and lectures to offer stress management to help cope with the pandemic. Any student experiencing feelings of heightened anxiety about COVID-19 should be provided with proper psychological support well in time. In the well-studied “flipped classroom” teaching method, learners are provided with didactic material in the form of a prerecorded video lecture that they can watch during their free time prior to the conference. The aim of the live conference session then shifts to synthesis, application, and case-based discussion. The importance of personal, real-time online interactions cannot be overlooked however, and attempting to reduce the distance between learners through provision of social media chat rooms for daily questions and discussion or real-time tutorials is a key element to successful online learning. Web-based learning had been previously successfully tested and used at other universities, and also, in the 2003 SARS outbreak in Hong Kong.

The major strength of the study is the quantification and statistical comparison of the alterations in perception of quality of education delivered online to first-year university students, by comparing two consecutive semesters. The results produced have not been previously published or presented in this way to the best of our knowledge and are of importance regardless of the ongoing pandemic. These results reflect perception of the new norm of online education and have led to specific administrative actions to enhance the educational performance. Nevertheless, this study is not without methodological flaws. Apart from the relatively small number of students participating, there is selection bias (first-year students are not as experienced with both academic and out-of-campus university life as older students) and obviously different kinesiology content, and therefore results should be viewed with caution.

6. CONCLUSION

These unprecedented circumstances will require innovation and cooperation on the part of university programs to maintain rigorous standards of higher education. Engagement of students is not merely enough for quality online university education. Online assessment and teaching present with advantages, as well as their own challenges, both on the student front as presented in this study, and the faculty front. The future of online education requires standardisation of student’s remote examination and clear guidance to extenuate unpredictable incidents. Although online assessments and teaching methods have become more prominent in the past decade, the COVID-19 pandemic has enforced conditions that may accelerate their widespread use in university education. As we witness the outbreak unfolding globally, the safety and well-being of students and staff members should be the highest priority.
• Author contributions: A.F. and A.K. conceived and designed the study, and drafted the initial manuscript. P.K. and V.C. collected data, completed the statistical analyses and authored the Materials and methods section. A.M. and V.R. performed the literature search, revised the initial draft of the manuscript and created the tables. N.S. and A.Z. sought and obtained institutional ethical approval, revised and edited the manuscript in its final form.
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REFERENCES

1. Sahu P. Closure of Universities Due to Coronavirus Disease 2019 (COVID-19): Impact on Education and Mental Health of Students and Academic Staff. Cureus. 2020 Apr 4; 12(4): e7541. doi: 10.7759/cureus.7541.

2. Kay D, Pasarica M. Using technology to increase student (and faculty satisfaction) with engagement in medical education. Adv Physiol Educ. 2019 Sep 1; 43(3): 408-413. doi: 10.1152/advan.00033.2019.

3. Sahi PK, Mishra D, Singh T. Medical Education Amid the COVID-19 Pandemic. Indian Pediatr. 2020 Jul 15; 57(7): 652-657. doi: 10.1007/s13312-020-1894-7.

4. Sandhu P, de Wolf M. The impact of COVID-19 on the undergraduate medical curriculum. Med Educ Online. 2020 Dec; 25(1): 1764740. doi: 10.1080/10872981.2020.1764740.

5. Theoret C, Ming X. Our education, our concerns: The impact on medical student education of COVID-19. Med Educ. 2020 Jul; 54(7): 591-592. doi: 10.1111/medu.14181.

6. Tokuc B, Varol G. Medical Education in Turkey in Time of COVID-19. Balkan Med J. 2020 Jun 1; 37(4): 180-181. doi: 10.4274/balkanmedj.galenos.2020.2020.4.003.

7. Agarwal S, Kaushik JS. Student’s Perception of Online Learning during COVID Pandemic. Indian J Pediatr. 2020 Jul; 87(7): 554. doi: 10.1007/s12098-020-0323-7.

8. Bao W. COVID-19 and online teaching in higher education: A case study of Peking University, Hum Behav Emerg Technol. 2020 Apr; 2(2): 113-115. doi: 10.1002/hbe2.191.

9. Bloom DA, Reid JR, Cassady CI. Education in the time of COVID-19. Pediatr Radiol. 2020 Jul; 50(8): 1055-1058. doi: 10.1007/s00247-020-04728-8.

10. Chiodini J. Online learning in the time of COVID-19. Travel Med Infect Dis. 2020 Mar-Apr; 34: 10169. doi: 10.1016/j.tmrid.2020.101669.

11. Ferrel MN, Ryan JJ. The Impact of COVID-19 on Medical Education. Cureus. 2020 Mar 31; 12(3): e7492. doi: 10.7759/cureus.7492.

