The age of academic integrity in COVID-19: new normal changes to the health professional education

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Abstract: With online examinations prevailing, academic integrity has become a concern. This study is to explore perceptions of online tests among students. An anonymous online survey was conducted among 156 students enrolled in the health professional courses from the CUHK Faculty of Medicine in the academic year 2019–2020. The majority preferred traditional onsite examination (75%) over online format type (25%) because of a less technical requirement (86%), immediate support from invigilators for unanticipated situations (74%), and easiness of focusing (64%); however, some prefer online

examinations due to convenience (66%). The pressure and anxiety towards the study do not have significant differences. The reasons for cheating include the desire to pass (42%), peer influence (42%), outstanding grades (38%), and ease of browsing other websites (31%). The application of the blackboard system, Respondus LockDown Browser, with Zoom invigilation minimises the chance of cheating.

Keywords: COVID-19 pandemic; social distancing restriction; academic integrity; cheating; blackboard system; Respondus LockDown Browser; zoom invigilation.

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1   Introduction

Academic integrity is the core element in education, requesting a "compliance with ethical and professional principles, standards, practices and consistent system of values, that serves as guidance for making decisions and taking actions in education, research and scholarship" (Tauginienė et al., 2018). Students are expected to engage in educational activities honestly and avoid all forms of cheating, plagiarism, and misrepresentation of information. Inaction in combating academic dishonesty behaviour may harm the learning environment and university's reputation (Macfarlane et al., 2014). There are increasing concerns about academic integrity when teaching and learning are conveniently conducted online (Bain, 2015). Usually, students must sit for pen-and-paper format examinations with physical invigilation at the end of every academic term. The examinations' regulations should be strictly exercised to ensure a fair assessment and prevent student misconduct (Cohen-Schotanus, 1999; Scanlan, 2006). Advanced information technologies facilitate the conduct of the evaluation through online mediums. Various learning management systems, including Blackboard system, Respondus LockDown Browser with monitor, and video conferencing system, such as Zoom, enable remote online assessments and invigilation. Many studies note the drivers for student dishonesty, including lack of self-discipline and temptation (McCabe, 2009; Stogner et al., 2013; Dyer et al., 2020; Rowe, 2004). Remote invigilation in an online examination is an issue that has not been well-addressed and arranged until the push under the COVID-19 pandemic.

The impact of information technology played on academic integrity was not without controversies. Many studies have demonstrated a link between the lack of academic integrity and information technology advancement (Miller and Young-Jones, 2012; McCabe et al., 2002; Miller, 2019). Students are growing accustomed to the easy and free access of information from internet support, and the copy-and-paste function is intrinsic. It eventually blurs students' understanding of what constituting violating academic dishonesty or integrity. There is evidence that the information technology for using the internet increases cheating incidents and makes plagiarism faster and more accessible (Lanier, 2006; Batane, 2010). Students perceived that internet content is free and part of their daily life (Torres-Diaz et al., 2018; Chang et al., 2015). A study conducted by Olivia-Dumitrina in 2019 revealed that 39.2% of students did not acknowledge copy-and-paste as plagiarism, while 68.3% of students did not consider paraphrasing as a kind of plagiarism (Olivia-Dumitrina et al., 2019). It is indicated that students are confusing the concept of plagiarism in the digital environment. Other studies revealed that student's misconception of 'internet plagiarism' is attributed to the lack of proper teaching (Cheak et al., 2013). With the rapid shift to online learning, the is an increasing reported several integrity violations, commonly because students are mostly perceived as 'digital native' (Prensky, 2009). These students are very familiar with computer technologies and tempted to abuse other methods to gain unfair academic advantages over their peers (Kitahara and Westfall, 2007). Nonetheless, a recent study reporting contradicting findings that students are less likely to cheat in the online medium than those attending traditional face-to-face classes (Peled et al., 2019), which can be explained by their greater intrinsic motivation to do well in their courses. The study objective is to explore perceptions towards conducting examinations online among students.

2   Methodology

2.1   Study context

There are two primary methods in invigilating examination during the pandemic. Below is a brief description of the arrangement of each type of method.

