Title: Improving Education in Primary Care: Development of an Online Curriculum Using the Blended Learning Model

Authors:

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Author's response to reviews: see over
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Editors,
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Dear Editors,

Thank you for the opportunity to review and revise our paper, “Improving Education in Primary Care: Development of an Online Curriculum Using the Blended Learning Model”.

We appreciate the thoughtful comments and suggestions made by the reviewers. We have addressed these concerns in the body of the revised paper and have outlined them below. We have included the reviewers’ comments followed by our answers to each of their concerns.

Reviewer #1 report:
• Minor Revision: The authors are requested to highlight the limitations of the study. Overall, I found this to be an interesting read. Although quite a bit of work has been published about on-line courses, there are fewer on blended learning. I liked the way the study linked the new course to be offered not only to Student Satisfaction, feedback for improvement of the course, but also to any gains in Student Performance.
• Response: Limitations to the study were added to the Discussion section as requested by Reviewer #2 (see below).

Reviewer #2 report:
• This is a case study of the development of blended learning in the primary care setting that will be of interest to medical educators, particularly those grappling with the difficulties of providing an appropriate learning experience for widely dispersed cohorts of students.
• Major Compulsory Revisions:
  Overall, this paper contains insufficient detail of the methods used and lacks clarity in the results and discussion sections. In particular, the authors need to:
  1. Clarify how the developmental modules were linked to the clinical learning in order to provide a blended approach.
  • In the Methods section, paragraph 2, states that the topics in the curriculum were identified by a group of primary care physicians who
teach students to be sure that they represent common clinical scenarios. In describing the four modules we chose to highlight some of the ways that the online portion of the curriculum was connected to the face-to-face clinical learning: on page 8, paragraph 2 we explain that each student submitted a SOAP note through the website from a real patient in their preceptorship site for course leaders to give feedback; on page 9, paragraph 1 we note that students answer open ended questions about online scenarios as they relate to their real clinical work; and at the top of page 10 in the description of Module 4 we describe how students create patient education flyers that remain on the website so that all students can access them if needed in their own practices. A few words of clarification were added to those paragraphs to address this concern.

2. Clarify whether the students were allowed to complete the modules in any order (as outlined in the discussion of adult learning principles) or in sequence (As indicated later in the paper).
   • On page 7, paragraph 3; we added clarification that students could complete the components of each module in any order, but the modules themselves were completed from first to last.

3. Clarify whether the ‘control’ traditional group was taking the elective without on-line learning, or not taking the elective at all.
   • On page 10, last paragraph we clarified that the control group had no exposure to the online curriculum or preceptorship.

4. Provide more detail about how the programme evaluations were carried out. What questions were on the questionnaires? Were they Likert scales or yes/no responses? Were there any open comments allowed? How were they analyzed? What was the response rate?
   • On page 10, paragraph 2, we added a sentence clarifying that the first three sections of questions were answered on a Likert scale and the last was free text. The same paragraph states that responses were tabulated and the percentage indicating each possible response was calculated. On page 11 in the last paragraph it states that all students completed the surveys as a course requirement.

5. Provide more detail on the assessment of student skills, particularly how many students were involved, how they were chosen and when they took the two parts of the assessment.
   • A paragraph was added on page 13 under Student Evaluation that states that there were 41 CPCP students and 9 controls that took the Generalist OSCE exam. On page 11 in the last paragraph we state how many students completed the program evaluations.

6. Ensure that the results table matches the text of the paper. At present, Table 2 does not show that the majority of student rated the overall content as excellent or very good. Also, the list of most highly rated components in table 2 does not match those listed in the text. Module 1 does not appear in the table at all.
• This was addressed in response to the comments of reviewer 3; please see below.
7. Clarify, in the discussion, what evidence the authors’ base based the statement that the curriculum was ‘well accepted’ by students.
• On page 14, paragraph 3; we added clarification that it was through the feedback surveys that we knew that the curriculum was well accepted.
8. Clarify what is meant by ‘analysis of the subsections’.
• On page 11 at the top the four subsections are listed: history taking, physical exam, medical knowledge, and patient education. We added clarification on page 13, paragraph 4 that those were the names of the subsections.
9. The current text gives little indication that the authors have considered the strengths and limitations of interactive electronic formats - such as the difficulty of dealing meaningfully with student free-text responses or with issues that require a thoughtful reflective approach. Some discussion of these issues would be beneficial.
• A paragraph was added to page 15 (paragraph 3) addressing this.
10. A brief discussion of the strengths and limitations of the work is required.
• The limitations of the study are addressed in on page 16 paragraph 2; the strengths of the study are described throughout the discussion.