12. Ortiz PA. Teaching in the time of COVID-19. Biochem Mol Biol Educ. 2020 May; 48(3): 201. doi: 10.1002/bm.21348.

13. Pather N, Blyth P, Chapman JA, Dayal MR, Flack NAMS, Fogg QA, Green RA, Hulme AK, Johnson IP, Meyer AJ, Morley JW, Shortland PJ, Strkalj G, Strkalj M, Valter K, Webb AL, Woodley SJ, Lazarus MD. Forced Disruption of Anatomy Education in Australia and New Zealand: An Acute Response to the COVID-19 Pandemic. Anat Sci Educ. 2020 May; 13(3): 284-300. doi: 10.1002/ase.1968.

14. Choi B, Jegatheeswaran L, Minocha A, Alhilani M, Nakhoul M, Mutengesa E. The impact of the COVID-19 pandemic on final year medical students in the United Kingdom: a national survey. BMC Med Educ. 2020 Jun 29; 20(1): 206. doi: 10.1186/s12909-020-02117-1.

15. Zhai Y, Xu D. Mental health care for international Chinese students affected by the COVID-19 outbreak. Lancet Psychiatry. 2020 Apr; 7(4): e22. doi: 10.1016/S2215-0366(20)30089-4.

16. Al-Rabiaah A, Temsah MH, Al-Eyadhy AA, Hasan GM, Al-Zamil F, Al-Suabe S, et al. Middle East Respiratory Syndrome-CoV (MERS-CoV) associated stress among medical students at a university teaching hospital in Saudi Arabia. J Infect Public Health. 2020 May; 13(5): 687-691. doi: 10.1016/j.jiph.2020.01.005.

17. Chick RC, Clifton GT, Peace KM, Propper BW, Hale DF, Alseidi AA, Vreeland TJ. Using Technology to Maintain the Education of Residents During the COVID-19 Pandemic. J Surg Educ. 2020 Jul-Aug; 77(4): 729-732. doi: 10.1016/j.jsurg.2020.03.018.

18. Røe Y, Rowe M, Ødegaard NB, Syllaas H, Dahl-Michelsen T. Learning with technology in physiotherapy education: design, implementation and evaluation of a flipped classroom teaching approach. BMC Med Educ. 2019 Jul 31; 19(1): 291. doi: 10.1186/s12909-019-1728-2.

19. Hew KF, Lo CK. Flipped classroom improves student learning in health professions education: a meta-analysis. BMC Med Educ. 2018 Mar 15; 18(1): 58. doi: 10.1186/s12909-018-1144-z.

20. Stone DM, Barry DS. Improving Virtual Learning Interactions: Reducing the Transactional Distance of Online Anatomy Modules. Anat Sci Educ. 2019 Nov; 12(6): 686-687. doi: 10.1002/ase.1889.

21. Pandza H, Masic I. Distance learning perspectives. Acta Inform Med. 2013; 18(4): 229-232. doi: 10.5455/aim.2010.18.229-232.

22. Masic Z, Novo A, Masic I, Kudumovic M, Toromanovic S, Rama A, et al. Distance learning at biomedical faculties in Bosnia and Herzegovina. Stud Health Technol Inform. 2005; 116: 267-272.

23. Masic I. E-learning as new method of medical education. Acta Inform Med. 2008; 16(2): 102-117. doi: 10.5455/aim.2008.16.102-117.

24. Masic I, Novo A, Deljkovic S, Omerhodzic I, Piralic A. How to assess and improve quality of medical education: lessons learned from Faculty of Medicine in Sarajevo. Bosn J Basic Med Sci. 2007 Feb; 7(1): 74-78. doi: 10.17305/bjbsm.2007.3097.

25. Masic I, Novo A, Kudumovic M, Rama A, et al. Web based distance learning at Faculty of Medicine in Sarajevo University. Bosn J Basic Med Sci. 2006 May; 6(2): 71-75. doi: 10.17305/bjbsm.2006.3178.

26. Masic I, Ciric D, Pulja A, Kulasin I, Pandza H. Quality assessment of medical education and use of information technology. Stud Health Technol Inform. 2009; 150: 898-902.

27. Masic I, Pandza H, Kulasin I, Masic Z, Valjevac S. Tele-education as method of medical education. Med Arh. 2013; 67(4): 229-232. doi: 10.5455/medarh.2013.67.229-232.

28. Masic Z, Novo A, Masic I, Kudumovic M, Toromanovic S, Rama A, et al. Distance learning at biomedical faculties in Bosnia and Herzegovina. Stud Health Technol Inform. 2005; 116: 267-272.

29. Stone DM, Barry DS. Improving Virtual Learning Interactions: Reducing the Transactional Distance of Online Anatomy Modules. Anat Sci Educ. 2019 Nov; 12(6): 686-687. doi: 10.1002/ase.1889.

30. Pandza H, Masic I. Distance learning perspectives. Acta Inform Med. 2013; 18(4): 229-232. doi: 10.5455/aim.2010.18.229-232.

31. Masic Z, Novo A, Masic I, Kudumovic M, Toromanovic S, Rama A, et al. Distance learning at biomedical faculties in Bosnia and Herzegovina. Stud Health Technol Inform. 2005; 116: 267-272.