Author’s response to reviews

Title: Assessment of the effect of application of an educational wiki in flipped classroom on students' achievement and satisfaction

Authors:

Ali Ahmadian Khoynaroud (ahmadian948@gmail.com)
Amirhossein Akbarzadeh (amirhossein_bio@yahoo.com)
Morteza Ghojazadeh (ghojazadehm@hotmail.com)
Saeideh Ghaffarifar (sa.ghafarifar@gmail.com; ghaffarifars@tbzmed.ac.ir)

Version: 1 Date: 18 Jul 2020

Author’s response to reviews:

Dear Editor,

In response to your email on June 30, 2020, I would like to submit the revised version of our manuscript entitled: "Assessment of the effect of application of an educational wiki in flipped classroom on students' achievement and satisfaction ". Many thanks for providing us with such an opportunity to receive very invaluable comments from our dear reviewers and their constructive feedback. All comments were considered and the requested points were corrected point to point. Amendments are highlighted in yellow and are described as below (divided by their line and page numbers):

Reviewer 1:

1. The authors followed a good structure.
2. Abstract (page 2), there was no mention how many students in the wiki groups and the situation in the conventional groups. The description of questionnaire, summative assessment or checklist to assess the quality and quantity of both groups is not given.

Really appreciate your comment. The correction was done on page 2, lines 39-40 as: “students did their group work on an educational wiki (n=85) or in a conventional way (n=120)”. The description was added to the abstract section on page 2, lines 40-47 as below:

“Assessment in this study was done in both formative and summative ways. Formative assessment included quizzes at the beginning of each class and students’ self-assessment (focused on their satisfaction with different educational activities of the course, using an 11-item validated satisfaction questionnaire). The summative assessment incorporated assessment of the quantity and quality of students’ participation in doing group assignments (by a five-item checklist); quizzes at the end of each class; the final exam; assessment of students’ competency in transferring their learning into creating an outline for a hypothetical article and writing topic sentences”.
3. Introduction (3-4), is focused on the purpose of the study.
4. Methods (page 5-10), the method section is in detail but there is missing such as
What are the tools used to assess the quality and quantity of work?

The checklist to assess the quantity and quality of student’s participation in doing group work was added as Appendix 2. The appendix was introduced in the text on pages 10-11, lines 245-247, as: "The checklist to assess the quantity and quality of each student's participation is attached as Appendix 2". On page 11, line 247-251, it was added to the text that: “The criteria to assess the quality included completeness, accuracy and pertinence of the content, which is written by each student. The usage of pertinent terminologies and the quality of the links established between the pages developed by other students and their own pages were used to assess the quality of each student’s participation too”.

Is the duration of the study was from 2016 to 2019?? Is this a longitudinal study or authors included all the students of four years?

It was not a longitudinal study. On page 5, lines 117-118, it was added to the text that: “All the students of four years were included in the study”.

What were the criteria of selection?

The text about participants was completed on pages 5-6, lines 121-125 as below:

"Participants were master students at the School of Medicine. All students had to pass a course entitled: “Writing and presenting articles in English”, in the first two semesters of their study at medical school. During four semesters, 205 master students enrolled in this course. As passing the course was compulsory for all master students, all enrolled students were included in the study.

Who was the teacher? The same teacher conducted the flipped class or multiple teachers were involved in all four groups? How the teachers' performance was assessed? Were all the teachers had experience of flipped classroom? Who trained them?

On page 7, line 154-160, with regard to your comment, it was added to the text that: "The same teacher conducted flipped classes in both wiki and non-wiki groups. She was an MD-PhD, who was trained at a master program in medical education. She was the instructor of flipped classrooms at the university and national level. The teacher's performance was assessed by department head, learners of the course and peers at scholarship committee as well. Furthermore, this educational intervention has been criticized by peers at university, leading to a learning and teaching scholarship award in 2018(Number: 5/d/214008)."

If students had the right to decide which group they would like to work then how the equal and fair distribution was ensured (good and average students, specialty wise)? Really appreciate your comment. Indeed, in this study, randomization was not considered at the time of the study design and before the process of data collection. Some explanations in this regard was added to the limitations section of the manuscript. The explanation is provided in reply to your 6th comment.

