Author's response to reviews

Title: A novel integration of online and flipped classroom instructional models in public health higher education

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Author's response to reviews: see over
August 2, 2014

RE: A novel integration of online and flipped classroom instructional models in public health higher education

Thank you for accepting our manuscript entitled "A novel integration of online and flipped classroom instructional models in public health higher education" by Lindsay P. Galway, Kitty K. Corbett, Timothy K. Takaro, Kate Tairyan, and Erica Frank. As per your request, we have reviewed the RATS guidelines and made changes to the manuscript to ensure that reporting adheres to these guidelines. The specific changes made are outlined in detail in a table on the following page. We have also included in this table (for your reference) the responses to reviewer comments that reflect changes made to the manuscript that was previously re-submitted (in May). The revised manuscript (re-submitted online) therefore includes changes based on the RATS guidelines and the reviewer comments.

Thank you!

Lindsay Galway
## REVISIONS BASED ON RATS GUIDELINES

<table>
<thead>
<tr>
<th>Aspect of RATS guidelines</th>
<th>Specific changes made</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study design described and justified i.e., why was a particular method (e.g., interviews) chosen?</td>
<td>We added additional justification explaining why we have used a mixed-methods approach (and collected quantitative and qualitative data). The following text was added (lines 135 – 138): “A mixed methods approach was used selected surveys are an effective tool for assessing pre and post student knowledge while focus groups are useful for gaining a more in-depth understanding of student perceptions and are also convenient and appropriate for non-sensitive topics.”</td>
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<tr>
<td>Details of how recruitment was conducted and by whom?</td>
<td>The following was added (line 195). “Recruitment was conducted by the lead author (LPG) during the first class session.”</td>
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<td>Details of who chose not to participate and why</td>
<td>We added the following sentence to ensure clarity for the reader (line 130). “All of the students in the class agreed to participate in the study.”</td>
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<td>End of data collection justified and described?</td>
<td>The following was added regarding the end of data collection (line 189): &quot;All data collection was completed by the end of the 2013 spring session of the university.”</td>
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<tr>
<td>Do the researchers occupy dual roles (clinician and researcher)? Are the ethics of this discussed? Do the researcher(s) critically examine their own influence on the formulation of the research question, data collection, and interpretation?</td>
<td>The primary researcher and lead author (LPG) did occupy a dual role as researcher and course instructor. It was emphasized for the students that the study was voluntary and that their decision to participate would not influence marks in any way. The following text was added (lines 198 – 201) to ensure this point is clear to the reader: “Also, the voluntary nature of the study was underscored, and it was made clear to students that they could end their participation in the study at any point and that their marks in the class would not be affected by their decision to participate in the study.”</td>
</tr>
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</table>
Anonymity and confidentiality discussed?  
The following text was added (lines 196-198):“All participants gave written informed consent and were assured of confidentiality and anonymity. “

Is the type of analysis appropriate for the type of study?  
We do provide adequate detail about the thematic analysis process used however we added additional text (on lines 182-183) as justification for selecting thematic analysis. “The data were analyzed using qualitative thematic analysis, selected because of the exploratory and descriptive nature of this study.”

Analytic approach described: Description of how themes were derived from the data (inductive or deductive).  
The following text was added (line 185 – 186) to clarify how themes were derived from data: “Major themes were therefore generated inductively. “

RESPONSES TO REVIEWER COMMENTS AND REVISIONS MADE (from the manuscript that was submitted in May)

<table>
<thead>
<tr>
<th>Reviewer comments</th>
<th>Response and changes made</th>
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| Reviewer 1                                                                                                    | “The methods used in this study do not control for variables between different student populations and sample sizes and therefore make the findings not sound.”  
- The authors appreciate this comment, and reviewer #1’s concerns regarding the lack of control between different student populations compared in this study. We have included remarks speaking to this important limitation in the discussion section. We would like to emphasize however, that the comparison across different student populations is only one piece of this study and results. Taken together, the pre- and post-course surveys, the focus group data, and the comparison across student populations, tell a compelling story about the potential utility of this innovative instructional model.  
  Additionally, although we suggest that the results of this study are promising, we highlight that further research regarding the effectiveness and impact of the flipped classroom model in higher education is warranted. A study design that allows for control across comparison |

groups is an excellent next step. Given that we have identified promising results with regards to the influence of the flipped classroom model on learning outcomes and learning experiences, we hope to pursue more research in the near future.