2.1.1   Closed-book online examination format

Most of the closed-book examinations adopted mixed monitoring strategies – the LockDown Browser, Respondus, and Zoom. Respondus is the software that prevents students from accessing other applications or functions during the examination. This way, students could not look up answers from the internet or notes saved on the computer. To prevent students from having printed notes for cheating, Respondus includes a function named environmental check. Students have to move the camera around to show a clean environment without suspecting notes before the examination. The camera recording also ensures that students do not leave their seats or invite another person to take the examination for them. All of the above measures involve collecting personal information and thus the ethical concern of privacy invasion. Therefore, informed consent was obtained right before the start of the examinations. Some departments have also setup an emergency hotline to offer students immediate assistance in handling unanticipated situations and technical problems during the examination period. The emergency hotline is a commendable assistive arrangement to ensure the smooth running of online examinations. Students could notify and seek instructions from the department in charge conveniently. It is also possible to raise questions in the chatbox function in Zoom. From our experience, the invigilators would generally attend to the questions raised quickly. The average responding time is approximately half to one minute.

2.1.2   Open-book online examination format

Open-book assessments are usually more thought-provoking and require more profound understanding and integration of knowledge instead of direct recitation from memory. This type of examination questions are less rigid and could stimulate students to think and apply their knowledge. There are two different operating systems.

- With Zoom: One of them made use of Zoom for taking attendance and delivering examination questions. It provides a channel for students to contact the invigilators in case of unanticipated problems. This method cannot prevent students from asking someone else to take the examination for them.

- Without Zoom: An alternative method did not use Zoom and deliver examination questions through email only. This method builds on the trust of students as there will be no invigilation at all.

2.2   Research design

An anonymous online survey was conducted among students enrolled in health professional programme under the Faculty of Medicine during the academic year 2019–2020. The online survey was opened for three weeks between 19 August and

5 September 2020. Students were recruited using convenience sampling, and a reminder was sent to the cohort every Monday.

The survey consists of three closed sections, gathering information on

1   attitudes towards the examination arrangement and regulations

2   possible cheating drivers

3   measures to enhance examination fairness.

Before exiting the survey, students were welcome to input personal thoughts on the online examination. Descriptive analysis and results were reported.

Figure 1   Preferred examination method by features (see online version for colours)
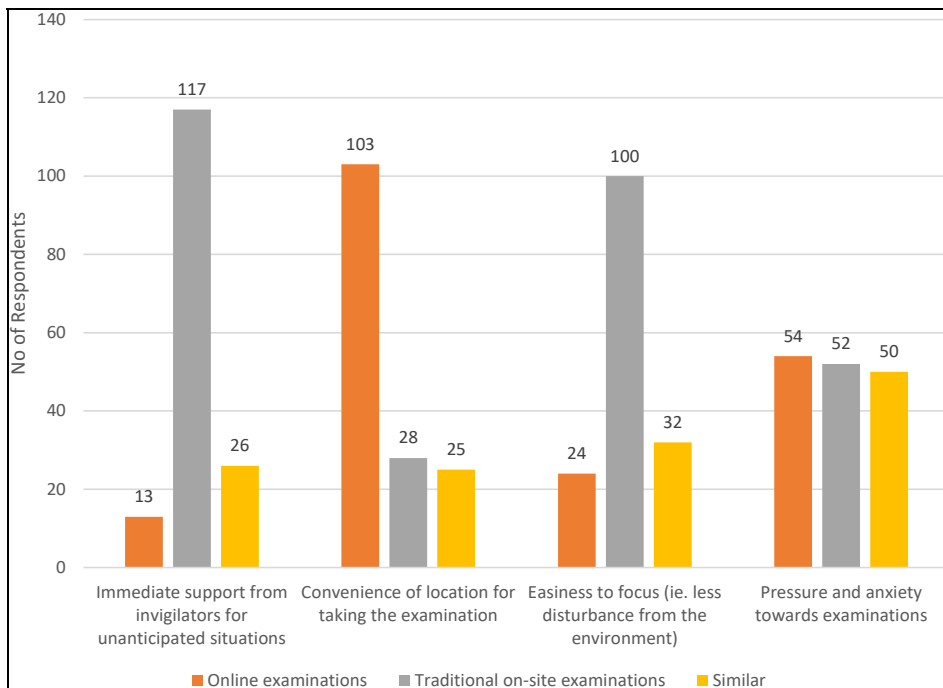
3   Results

One hundred fifty six students participated in this survey, involving biomedical, medical, nursing, and pharmacy students from year 1 to year 4. Figure 1 shows the preferred examination method. Overall, students preferred traditional onsite examination (75%) over online examination (25%) for several seasons, including less technical requirement (86%), immediate support from invigilators for unanticipated situations (74%), and easiness to focus (64%). Some perceived online examination was more advantageous than traditional onsite examination for convenience (66%). The pressure and anxiety towards the examination were similar regardless of the examination method.

