INNOVATION

From Videogames to Teaching — Different Camera Perspectives in an Interactive Synchronous Online Tutorial

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Abstract

The global COVID-19 pandemic has required clinical skills training to be transferred to an online format. An interactive synchronous online tutorial with different camera perspectives was developed. In a survey, 79% of the students preferred the first-person perspective, which allowed students to view the abdominal examination through the examiner's eyes.

Keywords Distance education · E-Learning · Educational technology · Clinical skills · Video-based education · First-person video

Innovation

The Brandenburg Medical School Theodor Fontane (MHB) is a state-approved private medical university with four campuses in four different cities in the state of Brandenburg. In the MHB skills lab certified by the "Practical Skills Committee" of the "German Association for Medical Education (GMA)," medical students can train their medical skills, e.g., in a peer-assisted learning program. At the end of each semester, these skills are tested in objective structured clinical examinations (OSCEs).

Due to the COVID-19 pandemic, a video-based online tutorial for learning medical skills under corona lockdown

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conditions was developed as a first test trial. In a systematic review, Youssef et al. show that video-based surgical education is effective in teaching surgical skills [1].

An abdominal examination video (and tutorial) was produced by two 6th and 8th grade students (Fig. 1). Both students were student assistants in the skills lab, and both had extensive experience in peer-to-peer teaching. Abdominal examination was selected due to the corona restrictions. Because the abdominal examination is part of the second year curriculum, 19 out of 96 (19.8%) first year medical students were recruited (twelve out of 48 (25%) 1st grade students; seven out of 48 (14.6%) 2nd grade students). Pre-training in examination technique would have resulted in bias.

Three different camera perspectives are offered. The first perspective showed an overall view of the examination room (Fig. 1, left). The second perspective focused on the patient observation during the examination and the examiner's hands (Fig. 1, center). The third perspective was the first-person perspective (Fig. 1, right). A standard smartphone was used as camera, which was attached to the examiner's chest with a chest strap (Maclean MC-773 Camera Chest Strap Holder).

The participating students dialed into the virtual classroom (Webex, Cisco Systems, Inc). First, the recorded video of the standardized abdominal examination was shown to avoid bias due to different content. All steps of the abdominal examination were then repeated "live" (via Webex) by the two skills lab tutors. Meanwhile, the students had the opportunity to ask questions. Afterwards, all students had 20 min to practice the examination steps

Fig. 1 Left: overview perspective of the whole room; center: representation of the oblique overview shot; right: the first-person perspective

independently from home in teams of two. For this purpose, individual session rooms were set up via Webex. After the self-training period, the shared virtual classroom was opened again, and any questions that arose were discussed in plenary. Afterwards, a preliminary survey was carried out on the preferred camera perspective, before the online tutorial ended after about 90 min. At the end of the semester, the students took their OSCE exam.

First results were presented at the GMA Annual Meeting 2021 [2]. For example, the best OSCE results were obtained in the group of students who participated in the interactive synchronous online tutorial. But most of the workshop discussion related to the different camera positions, especially the first-person perspective. That's why we decided to share this "innovation" first. The majority (n=15, 79%) preferred the first-person perspective. Some participants (n=3, 16%) preferred a combination of first-person perspective and oblique overview shot. Only one participant (5%) preferred the oblique overview view. The total overview shot was not preferred by anyone. Our results indicate that the first-person perspective is preferred.

This is in line with Burnham et al. [3]: "To best mimic the [face-to-face] student experience, camera position presented the first-person perspective of the faculty member with the faculty member's hands in view" [3, p. 8]. The first-person perspective is very common in video games, as gamers often prefer this perspective to immerse deeper into the game. Since the majority of 1st and 2nd grade MHB students belonged to Generation Z, the proportion of gamers among the participants was likely to be high.

The innovations' benefit could lie in incorporating the learner's digital (gaming) preferences even more into account in their own teaching. Future versions will contain open questions that allow conclusions why most students chose the first-person perspective and what further potentials for improvement the students see. In addition to simple technical on-demand "innovations," smarter technologies such as 3D and 360° cameras or motion control camera systems will also be used. However, emerging (gaming) technologies might sometimes be able to boost post-COVID healthcare education.

Declarations

Ethics Approval The study complied with good scientific practice in accordance with the Declaration of Helsinki and the laws and regulations applicable in Germany. The local Ethics Committee of the Brandenburg Medical School approved the study (E-01–20210415). The participation was voluntary and could be terminated at any time without giving further reasons.

Consent to Participate Participation was voluntary. All participants gave their written informed consent. The authors affirm that participants provided informed consent for publication of the images in Fig. 1.

Consent for Publication All co-authors have read the final version of the manuscript and have approved its submission to *Medical Science Educator*.

Conflict of Interest The authors declare no competing interests.

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