

STUDENT PERCEPTIONS ON OVERALL QUALITY OF EDUCATION OF STATISTICS: A 12-YEAR RETROSPECTIVE STUDY

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Several factors may affect the quality of education (QoE). The challenges have intensified over the past 20 months of COVID-19. Our goal is to understand the effect of transitioning to online-learning on QoE amongst those undertaking statistical courses. A total of 714 evaluation forms were collected from students over a period of 12 years. Students were asked to rate the overall QoE of the research methods course. More than 90% of the students agreed that the overall QoE was very good/excellent over the past 12 years. Despite the online delivery of the course since 2020, more than 90% reported a very good/excellent QoE. A synergy of factors may contribute to the retention of an overall good QoE. Further studies could assess the effectiveness of online learning.

BACKGROUND

Several studies investigated the experience of online learning (OL) during the COVID-19 pandemic among students undertaking courses of varied subjects. The findings highlight both important challenges and great opportunities with OL. The experience of OL has been significantly different across students of different school years (Erlam et al., 2021; Yan et al., 2021). Common challenges reported include online fatigue (Niemi et al., 2020), lack of engagement, increase in ocular problems (Agarwal et al., 2021), dependence on technological devices, internet and digital competence, and risk of human and pets' intrusion (Adedoyin & Soykan, 2020). Other factors such as poor digital readiness, reduced learning motivation, and limited collaborative learning opportunities may affect the experience of OL. Nevertheless, OL has been beneficial in achieving equivalent or better student course performance (Khalil et al., 2020) whilst allowing flexibility (Smedley, 2010), allowing accessibility (Mukhtar et al., 2020), and enabling interactivity (Leszczyński et al., 2018; Wagner et al., 2008). These are all attributes that students may consider comforting given the challenging work/life balance and personal priorities that have been aggravated during COVID-19 pandemic.

The Centre for Applied Statistics Courses (CASC) has been established since 2009. The Centre is based within the University College London (UCL) at the Institute of Child Health (ICH) and provides short courses in research methods and statistical analysis for anyone wanting to interpret or undertake their own research. The statistical background of the students may vary from very basic to very advanced. Statistics is a complex subject to teach and learn, and little is known regarding the effect of transitioning to OL on the overall quality of education (QoE) among students. The aim of this study was to investigate the effect of transitioning to OL on the overall QoE for the course of Introduction to Research Methods and Statistics within CASC.

METHOD

Over the 12 years of the CASC the course of Introduction to Research Methods and Statistics has been taught multiple times per annum. Students were asked to evaluate the five-day course after its completion using an online questionnaire. Students were asked to rate the overall QoE of the course using a Likert scale ranging from 1 (Very poor) to 5 (Excellent). eSurvey data from a total of 714 undergraduate and postgraduate students who anonymously evaluated the course over a period of 12 years (2009–2021) were downloaded for analysis. The years before 2020 were considered as pre-online transition and 2020 and 2021 were considered as transitioned online. The sample included 154 student who evaluated the course and rate its overall quality since courses were delivered online (Zoom) since the first national lockdown in 2020. Descriptive statistics were used to assess the annual overall QoE.

RESULTS

The total number of students who attended the course of Introduction to Research Methods and Statistics over the past 12 years was more than 2500. From this grand total, 714 completed the online evaluation form of the course. The number of evaluation forms ranged from four to 99 per annum due

to the different number of times the course was delivered. We found that for six out of the 12 calendar years, 100% of the students felt that the overall quality of the course was Very good/Excellent. Over the 12-year period, more than 90% of the students agreed that the overall QoE was Very good/Excellent. Despite the new modality of delivering the course online since 2020, the overall QoE remained Very good/Excellent for more than 90% of the students (91.9% in 2020 and 100% in 2021), as displayed in Figure 1. The close monitoring of the perceived QoE per calendar year aided our goal to understanding the effect of transitioning to OL amongst those undertaking statistical courses.