Figure 2 Self-reported confidence over examination regulations (see online version for colours)
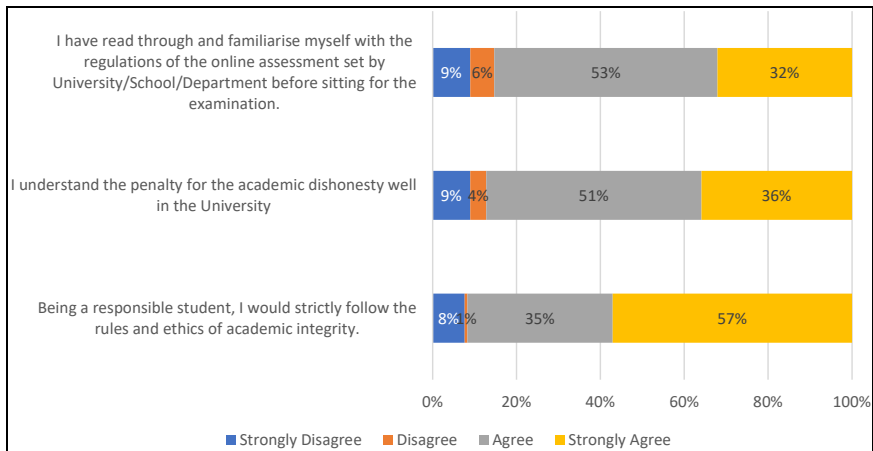

Figure 3 Possible drivers for cheating (see online version for colours)
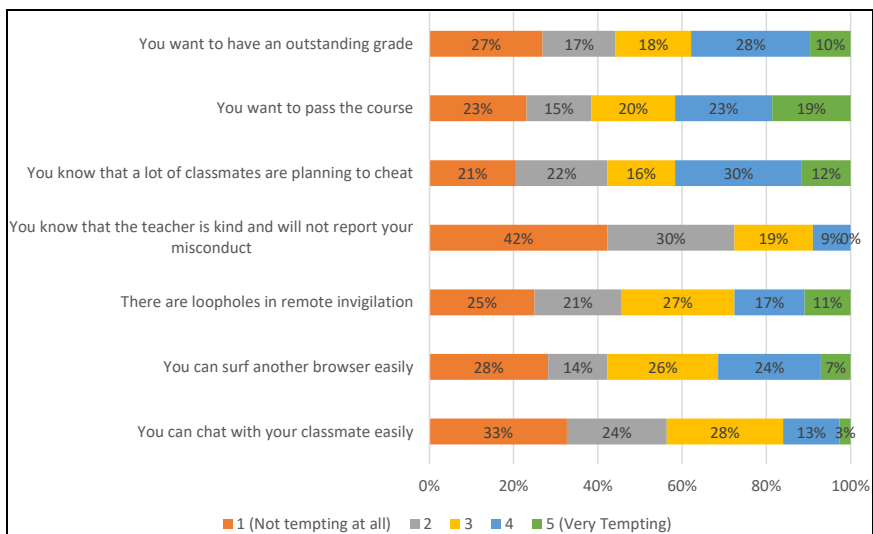

Figure 2 reports self-reported confidence over examination regulations. Students reported high confidence in complying with the rules and ethics of academic integrity (92%). They generally believed themselves to be quite familiar with the regulations of the online assessment set by the university before sitting for the examination (85%), and most students understood the penalty for academic dishonesty (87%). Figure 3 shows the possible drivers for cheating. The most compelling reasons lead to engaging cheating behaviour was the desire to pass the course (42%), the majority class cheat too (42%), achieve outstanding grade (38%), and ease to browse other websites (31%). Knowing the teacher is kind and would not report the misconduct was the least possible reason for cheating (9%), easy to chat with classmates (16%) were also not a likely cause of cheat.