Who was involved as teachers on wiki; who trained the students and teachers for wiki

It was explained about the only teacher of the course and her training in reply to the previous comment. About training students for wiki, it was added to the text on page 8, lines 183-184 as: "Both the course teacher and the IT expert, who was working at virtual training center of the university, trained the students for wiki".

Although in the tables authors mentioned the domains of assessment but is not mentioned in the methods section clearly. Please clarify specifically how the participation was assessed; what was the purpose of using checklist and the content of the checklist, and how many evaluators were involved.
Many thanks for your comment. The methods section was completed in this regard. The necessary clarification was added in different sections as below:

On pages 8-9, lines 189-200, it was highlighted that: The course teacher (SGH) was able to supervise LMS activities of all learners 24 hours a day. By controlling history and logs of the learners, she was able to assess both the quantity and the quality of each student’s activity on the LMS and wiki; therefore, it was possible to differentiate the various activities of the students in the system. Different activities of students included a simple log in, moving between pages or typing and editing in the wiki. Any changes made by the students in their writing would be highlighted in the text and the highlights were evaluated by the teacher.

It was also added to the text on page 9, lines 200-203 that: "Both the quantity and quality of each student's participation in doing the group assignment were assessed by a five-item checklist (Appendix 2), which is described later under the heading of "Evaluation of the intervention and data analysis".

On page 9, lines 205-208, it was added to the text that: "Since, according to the university regulations, the minimum passing score in this course was 14 out of 20, the minimum acceptable score for both the quantity and quality of students' participation was considered to be 3.5 out of 5. A reminder notice email was sent to students with a participation score of less than 3.5".

On pages 9-10, lines 214-226, it was added to the text that: "Assessment in this study was done in both formative and summative ways. Formative assessment was performed in the form of a quiz at the beginning of the class. In this type of assessment, students' knowledge was evaluated in order to identify and eliminate any misunderstandings about the content of the course, which had already been provided electronically. To do this, students answered 10 multiple choice questions (MCQs) on the LMS and received the necessary feedback immediately. The correct answers to the questions were shown to them at the end of the test, and in cases where the mistakes were repeated by a large number of students, the teacher gave more explanations about those common misunderstandings at the end of each class.

The quiz at the end-of-the class was similar to the one at the beginning. It included ten MCQs too. The only difference between these two quizzes was the summative nature of the latter one. Unlike the first quiz, the score of the second one was considered to be part of the students' final score. The students were previously informed about this point".

On page 11, line 254-255, it was added to the text that: "The minimum passing score for this summative exam was 14 out of 20 and students should have achieved at least 14 to be successful in it ".

On page 11, lines 259-263, it was added to the text that: "In all, calculation of students' overall score for the course was done as: forty percent of the score was allocated to the quantity and quality of student participation in doing group assignments; twenty percent to the quizzes at the end of each class; thirty percent to the final exam and ten percent to their competency in transferring their learning into creating an outline for a hypothetical article and writing topic sentences".

5. Results (page 10-11), There is no mention of summative assessment and quiz results, and also the findings of checklist. These in my opinion are important to share in this study where authors are claiming the positive effect of Wiki on outcomes.

Many thanks for your comment, the explanation was added to the text on page 13, lines 302-315 as below. All pertinent numbers are presented in tables 2 and 3.

"Based on the results presented in tables 2 and 3, students in the wiki group were more satisfied with the course and flipped classrooms. Collaborating on the wiki, they found their GA more
appropriate and helpful compared to their counterparts in the non-wiki group. According to the participants, compared to the traditional way of doing GA, doing group assignments on the wiki more motivated students to learn. Doing GA on the wiki had better impacts on increasing students' confidence in writing an article. By group working on a wiki, students identified their weaknesses and strengths in writing articles more and they were more encouraged to participate in similar experiences in the future. In addition, working on the wiki helped students to build better teamwork skills. The number of e-contents downloaded and studied by students in the wiki group was more than the number in the non-wiki group. The mean of scores of the quiz at the beginning of the class; the quiz at the end of the class; quantity and quality of their participation in doing the GA; final exam and competency in writing an outline and topic sentences for a hypothetical title among students in the wiki group outweighed those among the students in the non-wiki group".

