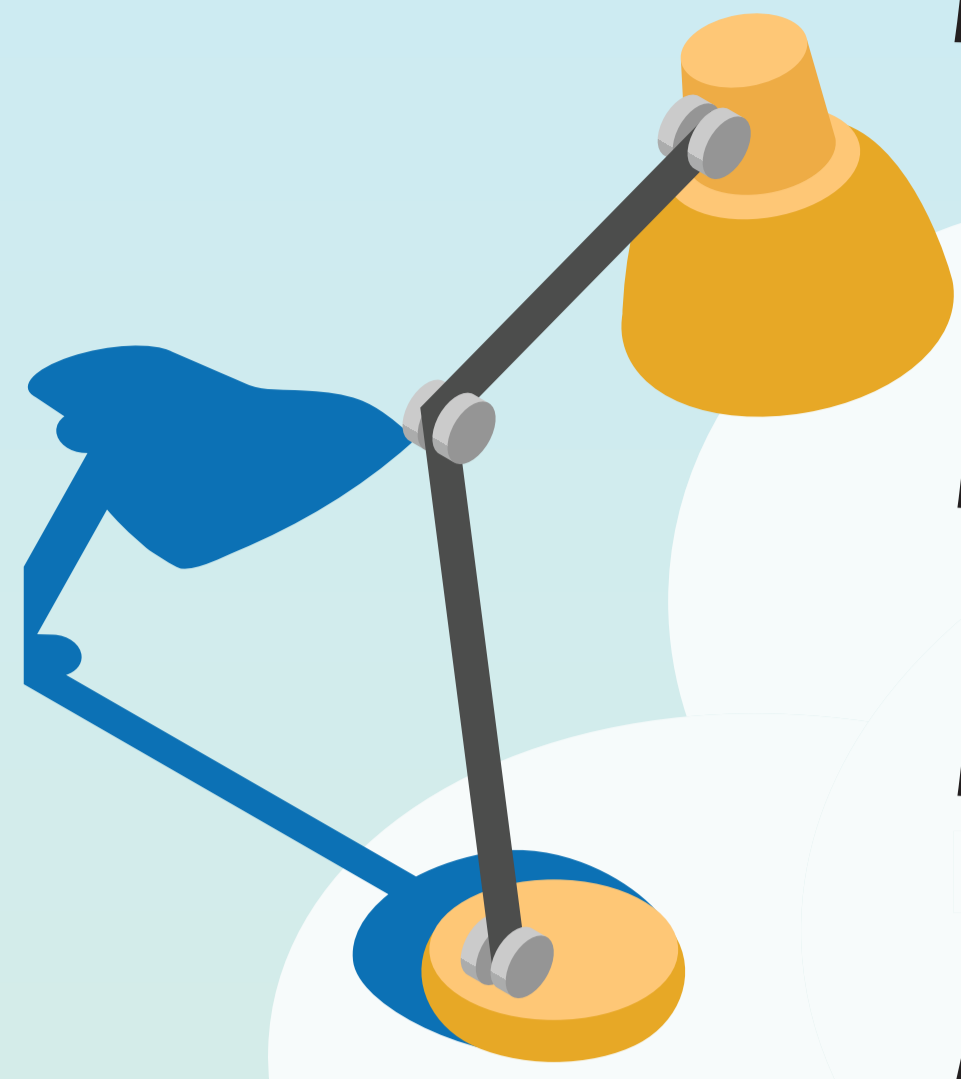
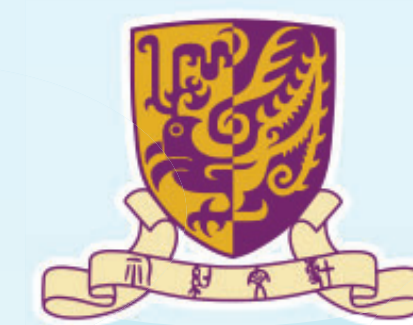




Challenges to Online Assessments in Biomedical Sciences Education During the COVID-19 Pandemic



Members/ Contacts:

Dr. Molly Pui Man Wong*
 molly.wong@cuhk.edu.hk
 *Corresponding author

Dr. Florence Mei Kuen Tang
 florencetang@cuhk.edu.hk

Mr. Frederic W. T. Choi
 waitochoi@cuhk.edu.hk

School of Biomedical Sciences, Faculty of Medicine,
 The Chinese University of Hong Kong, Shatin, New Territories, Hong Kong



Background

In view of the outbreak of COVID-19, the University recommended teachers to conduct online assessments and avoid face-to-face examinations. To assess our students based on these criteria, we revised our assessment schemes for our course, Human Anatomy and Physiology II, with a class size of 65 students, accordingly, and replaced all on-campus assessments with online assessments.

