Flipped classroom

- Student engagement in a flipped undergraduate medical classroom to measure optimal videobased lecture length
- Video-based lecture engagement in a flipped classroom environment
- Beyond medical knowledge: a didactic curriculum focused on knowledge, wisdom, and application
- Development and implementation of a student tumor board as a teaching format for medical students
- Flipped classroom applied to Neurosurgery in undergraduate medical education
- Teaching through the screen: a toolbox for creating a virtual neurosurgical subinternship program
- Neurosurgery Lectures Benefit from a Flipped Class Approach
- The effectiveness of flipped classroom on learning outcomes of medical statistics in a Chinese medical school

A single-center experience with video-based lectures in undergraduate medical education is described. The activity was applied to the subject of Neurosurgery during two consecutive courses (2021/22 and 2022/23). The videos were available prior to face-to-face classes through the online application Edpuzzle. Information was obtained from the own platform at the end of each course. Multivariable linear regression analyses were performed to assess the association between different variables and the percentage of video viewing, the early dropout rate, and the percentage of audience retention.

A total of 109 students registered in Edpuzzle (87.2% of all enrolled students). Fifty-one videos were uploaded each course to cover 11 topics. Mean video viewing rate was 41%. Those videos linked to the earliest classroom lessons showed more percentage of viewing and audience retention than those programmed at the end of the course. With mandatory classroom assistance and homework assignments, the seminar videos were viewed more but retained less audience. Shorter videos were associated with higher viewing and audience adhesion, but the presence of questions embedded throughout the clip did not significantly engage students. No significant difference was observed regarding lesson topics.

It is essential to emphasize the importance of designing strategies to initially engage learners since more than half of our students never connected to the clips. Decreasing engagement was associated with the end of the course and video length. Seminar videos were viewed more but retained less audience. Active learning activities such as quizzes embedded throughout the clips did not significantly engage learners ¹⁾

A quasi-experimental study was carried out during the period January through June 2023. The effectiveness of teaching neuroanatomy in flipped classrooms versus traditional classrooms was assessed using formative assessment and a pre-designed structured questionnaire. The questionnaire was composed of four sections assessing different domains on a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

The total sample reached 214 students. Most students' attitude statements covering skills, knowledge and learning process, and length of time were significantly in favor of flipped teaching at the expense of traditional teaching. Then mean examination grades were significantly higher for pre-test flipped and post-test flipped in comparison to pre-test and post-test traditional examination.

Although the flipped classroom is an effective method of learning neuroanatomy as compared to traditional classes, it faces some challenges in its implementation. Such challenges need awareness and solutions from educational institutions²⁾

1)

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