Medical curriculum reform in the disruptive technology era

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Reports have shown that medical students are accustomed to the use of internet-based technology for their self-directed learning, such as social media (AlFaris et al. 2018; Tackett et al. 2018). In addition, various web-based audience response systems have now been popular for interactive lectures. Thus, these technologies may not be considered disruptive. Despite the widely use of these technologies, how they could affect medical students’ academic performance in student-centred curricula remains unclear. A recent cross-sectional study using a questionnaire showed that the use of social media is not associated with Grade Point Average among medical students (AlFaris et al. 2018). However, improvement can be made if students use technology tools to set their goals, plan their activities, and monitor their progress rather than simply using them without reflection.

Along with the above-mentioned technologies of unclear advantage on students’ academic performance, other advancements, involving either scientific discovery or educational purposes, have been progressing at an accelerating rate during recent years. An example of the former is the advancement of genome-wide association studies, which drives the trend of patient care to the so-called "precision medicine". Although keeping up-to-date knowledge in science and medicine is a crucial professional characteristic of physicians, and like what happens in the previous era of genomics and proteomics, new scientific technologies add new information, medical teachers should be aware of content overload when putting it into the courses to ensure students’ achievement in their subjects. How medical students can handle the load of social media on new scientific information not to distort their academic performance will be a challenging issue.

Besides emerging technologies in science, the recent breakthrough technology in virtual reality (VR), augmented reality, Chatbots, and artificial intelligence (AI) are taking their leaps in medical education, such as is the potential application of VR in histopathology teaching (Madrigal et al. 2016). Although most users are satisfied with the use of the VR technology, a proportion of users disagree with its usage (Madrigal et al. 2016). Another example is AI applications. Regarding the exposure of future physicians to big data of healthcare systems, risk prediction of disease, and precision molecular tools for patient treatment, a reform of medical education from information-based
Curriculum to AI-integrated curriculum may be required. This idea is also supported by Wartman and Combs in their invited commentary (Wartman and Combs 2018). The reform might be especially suitable for the patient-centred curriculum design, which means new skills and expertise will be required for both medical students and teachers.

All of the above technologies could be disruptive to medical schools. Pros and cons of these disruptive technologies in medical education remain to be debated based on situational factors of individual medical schools. Structured research is required to show how these technologies affect students’ learning performance, both in short- and long-terms, and ultimately, quality of patient care. Medical schools may turn this challenge into an opportunity for cultivating medical students for the future inevitable changes of their national healthcare systems.

**Keywords:** Curriculum development; Social media; Technology

**Notes On Contributors**

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**Declarations**

The author has declared that there are no conflicts of interest.

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