The authors remain confident that this study makes an important contribution to our currently limited knowledge of the flipped classroom in the context of higher education.

"Inclusion of all support materials in a table or figure should be included."

- We added details to Table 1, which now outlines additional support materials used in the course. We also remind the reader that the online course can be accessed and reviewed in full at [http://www.nextgenu.org](http://www.nextgenu.org).

"I believe the self-perceived knowledge questions were the same on pre and post survey, but that is not clear here, nor do I see the full pre and post survey in the tables."

- We added the following sentence to ensure that this important aspect is clear to the reader: “The self-perceived knowledge questions were identical in the pre- and post-course survey instruments.”

"Further editing is needed" (reviewer 1 highlighted specific areas of the manuscript text requiring editing. These areas are outlined below)

- We made specific edits to improve the writing and clarity of the text.

- Line 4-5: “(also known as the reverse or inverted classroom)”
  - We removed the word “reverse” for the sake of clarity.

- Line 8-9: “The flipped classroom model is a type of blended learning where face-to-face classroom experiences are integrated with online learning experiences”
  - We have changed the sentence to “The flipped classroom model is a type of blended learning where in-class learning is integrated with online learning experiences”

- Line 246: Small class size
  - We removed the word “small” to improve clarity.

- Line 256: “The focus group also highlighted the contribution of reflective responses to positive learning experiences”
  - We have changed this sentence to “The focus group data also highlighted the contribution of reflective responses to positive learning experiences”
• Line: 281: For example, none of the students were part of the EOH concentration option available for the MPH students at the test-site university. The majority of students noted that they would not have taken the course had it not been a required core course for their degree

• The first sentence from this section has been removed for the sake of clarity.

**Reviewer 2**

"The abstract results omit reference to the finding that no difference was found when comparing knowledge between the classes of 2011 and 2013. Since this was one of the 3 principle measurements of the study, it should be included here"

-The following sentence has been added to the abstract: “Those students who participated in the flipped course in 2013 had more positive learning experiences compared to those students who participated in the lecture-based course in previous years. However, we found no difference across examination scores for the 2013 students compared to 2011 students.”

"It is not clear why the prior course evaluations were pooled over several years (2009-12) for comparison with the revised 2013 course while the grade comparison was only 2011 vs. 2013. Since the ratings significantly improved with a larger N, but not the grades, the reader is left to wonder why the comparisons were not similar. This should be explained or the complete analysis performed"

-Thank you for this important question. Unfortunately, the authors only had access to final examination scores for 2011. Consequently, we were unable to compare examination scores any other years. We felt however, that a single year comparison was useful and added depth to the analysis and therefore this was included in the study. We have included the following comment to clarify this point for the reader: “Examination result data were only available for 2011”

"Reference #3 refers to K-12 studies and the citation on lines 9-12 implies that it applies to higher education. Please qualify this mention in that sentence to clarify the meta analysis was for K-12 education.”

This is an excellent comment. It also highlights that there is currently very limited research and knowledge regarding the impacts of the flipped classroom model in the context of higher education in general. We have seen positive impacts in K-12 education but more research is needed to understand if these positive impacts translate to higher education.
We added the following sentence to the introduction to qualify Reference #3: “This meta-analysis was focused on K-12 education. There has been limited research exploring the flipped classroom model in the context of higher education (and none in the realm of public health higher education) highlighting an important knowledge gap.”