6. Discussion (page 12-15), Students in the non-wiki group did not take advantages of collaborative learning and formative assessment for full. Why this was the case? It is necessary to explain differences and speculate on why those differences exist. Limitation about this study also should be discussed. The empirical evidence is required to justify the statement including teachers' role in classroom activities.

The differences and reasons were explained on pages 17-18, lines 411-425 as: “Moreover, based on their self-declarations, each student in the non-wiki group did only one part of the GA. They did and submitted their GA at the end of the semester and they were not informed about the work done by their other teammates; therefore, they did not feel the need to get feedback from the course teacher during the semester; whereas, students in the wiki group collaboratively managed their GA with both team and personal accountabilities. All the team members as well as the course teacher had access to the content of the GA at all times and collaborative learning put them in a position of constructive competition to improve and enhance the quality of their work; therefore, most of the students in this group repeatedly requested feedback from the teacher”. These findings can be justified with the findings of Robertson and Fowler’s study in which medical students’ perceptions of learner-initiated feedback were elaborated. Based on those findings, students’ decision to request feedback is influenced by their performance. Students who start working and engage timely benefit from advantages of the teacher’s prompt and formative feedback; therefore, it is recommended to employ learner-centered feedback models where students are in the center of the model(24).

Limitations of the study were discussed and added to the text on pages 18-19, lines 433-451 as below:

Our study had some limitations. In this study, randomization was not considered at the time of the study design and before the data collection process; therefore, students had the right to decide which group they would like to work and they were free to choose one of the two available options for doing their group assignment. As volunteers might have a different interest in the subject of the study (either negative or positive); and might have been more motivated to learn about the study topic, the outcomes of this study might have been influenced by specific characteristics of the students in the wiki group (selection bias). To overcome the selection bias, it is recommended to collect the information about the students' grade point average at the beginning of the course and to examine the results obtained in different categories, including good, average and weak students. Indeed, by asking more questions at the beginning of the study, student's specific interests to learn more about the research topic as well as their particular characteristics can be explored and the findings can be adjusted for those potential confounders.
Moreover, in this study, students' reaction to the educational intervention was assessed just by a validated satisfaction questionnaire. Applying exploratory research designs might address students' perceptions, concerns and recommendations more and better in the future studies. Our study was conducted in a single center (TUoMS) over eight semesters and it was focused on a single course. It is recommended to conduct similar studies in multiple centers/ institutions or on different academic courses as well.

The roles of a teacher are explained on page 7, lines166-172 as:
"In the flipped classrooms, the teacher did not provide direct instruction. S/he only facilitated students’ learning through discussion on the introduced e-contents of the classes; providing a supportive environment for students’ collaborative learning and cognitive development; incorporating formative and summative assessment into each session of the class; providing mini-lectures to clarify any misunderstandings; and mapping out group assignments(14, 15). Playing these roles are justified by constructivist and cooperative learning theories(11)."

Reviewer 2:
This manuscript needs a lot of language revision, many sentences are too short and can be linked using connectives, there are some grammatical errors and there are also punctuation mistakes.-We don't start the sentences using "so" (page 3, line 54), "Although recently"(page 4, line1)
The language revision was done. Short sentences were linked using connectives. Grammatical errors and punctuation mistakes were fixed. In this regard, the acknowledgement section was completed by these sentences on page22, lines 508-510 that: "We also sincerely appreciate Mr. Ali Roshani's invaluable and elaborative language editing job on our manuscript".
The language editing file with track changes is attached to manuscript as a supplementary file too. On page 4, lines 81-82, “So, a wiki can facilitate group collaboration, knowledge acquisition and writing skills of participating students” was replaced with “Working on a wiki can facilitate group collaboration, knowledge acquisition and writing skills of participating students”.
On page4, line83, “Although recently, wikis are extensively adopted in education and …” was replaced with “Although, wikis are extensively adopted in education recently and …”.
The title: it's not clear and not focused, the current study didn't assess the effect of flipped classroom, because flipped classroom was applied in both groups, so it's an assessment of the effect of using wiki in flipped classroom on both students' achievement and satisfaction with the application of wiki, while the current title doesn't really reflect the focus of the study.
Many thanks for your great comment. Upon your proposal, the title was amended as below: Assessment of the effect of application of an educational wiki in flipped classroom on students' achievement and satisfaction please explain for the readers what do you mean by action research.
On page 5, lines 109-113, it was added to the text that “In an action research, researchers and participants collaboratively work through an iterative process to define a problem, to design an action based on the participants’ needs, to carry it out and discover the changes(10)” An action research is “a cyclical process of reflective practice particularly suited to educational settings”(11). Some abbreviations were mentioned before explaining what they refer to, like FC in page 4 line 56 Many thanks for your comment. Amendment was done on page 5, line 105 as: flipped classrooms (FCs)
Please specify if there is a need to use the term group-work instead of teamwork
Given the different types of teamwork, what we meant by teamwork in this study was a doing a group assignment by a team of peers. Considering this issue and according to your comment and in order to remove the ambiguity, “group- work” was replaced with “group assignment(GA)" on
page 3, line 65. Later every “group- work” was replaced with GA (the abbreviated form of group assignment).