Objectives

In this study, we aimed to investigate the feasibility and effectiveness of our online assessments and invigilation methods for maintaining academic integrity. We conducted online questionnaires and in-depth focus group interviews, and analyzed students' feedback qualitatively and quantitatively, to explore the pros and cons of the various methods, and to determine the most stringent and effective mode of invigilation and question display format for ensuring academic integrity and preventing cheating.

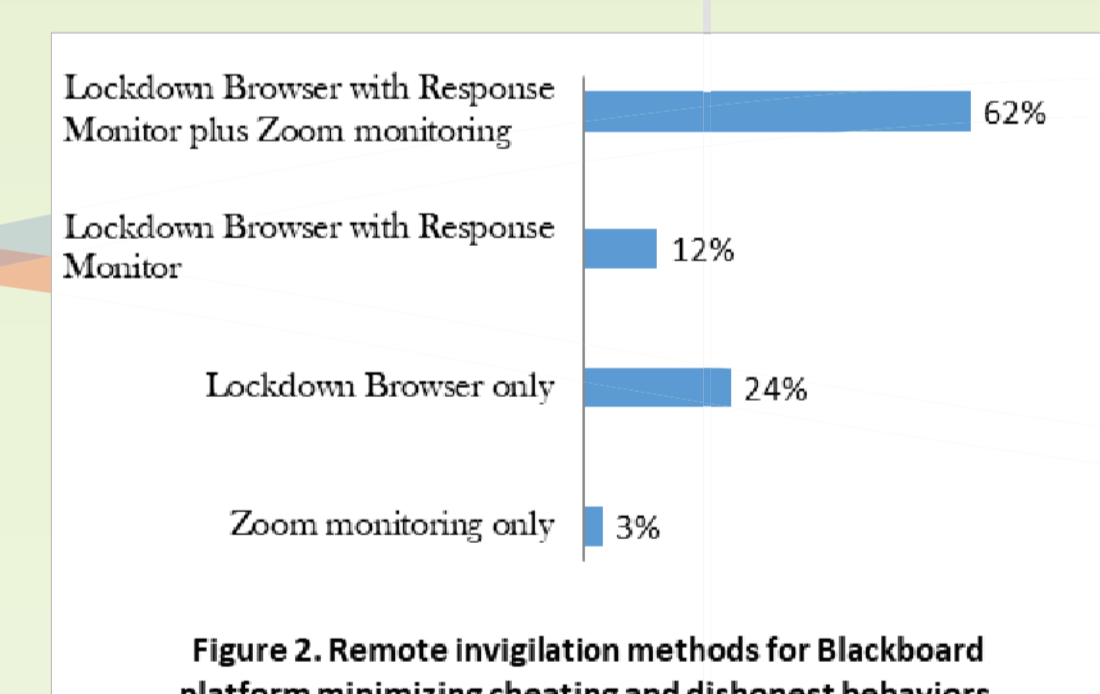
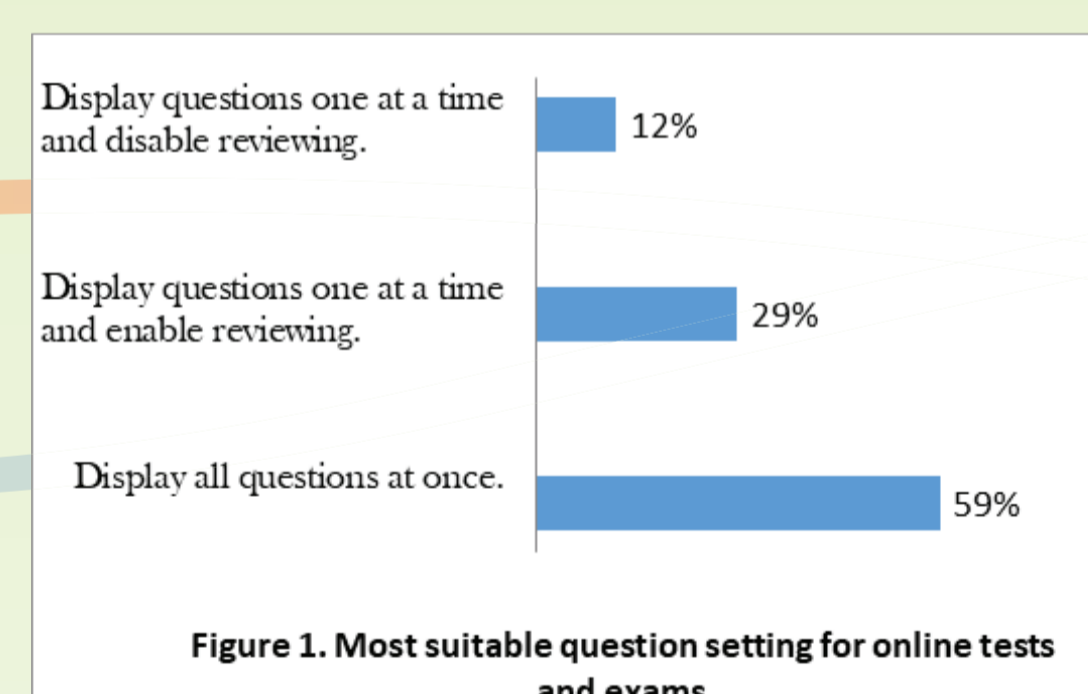
Methodology