Figure 4   Perceived easiness to cheat by various invigilation method (see online version for colours)
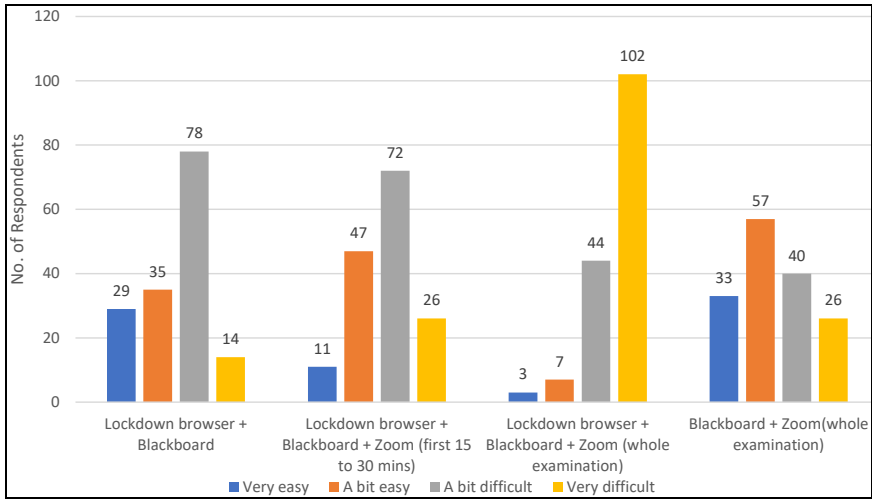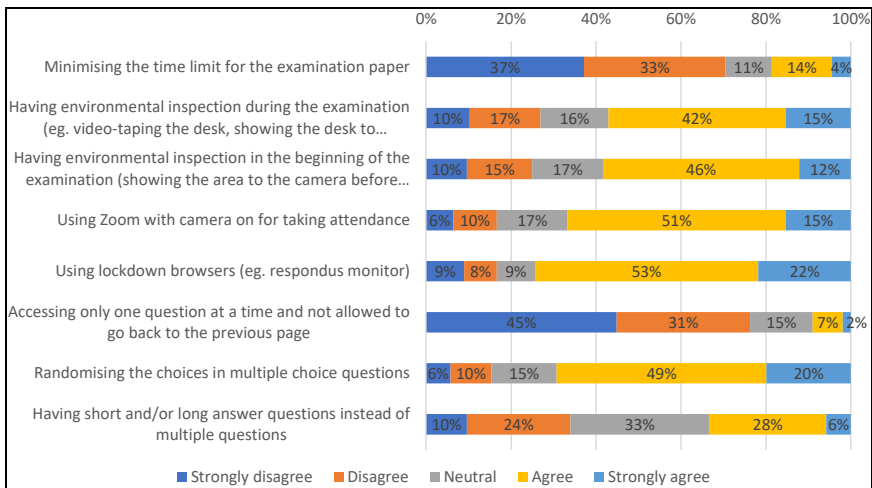

Figure 5   Features that enhance procedural fairness in the examination (see online version for colours)

Several methods had been adopted to ensure a high standard of academic integrity during online examinations. Three different platforms are used to invigilate students' conduct during the test: LockDown Browser, Blackboard, and Zoom. Figure 4 reports perceived easiness to cheat by various invigilation methods. Students believed it was most effective when all (LockDown Browser, Blackboard, and Zoom), where 93% find it difficult to cheat. Integrity was loosely complied with by students when using Zoom and Blackboard alone (70%). Features that enhance procedural fairness in the examination was described in Figure 5. In general, most students viewed lockdown browsers, such as Respondus monitor, to be most helpful, with 75% of students either agreed or strongly agreed that it could enhance integrity. Randomising the choices in multiple-choice questions (69%) and

using Zoom with webcam for attendance (66%) were also considered by students to be effective methods to deter exam dishonesty. As for environmental inspection, students thought that showing the area to the camera before the beginning of examination (58%) was of the same importance as video-taping the desk, showing the desk to invigilators through Zoom throughout the whole examination (57%). There were, however, some methods in which students deemed to be relatively less effective, including minimising the time limit for the examination paper (18%) and accessing only one question at a time and not being allowed to go back to the previous page (9%).

3.1 Students' voice on online vs. paper examination format

This section below reports students' free-text comments on the online examination design and arrangement.

- *Concentration problems:* Some said that the online exam method might not be an excellent tool for the written paper exam.

  "What divides online exam and paper exam the most is the environment of the exam being taken place. Students sit in the same lecture hall or classroom for the paper exam, take the same exam with a specific time limit, and hear the turning pages and the running pencils on the exam paper. Personally, a background sound is preferred to stay focused, although acoustics' psychophysiology requires some evidence to support it. An entire silent environment like a room taking the online exam can easily allow the existence of sound from the room outside, and participant might pay exogenous attention to the sound generated."

- *Visual problems:* In addition, digital eyestrain caused by long-term staring at the computer screen is a common health problem associated with online examinations.

