

Use of Augmented Reality to Optimize the Effectiveness of Biomedical Education

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Introduction

Augmented reality (AR) is a live view of a physical environment in which elements are enhanced by computer-generated sensory inputs. As a novel technology, AR has been paradigmatically shifting the mode of E-learning toward virtual experiences embedded in real-world contexts. However, the impacts of AR applications in medical education were not well-studied. We therefore investigated the effectiveness of AR software on improving the quality of biomedical science education.

Method

We focused on biomedical science courses taken by undergraduate students enrolled in degree programmes of Nursing, Chinese Medicine, and Pharmacy in HKU. In lectures or tutorials, educational AR-software was used to assist teaching and learning. The teacher also provided guidance on how to install and use the AR-software to ensure that the students understood the functions and were able to use the software appropriately on their own to learn at any time. After learning experience with AR-software, students were invited to complete a questionnaire designed to evaluate the effectiveness of the software in their learning, as well as their expectations on how to enrich the functions of educational AR-software.

Findings

Students demonstrated excitement when the AR-software was presented to them during the teaching sessions, suggesting that AR-software can help to enhance students' interest in learning. Most students expressed that teaching with AR-software is better than without. They generally agreed that the use of AR facilitated their understanding of knowledge and awareness toward abstract concepts. They anticipated that new AR-software with extended functions will be useful in various aspects of biomedical science. High quality of figures and good integration of contents with the curriculum are important factors in developing AR-software.

Conclusion

Introduction of AR as a mainstream technology into biomedical education is a potentially effective approach to improve the quality of biomedical science courses, leading to productive, fulfilling, and rewarding learning.