Institutionen för lärande, informatik, management och etik

Technology in education: necessary but not sufficient. Understanding learning with virtual patients

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ABSTRACT

With the rapid technological development and the broadening access to computers over recent decades, several technological innovations have emerged in medical education, including virtual patients. Students' use of virtual patients is proposed to fill gaps in clinical exposure, and train clinical reasoning. However, higher education faculties have been slow to adopt new technology as a regular part of curricula. Virtual patients and similar technologies have either been implemented by enthusiastic teachers or by university policy directives. A possible reason for the low uptake of virtual patients in curricula is a lack of a clear understanding of how their use contributes to student learning.

The four studies described in this thesis address learning with virtual patients from three perspectives: the student perspective on learning with virtual patients; the course integration perspective; and the individual study strategy perspective. A mixed methods approach was used given the overarching interest to seek understanding and clarification of student learning with virtual patients.

Data were gathered by research interviews with medical students during clerkship, and by questionnaires in clerkship preparatory courses. Interview data was analysed by a phenomenological approach, and scales were formed from questionnaire responses which were analysed cross-sectionally for the four teaching hospitals affiliated with the medical programme at Karolinska Institutet. Use frequency, students' perceived benefit of virtual patients, their wish for more guidance on using virtual patients and, wish for more assessment and feedback on virtual patient work were targeted in the questionnaires. Furthermore, the students' preferences of study strategies were analysed in relation to the virtual patient activity using regulation strategy scales from the Inventory of Learning Styles devised by Jan Vermunt.

The findings suggested that virtual patient learning activities offer possibilities of applying biomedical knowledge to clinical cases in a way that was engaging and supported decision-making. Furthermore, the virtual patient learning activities were perceived as having an intermediate function between textbook learning and learning with actual patients. The consequences of integration strategies in the course context were influential for how students perceived the benefit of learning with virtual patients.

Intensity of processing of virtual patient cases, and presenting cases for other students were associated with high perceived benefit of virtual patient learning activities. Students' self-regulation abilities were also associated with perceived benefit of the virtual patient learning activities, although to a lesser extent than the influence of the course context.

The technology of virtual patients provides possibilities that enhance student learning, and should thus be a necessary part of education. However, this research show that an educational integration strategy is needed that supports students' active processing of virtual patient cases.