There was a total of two multiple-choice question online tests and one online exam. We designed and conducted these online assessments in various formats, and adopted three different combinations of invigilation methods as summarized in the following table:

Formats of Multiple-Choice Question Setting	Invigilation Methods
1. Display all questions at a time	a. Blackboard with Zoom monitoring
2. Display questions one at a time (Trial only)	b. Lockdown Browser with Response Monitor
3. Display all questions at a time	c. Lockdown Browser with Response Monitor plus Zoom monitoring
4. Randomize the order of questions or answers	d. Lockdown Browser with Zoom monitoring

Results

Based on the data obtained from the online questionnaires and in-depth focus group interviews, our results showed that there were pros and cons for each of the settings and invigilation methods. In addition to the qualitative analyses, some of the quantitative analyses were summarized in Figure 1 and 2 below:



Discussions

We tested and analyzed the feasibility and the effectiveness of each of the question display formats and different combinations of invigilation methods of the online assessments. The most suitable and practical question setting for online tests and exams was to display all questions at once (59% of respondents agreed). Our results also indicated that there were pros and cons in any of these methods. Therefore, there is indeed no "magic" solutions to ensure the academic integrity of students. On the one hand, we trust our students. On the other hand, we ought to provide fair assessments and ensure academic integrity. We could only do our best to minimize the chance of cheating while ensuring that these online assessments could serve as appropriate assessments for our students and preventive measures against the potential spreading of COVID-19. Nonetheless, the most stringent and effective mode of invigilation was a combination of Lockdown Browser with Response Monitor plus Zoom Meeting for best results of ensuring academic integrity and preventing cheating (62% of respondents agreed).

Take Home Messages

To conclude, it is important to ensure a stable internet connection on both ends (examiners/invigilators and students), provide clear and detailed instructions and guidelines to both students and invigilators with test trials in advance, and a smooth systemic invigilation process. In the future, there is a need to promote academic integrity widely on campus. Both teachers and students should have mutual understanding about the standards and the consequences of the academic dishonesty and cheating.

Acknowledgements

Division of Education, School of Biomedical Sciences, Faculty of Medicine, CUHK
 Miss July Lo and Mr. Ray Lee, Information Technology Service Center, CUHK
 Prof. Simon Au and Ms. Shirley Tsui, Division of Education, School of Biomedical Sciences, Faculty of Medicine, CUHK

