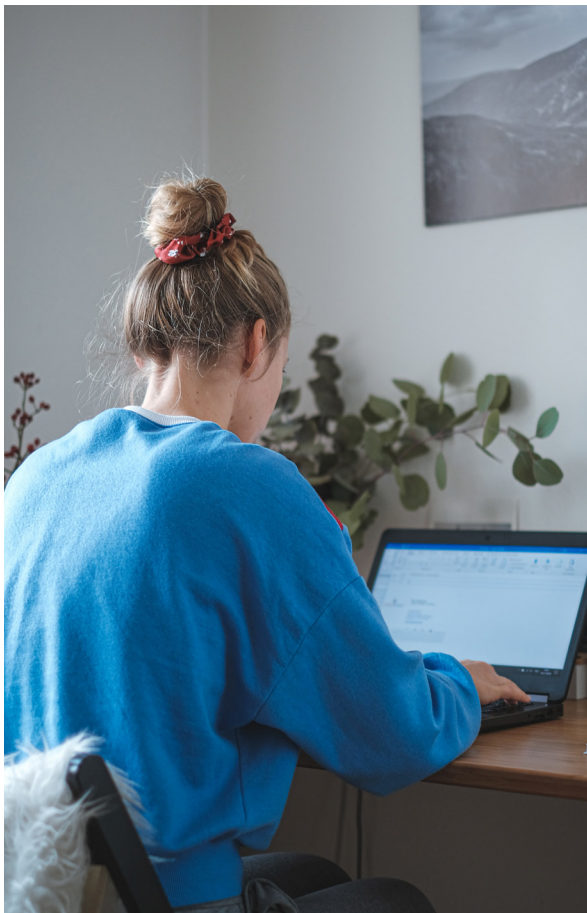


Flipped classrooms may improve academic performance and satisfaction of undergraduate health professional students



Students watch recorded lectures off campus, then meet up for discussion.

What is the aim of this review?

This Campbell systematic review examines the effects of flipped class teaching compared to the traditional method. The review summarises evidence from 45 studies, including 11 randomised controlled trials.

Flipped classroom learning appears to improve academic performance and the evidence suggests student satisfaction with the innovative learning method, but the certainty of the evidence was low.

What is this review about?

Students face several challenges when learning through traditional teaching settings. They need to accumulate huge amounts of factual knowledge from the courses, and to keep up-to-date with the prolific growth in health knowledge.

Lack of awareness about digital technologies and non-exposure to digital-friendly environments have made learning even more challenging. Therefore, an innovative approach to the education delivery system is needed.

A flipped class includes two elements of education: a recorded lecture (off-campus learning as homework) and an active learning session (on-campus learning). Pre-recorded lectures are provided to the students as homework and as an aid to learning which is then interactively discussed later on campus.

This review aims to explore whether there is empirical evidence that supports this method of learning for undergraduate health professional students. Do flipped classrooms improve academic performance and are students satisfied with the flipped class learning method?

What studies are included?

This review includes studies that have evaluated the effect of flipped classes compared to traditional classes on the academic performance and course satisfaction of health professional undergraduate students.

Forty-five studies were identified, involving 8,426 undergraduate students in medicine, pharmacy, nursing and other health professional courses.



How up-to-date is this review?

The literature searches were last conducted in April 2022.

What is the Campbell Collaboration?

Campbell is an international, voluntary, non-profit research network that publishes systematic reviews. We summarise and evaluate the quality of evidence about programmes in the social and behavioural sciences. Our aim is to help people make better choices and better policy decisions.

About this summary

This summary is based on Naing, C., Whittaker, M. A., Aung, H. H., Chellappan, D. K., & Riegelman, A. (2023). The effects of flipped classrooms to improve learning outcomes in undergraduate health professional education: A systematic review. *Campbell Systematic Reviews*, 19, e1339. <https://doi.org/10.1002/cl2.1339>.

Financial support from the American Institutes for Research for the production of this summary is gratefully acknowledged.

Of these, 44 studies involving 7,813 undergraduate students examined the outcome of academic performance, measured by examination scores/final grade). Only eight studies, involving 1,696 undergraduate students, examined the outcome of students' satisfaction.

Studies spanned the period 2013 to 2021. Sixteen studies were conducted in the USA, and only three studies were from lower-middle-income countries, including India. All the studies had important methodological weaknesses.

Does the flipped class method of learning improve students' academic performance?

Yes, low certainty of evidence shows an overall improvement in academic performance when flipped classroom interventions were implemented compared to traditional lecture-based classes.

Are students satisfied with flipped class learning?

Yes, low certainty of evidence shows that students' satisfaction with the flipped classroom method of learning is positive. Therefore, further research may change the estimate in either direction (that is, a larger difference, or no difference, in satisfaction).

What do the findings in this review mean?

The review shows that flipped classroom learning may improve academic performance and satisfaction of undergraduate health professional students. Well-designed studies with larger samples that rigorously evaluate the outcomes are needed.