page 4 line 27, if there are "some researches" so more than one reference should be mentioned, also no need to write ref.no 9 and then repeated again at the end of the paragraph, only at the end of the paragraph is enough.

Really appreciate your comment. The amendment was done. “Some research” was replaced with “a research” and the redundant reference number was deleted one page 4, lines 92-94 as below: “Integrative application of wikis; electronic contents (podcasts); web log activities such as discussions on a forum and student-tutor interactions are recommended in a research. According to the research, synergistic contributions of the above-mentioned elements may enhance students’ learning and may provide “a coherent wholesome learning experience” for them(9)”. if the reference in-text citation used is numbering so this should be used consistent all over the manuscript, in page 7, line 5, no need to write Dent.et al, 2017 Really sorry. This error had been unwantedly happened when working with our reference management tool. Redundant phrases were deleted. The corrections were done on page 6, line 143 and on page 8, line 174.

Page 9, line 4-5 more details should be provided about this 5-item checklist
The checklist to assess the quantity and quality of student’s participation in doing group work was added as Appendix 2. The appendix was introduced in the text on pages 10-11, lines 245-247, as: "The checklist to assess the quantity and quality of each student's participation is attached as Appendix 2".

More details should be provided about the inclusion of participants in the study
Thanks to your comment, the text about participants was completed on pages 5-6, lines 121-125 as below:

"Participants were master students at the School of Medicine. All students had to pass a course entitled: “Writing and presenting articles in English”, in the first two semesters of their study at medical school. During four semesters, 205 master students enrolled in this course. As passing the course was compulsory for all master students, all enrolled students were included in the study”.

, and what was the questionnaire used (page 5, line 40)
It was satisfaction questionnaire. The correction was done on page 6, line 129 as: "the data about the students who had not completed the satisfaction questionnaire were set aside".

More details should be explained about what is meant by "the quantity or quality of a student's activity was not desirable" page 8, line 5-7.

Really appreciate your comment. The text was completed on page 9, lines 205-208 as below: "Since, according to the university regulations, the minimum passing score in this course was 14 out of 20, the minimum acceptable score for both the quantity and quality of students' participation was considered to be 3.5 out of 5. A reminder notice email was sent to students with a participation score of less than 3.5".

page 11, line 5-7, it's not clear the part of the time taken for feedback by the teacher, three minutes or three what? and also line 17 in the same page, about the number of pages, and what is the implications of both in this study?

Sorry for the error. It was three hours and the text was completed as: "The mean time of the constructive feedback provided by the teacher was three hours for each student" (on page 14 line 319).

On page 14, line 323-326, it was also added to the text that "The number of the pages of the students' group work was considered as an objective indicator for the quantity of the effort they
put on their team work. It also provided an answer to the question of which group of students was most motivated to collaborate on their group work and to learn more".

Page 12 line 21-23, when referring to a previous research, it's enough just to mention the reference, no need to write the title of the research.

Thank you for the comment. The title of the research was deleted.

Table 3 includes comparison of the students' scores but in the title it's written students' satisfaction so please revise.

Really appreciate your comment. The necessary correction was done as: on students’ scores