Reviewer’s report

Title: Effectiveness of flipped classroom combined with team-, case-, lecture- and evidence based learning on ophthalmology teaching for eight-year program students

Version: 0 Date: 23 Aug 2019

Reviewer: Jacqueline E. McLaughlin

Reviewer's report:

This paper describes the evaluation of a flipped classroom model using a combination of team-, case-, lecture, and evidence-based learning. The paper is relatively clear, however it could benefit from some editing for word-choice in some places. The following review is offered in an effort to help strengthen the work:

ABSTRACT: The conclusion section of the abstract suggests that the study compared the TCLEBL model to a FC, which is not accurate. Suggest a reword to more accurately align with the design of the study.

BACKGROUND: There are numerous statements in this section that need citations (e.g. pg5, line 14; page 6, line 50) to support the claims that are made by the authors.

The FC does not necessarily require multimedia information technology and Internet/LAN use. While these are common modalities for facilitating flipped learning, they are not required. This statement should be updated accordingly (pg 5, line 33)

Similarly, a key element of flipped learning is students completing self-study prior to class, which should be noted in addition to 'free time' (page 5, line 34).

The claim that students "often complain" about pre-class preparation strikes me as overstated. While there are some studies to suggest this happens in some FC models, the authors need to provide more evidence or criteria to defend use of the word "often" (pg 5, line 56).

The purpose statement in the last paragraph in this section is difficult to interpret. Is this study about teachers "communicating ophthalmology knowledge to medical students", which sounds very passive and unidirectional, or about student learning of ophthalmology?

METHODS: This section could benefit from additional clarity and detail. consider adding a flowchart or table that illustrates study design and data collection (including instruments used and timing of data collection). In addition, detail would be helpful for:

Page 7, line 39-45: How were students allocated to groups? Randomized? Stratified?

Page 9, line 25-34: Feedback questionnaire scale is ill-defined. What is the magnitude of the scale? 1-5? Is the scale set with 1 = excellent (best) and 5 = poor (worst)?
Page 9, line 50-54: No information is given as to how/when the data for "time needed for preparation before and after class" was collected. How long after the review period was this data collected? There might be concerns for recall bias.

Page 10, line 19-22: Students were broken down into teams of 3 for the evaluation of clinical practice but there is no description of how they were assigned.

What were the formats and scales of measurement for the quizzes and theoretical examinations?

Page 26-28: In the questionnaire, prompts refer to "the course". As per the study design, only one class section (on DR) had 2 different methods of teaching. Can you detail how much time the course/class in this study covered? was it a one-hour course/class session? An 8-hour class session? Over one day? Over multiple days? etc.

ANALYSIS:

Were any analyses used to examine changes from any of the pre- to post- measures? There isn't anything in the text about a paired-analysis.

It is not clear what scores are being used in the Post-test. Only the theoretical examination scores? Both clinical and theoretical?

RESULTS:

Page 13, line 22-21: It is unclear as to how a decrease in score (clinical thinking ability: 57 vs 50) and an increase in score (independent learning ability: 139 vs 147) both represent improvement for the students. Is there a typo in this sentence?

Table 2: please include median (range) in the descriptive statistics since non-parametric tests were used to analyze the data from the questionnaires.

Inconsistent number of significant figures are used.

Page 30-31: Resolution of graphs is too low; figures are illegible

DISCUSSION: in general, the discussion could benefit from additional citations and softening some claims. Some of the statements seem to draw from data that is not provided in the results section. For example:

Sentence 1 (page 13, line 31) needs citations.

Sentence 2: some students have complained about the learning burden. and add citations.
Sentence 3: "reduce the learning burden" when compared to what? other FC models? the lecture model?

Page 13, line 47: this claim (reducing the learning burden) is not supported by the data in the results. What is the comparison group for this statement? The FC students reported spending more time preparing for class, not less. in addition, what aspect of your study design enables you to tie the reduced learning burden (if that's true) to the team-based learning and not some other part of the model (e.g. evidence-based or case-based)? There is not enough control in your study design to attribute any outcomes to specific elements of the TBLEBL model. You may hypothesize, but you cannot make strong claims.

Page 13, line 56 "admitted" may not be the right word here...suggest using "believed" or "perceived"

Page 14, line 1-17: Again, these statements do not appear to be supported by the data in the results. There is no statistically significant difference between the groups in any of the questionnaire questions related to reduction of workload. The FC group spent more time pre-class than the LBC group. While the team aspect might have reduced time spent if they each had to everything individually, this is not what was measured or tested.

Page 14, line 17-21: Although both groups are ophthalmology students, we don't know enough of each class and the material given to make this time comparison.

Page 15, line 22-35: It was a surprise to read that the content in the FC-TCLEBL model was supplimented, since the methods state that the content was the same in both groups. Could this suppliment have influenced differences in outcomes between the two groups?

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Unable to assess

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No
Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

Quality of written English
Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

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