

# Medical students' satisfaction towards videos as flipped classroom materials

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## Abstract

A video with the complete workflow of colorimetric assay of serum glucose was shot and launched on the college Learning Management System (LMS) for first year medical students. The aim of this project was to assess students' satisfaction with videos as flipped classroom (FC) materials. Year 1 medical students were instructed to watch the video through an available link before the practical session and answer a questionnaire measuring their

satisfaction at the end of the session. 162 students responded to the questionnaire. 85.8 % of students said that FC videos should be used for other practical/ clinical sessions. Students' satisfaction indicates that videos may be useful as FC materials.

**Keywords:** flipped classroom videos, student satisfaction.

**Abbreviations:** flipped classroom (FC), Learning Management System (LMS)

**Date submitted:** 24-May-2024

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## Introduction:

Engaging medical students with flipped classroom (FC) material is a pedagogical challenge. FC videos for medical students are of increasing importance especially since the COVID era. Learning with online videos has been reported as a useful tool that can be applied to practical and clinical medicine.<sup>1</sup> Combining active learner engagement with a well-controlled cognitive load of the video content is shown to be important for the success of online video learning.<sup>2</sup> We assessed first year medical students' satisfaction with a FC video on the complete workflow of colorimetric assay of serum glucose in anticipation of creation of a FC video library in place of the FC pdf documents currently uploaded on the college LMS, in an attempt to increase students' interest in the FC material.

## Project description:

A cross-sectional study was conducted during the Fluids, Nutrition and Metabolism (FNM) module for first year medical students at The School of Medicine, New Giza University, Cairo, Egypt, during the second semester of the academic year 2021/2022. It included 162-year one medical

Citation: Omar H, Zaki R, Hayek N, Mohsen L. Students' satisfaction towards videos as flipped classroom materials. *Educ Health* 2024;37:284-286

**Online access:** [www.educationforhealthjournal.org](http://www.educationforhealthjournal.org)

DOI: 10.62694/efh.2024.100

Published by The Network: Towards Unity for Health

students, comprising 82 females and 80 males. All students were between 17 and 19 years old.

A video with the complete workflow of colorimetric assay of a patient's serum glucose level using glucose oxidase method was developed. The author wrote the video script over the period of four weeks and rehearsed it for five consecutive days. With the help of a cameraman (the Biochemistry lab technician) the video was shot using the author's mobile phone. Four days before the practical session the video was launched on the college LMS; students were provided with a link to the instructional video.

If students reported satisfaction with the videos, a series of educational videos would be developed to replace pdf documents and create a FC library for the practical and skill lab sessions for first year medical students. This may improve engagement with FC material and consequently students' performance.

Expenses were minimal as the video was shot with the author's mobile camera in the college's lab.

**Project evaluation**

A questionnaire was developed asking students five questions, if: 1. the length of the video was appropriate; 2. the content covered all the points related to the skill; 3. watching the video made them feel more confident about performing the assay; 4. the video was interesting to watch; and finally, 5. if other pre-class videos should be developed for practical or clinical sessions. The questionnaire was distributed to students at the end of the practical session. Responses were anonymous.

Data were coded, entered, and analyzed using Microsoft Excel (2016 version). Data analysis was performed using IBM SPSS software (version 22). Answers for each question on the Likert scale were presented using descriptive statistics, including frequencies and percentages (%).

**Results:**

The video was streamed 526 times. 85.1% of the students responded that the length of the video was appropriate. Most students (90.1%) responded that the video was comprehensive and covered all the points needing to be covered to perform the required skill. 84.6% of the students felt more confident about performing the practical part of the lab session after watching the video. In addition, 72.2% of students found the video interesting to watch. Finally, 85.8% of students recommended integrating the pre-class videos as a part of other practical or clinical sessions.

**Discussion:**

FC has become a leading teaching strategy and has helped learners modify their learning style.<sup>3</sup> One of the advantages of this online option is that students can access online material anytime and anywhere—without geographic or time constraints.<sup>4</sup>

85.8 % of students said that FC videos should be used for other practical or clinical sessions. Our findings agree with those of Evans et al, (2016) who stated that video supplementation adds to student satisfaction and performance because of its

potential to increase active, student-centered learning.<sup>5</sup>

FC improves performance of clinical skills by offering an opportunity for students to engage in higher order cognitive activities such as analysis, evaluation, and synthesis of knowledge, leading to improvement in higher order problem-solving and clinical reasoning. Several studies have shown that pre-recorded videos improve students' enthusiasm for learning research by enabling them to arrange their study plans at their own pace, regardless of time and place. For knowledge that is not well mastered, students are able to repeat the broadcast of videos as many times as necessary, improving their learning, and providing flexible pacing.<sup>6,7</sup>

Some faculty were resistant to replacing text-based documents on the LMS with videos. The author met with faculty and presented published literature supporting such an innovation. Faculty members were also concerned about funding, and the impact on student performance.

These factors will be addressed in the second part of this project. The students will be randomized to one group that watches the video, while another group completes the practical without prior viewing of the video. Student performance in both groups will be measured using a standardized checklist in addition to surveying student satisfaction. We intend to train first year students to create future videos to increase student engagement. Funding will be allocated from the college for development of subsequent videos.

**Ethical committee approval**

This study was approved by the New Giza University Research Ethics committee with an IRB approval number N-23-2022.

**Acknowledgments:** The authors would like to thank year 1 medical students for their participation in this study. Special thanks to Mr. Yasser Badr, the lab technician who shot the video.

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