• **Minor Essential Revisions**
  1. The current title of ‘student evaluations’ suggests student feedback rather than the assessment of student skills via an examination. This section would benefit from a more descriptive title.
• We feel that the parallel titles of “Program evaluation” and “Student Evaluation” are needed: one is about the evaluation of the program itself, the other about evaluation of the students.
  2. It would be helpful if the authors discussed how any ethical issues were dealt with (eg obtaining student consent) in addition to stating that ethical approval was obtained.
• On page 11 just before the results section it is stated that IRB approval was obtained. We added the fact that the study was deemed “exempt” so consent was not required.

• **Discretionary Revisions**
  1. The authors may wish to discuss how they intend to develop their work.
• We do explain that the curriculum has been expanded to include all students at Case. (Page 7, Line 2)

**Reviewer #3 Report:**
In this paper authors are describing a web based undergraduate medical teaching programme and its acceptability to students. The idea of web-based learning is very interesting and can be an important source of learning especially in circumstances where direct interaction with teachers is limited.
1. Authors have stated the goals of the teaching programme and objectives of this paper clearly.
Minor revisions:

Methods

2. Overall the modules has been described well and further details are easily accessible from the website link. However, the paper does not clarify that there is no teacher or trainer supports for students within this module and that the answers to the questions asked during activities are fixed. In methods section (paragraph 2), it is said that open-ended questions and discussion boards allow students to address clinical issues, but it should be clarified, as it appeared to me that there is no arrangement for feedback. If there is then it should be clarified in the paper.

- We addressed this concern in the body of the paper in the methods section (Page 7). As the students answered the open ended questions in each module on the discussion board, these answers were reviewed periodically both by the course director and web instructional designer and feedback was posted to the discussion board. Please note that for viewing by a larger academic community and scholarly dissemination purposes, the interactive feature of the discussion board has been removed from the current website.

3. The full form of “SOAP” note should be included in the paper as readers unaware of the US medical system may not be aware of this term.

- This change was made in the paper. (Page 8)

4. In paragraph 4, it is said that other students and faculty members can see the discussion board but it is not stated how often this was actually done and how useful it is for overall learning.

- The course director and web instructional designer reviewed the answers to the assignments (on average once a month) and posted feedback directly to the discussion board for all students to see.

Results

5. The numbers do not tally in the text and in the table 2. The results for first module are missing from table 2. The n numbers for module 2-4 do not match with those given in paragraph 1 in the results section. It is not clear why only results from 14 students have been presented for module 4. In table 2, for module 3, N has been used instead of n.

- We made the necessary changes. Table 2 depicts the percentage of students who could directly relate the content of the web modules to “real life” clinical practice and we added text to explain the table. In keeping with the blended learning model, we decided this information was pertinent to the readers. During the module development, the question “Students that Agree or Strongly Agree “I Could Directly Relate what I Learned in the Following Module Components to Real Patient Interactions in my Preceptor’s Office” was added after students completed Module 1 thus we did not have results to this particular answer for module 1.
Discussion

6. Authors have included many relevant points and some limitations of this course, but they should also acknowledge that the modules are very brief and only covers a small spectrum of medical curriculum. It has to be complemented by other study material.

7. This course is providing a one-way interaction. This is very interesting but may not be the best learning method for all students.

8. There should be an appropriate feedback mechanism for students either inbuilt in the system or by regular group discussions or meetings with the teachers.

9. It is not surprising that authors did not find much significant difference in the measured outcome of this teaching programme compared to traditional teaching because such outcomes depend on many factors.

- The authors appreciate these thoughtful comments by the reviewer on the curriculum itself. We cited similar concerns in our discussion section.

Thank you again for your time in considering this manuscript. Please let us know if you need any further information.

Sincerely,

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