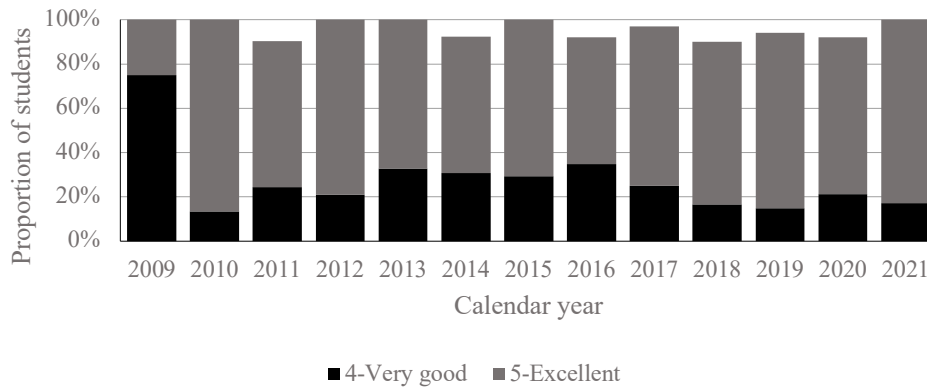


Figure 1: The overall quality of the Introduction to Research Methods and Statistics course as reported by students attending the CASC

DISCUSSION

A main concern for the CASC teaching team was that the transition to OL via Zoom might have adversely influenced the overall quality of the course as experienced from the students. Our goal was to assess the effect of transitioning to OL on QoE. We found that at every calendar year, more than 90% of the students rated the quality of the course as Very good/Excellent. Although the course was taught online since 2020, there was no significant change in the perceived overall quality of the course, with more than 90% of students continuing to rate the overall quality as Very good/Excellent.

This great achievement among the CASC team is a result of the synergy of efforts and collaborative working between a multidisciplinary team, including lecturers, the administration team, and the information and technology (IT) department. The transition was challenging considering the compulsory transition of all teaching to online, which required quick, reliable, and effective response.

Challenges as outlined by Adedoyin and Soykan (2020) regarding quality of internet and digital competence were not an issue within the CASC team due to the access to the technology-fluent staff, the high-end technology within UCL, and the access to good quality of internet. The median average download speed of UK home broadband connections in 2021 was 50.4 Mbps, and this was a 20% increase compared to November 2019 (Airband, 2022). This exceeded the Zoom Video Communications requirements for a 1080p HD video of 3.8Mbps/3.0Mbps (Zoom, 2022).

Whilst anecdotal evidence suggested that the transition to online teaching was challenging for the academic team because we needed to ensure that we were appropriately prepared both technologically and physically to deliver courses online, we felt that OL enabled some new opportunities within the CASC team.

A key driver for this transition resulted from the dedicated input from one team member who transitioned full-time to designing and recording online self-paced courses. This way the students were given the opportunity to attend courses of very similar or the same content and quality to the live online courses at their own time. Although the courses delivered at self-paced mode did not have the option of a direct synchronous live communication with the lecturer delivering the course, online portals and forums are available to the students registering for the self-paced courses and to contact the academic team asynchronously with queries or requests for clarification.

Furthermore, the transition to OL enabled reaching out to a wider audience due to the lift of geographical boundaries for accessing the courses provided by the CASC team. Over the past two years, we had several students attending our courses from areas out of London or out of the UK. Similarly,

some of the lecturers delivering the course were not based in London, either, which enabled the accommodation of personal and practical needs. However, our team and our students still recognize that the face-to-face teaching is a more intimate and engaging experience, and although we appreciate the opportunities of OL, we understand the great benefits of delivering a course face-to-face. In view of this, CASC decided to launch a hybrid Summer School in 2022, allowing students to opt for face-to-face or online attendance. Although this requires enhanced team working, we feel that we are now equipped with the relevant skills and experience and have the critical capacity to deliver this new modality of courses. We anticipate that this hybrid model would enable us to reach out to a wider audience, thus providing more people with the opportunity to enhance their statistical knowledge.

LIMITATIONS

We acknowledge that various factors (such as the quality of the online connection and internet speed, access to a dedicated and comfortable space to study, and other socio-demographic factors) could affect student experience, and we have not accounted for them. Further, our results may be subject to bias due to the lack of feedback from those with poor internet connection who may have been less likely to report a Very good/Excellent overall quality of the course. This suggests that the findings of our retrospective survey may not be generalizable, especially in settings where internet access and digital-readiness are limited. We were also unable to assess student preference for online versus face-to-face teaching because this question has not been added to the evaluation form. It was deemed incongruent due to the compulsory transition of all courses to be online.

CONCLUSION

CASC sustained the achievement of a Very good/Excellent overall quality of the course over a 12-year period despite the transition to OL over the past two years. Further studies could evaluate the effectiveness of the newly introduced modalities (e.g., face-to-face, online, and hybrid/blended learning) of teaching statistics considering the complex and demanding nature of the subject.

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