  "With a regular exam having two hours or longer, students have to focus on the screen for this period. It is a commonplace to cause eye fatigue to us despite appropriate lighting. In a worst-case scenario, the accompanying headache might affect students' performance in both revision and following exams, which I experienced."

- *Technical problems of 'not able to return':*

  "Among my major courses, there was one having a technical problem of "not being able to return to the previous questions."

The examination was taken without a Respondus LockDown Browser, but just self-invigilation with video recording provided to the teacher afterwards. The exam displayed each short-answer question (SAQ) at one time, and once the student clicks the 'next' button, there will not be a chance to return and modify the question. From received feedback from my classmates, this is stressful and frustrating since students need first to ensure the answer is correct to proceed, or even when students encounter circumstances.

4   Discussion

Shifting from traditional face-to-face classroom learning to online learning (an unfamiliar learning environment to most students) puts enormous pressure on students (Grubic et al., 2020; Kecojevic et al., 2020). Like other studies (Davis et al., 1992; Mazar and Ariely, 2006; Starovoytova and Namango, 2016), we revealed that modern technology and students' internet habits lead to misunderstanding plagiarism and misconception towards unrestricted use of internet content. Our results also showed that students are more inclined to cheat when others are cheating. It may be due to loopholes in the examination that make it easier to cheat and not be disadvantaged. The easiness of cheating (via surfing another browser or from loopholes) is essential in whether students commit dishonest acts in examinations. A proposed solution mitigating cheating behaviour is to adopt additional monitoring measures during the invigilation process, including environmental monitoring, utilising LockDown Browser, Blackboard, and Zoom. Another debatable issue in online invigilation is to verify a candidate's identity. There is some discussion that it could be addressed by employing more stringent practices (e.g., 360° camera) to validate the biometric parameters, such as online photo-taking procedures before tests, environmental inspection, and video invigilation during the examination (Sarrayrih and Ilyas, 2013).

Cheating behaviour could be explained by understanding the purpose of the examination. Students primarily believe the purpose of assessment is to make a summative assessment in grading or ranking student performance (Maclellan, 2001). Our result also echoed this phenomenon, where students failed to recognise that the exam's purpose would be to enable learning and student development. Instead, they only viewed assessments as an end, such as achieving a good grade or passing, but not a means, to learning. Thus, they may utilise cheating to improve their grades or pass the course. It could be hypothesised that a change in mentality would lead to a reduction in academic dishonesty.

The introduction of measures to maintain academic integrity is of utmost importance (Gallant and Stephens, 2020; McCabe et al., 2004). The European Commission-funded project has developed an adaptive trust-based e-assessment system for learning (Noguera et al., 2016). This system ensures learners' identity and authorship authentication in online and blended learning environments to secure remote assessment. The core elements of the TeSLA include

1   authentic checking instruments for face recognition, voice recognition, keystroke dynamics

2   authorship instruments for forensic analysis for writing style and plagiarism detection.

However, these technologies may have a negative impact on students. Alessio et al. (2017) reported that students take the online assessment with proctoring, resulting in lower scores. Some proctoring tools are privacy-invasive, although they may be continuously adapted in future remote invigilation (Swauger, 2020). General data protection regulation, including data storage, protection, and disposal, should be adequately discussed within the institution.

From the educational point of view, formalising the course learning objectives (Kleinman, 2005) and heightening students' understanding of the importance of academic

honesty (Mitchell and Hussain, 2018) would be beneficial to promote integrity in online learning. It has been suggested that teachers should introduce students to the definition of cheating and educational integrity policy (Tabsh et al., 2015). When students recognised the importance of ethical behaviour, they were less likely to commit any misbehaviour (Ramdani, 2018). Perkins et al. (2020) also reveal a similar result. In his study, a 37% reduction in plagiarism is recorded following the intervention. In this consideration, and we shall consider building a clearly defined academic integrity education and materials for both students and teachers. In the materials, the purpose of exams (which is to assess students' skills) is required to highlight the definition of cheating and academic integrity policies.

5   Conclusions

It was the first time experience our faculty arranged online examinations with remote invigilation. The students were under significant stress to set for the non-physical contact assessments since they might meet any technical problem, such as being disconnected in the middle of the examination or staying in the Zoom throughout the examination. The combination of the Blackboard system, Respondus LockDown Browser, with Zoom for the online examination environment minimises the chance of cheating, even though there is no foolproof method for zero prevention. While these technologies prove effective, they should be a supporting tool rather than a total solution.

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