Author's response to reviews

Title: Integrated online formative assessments in the biomedical sciences for medical students: benefits for learning

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Author's response to reviews: see over
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General:

The authors would like to thank both the referees for their constructive and insightful comments.

During the process of revision of the manuscript, we discovered that data from a number of students who commenced the Medicine program in 2005 had inadvertently been omitted from our original submission. These data have now been included in the analysis, leading to revisions in the text, as well as major revisions to Tables 1 and 2, and minor revisions to Table 3. The added data also strengthens the study’s capacity to determine the effects of participation in formative assessments on end of course examination marks across cohorts (Table 4).

The following paragraph regarding Ethics approval for our study has been added to the Methods section, as requested by the Editors:

“Our study was approved by the Human Research Ethics Committee of The University of New South Wales. Consent for participation in the feedback component of the study was implied by response to the anonymous online survey. Students completed online formative assessments and EOC examinations as part of their learning in Phase 1 of the Medicine program. Correlations between participation and performance in online formative assessments and end of course exams were performed in retrospect. The academic standing of students was not influenced by this study, and students’ identities
were masked from the investigators in adherence with ethical principles. Therefore, consent was not sought from students.”

Responses to Reviewers’ Comments:

Reviewer 1

• As suggested, the title of the paper has been changed to emphasise the positive effects of online formative assessments on learning.

• Legends to Tables now include a summary of statistical tests used to analyse the data.

• The paragraph on equity and inclusiveness (page 4) has been expanded to include more relevant issues.

• In the Methods section, the timing, number (one), content and format of formative assessments in each course has been specified (pages 6 and 7).

• Table 1 has been modified to clarify the number of students for whom data is available, as well as the percentage who participated in formative assessments in each course. The 95% confidence interval figures and T-scores are now expressed in positive numbers.

• Response rates to online feedback surveys are now documented in the Legends to Figures 3 and 4.

• In the Results section (now page 9), the statement regarding the correlation between participation in the formative assessments in each course and the respective end-of-course exams has been modified. Following re-analysis of the data, there was a statistically significant relationship in all courses.
• On page 9, the sentence has been modified as suggested to read: “For all courses, performance in formative assessments had significant but moderate correlations with EOC examination marks (p<0.001).”

• On page 10, improvements to the formative assessments that might have led to enhanced student perceptions are expanded upon.

• On page 10 (now page 11), the data relating to the benefits of participation in formative assessments for 1st and 2nd year students in vertically integrated courses is now supported by a new table (Table 4), detailing participating student numbers in each year, as well as providing statistical comparisons.

• In the Discussion section on page 12, following reference 23, the following sentence has been added: “It should be noted that the latter investigation, in contrast to our study, failed to gain significant numbers of participating students.”

• On page 14, the paragraph dealing with the possibility that “better” students participated in the formative assessments has been expanded.

**Reviewer 2**

• The composition of end-of-course examinations is now described in more detail in the Methods section (page 7).

• The information regarding continual improvement of the formative assessments has been transferred to the Discussion section (page 14).

• Information on the mean time taken by students to complete the formative assessments has been added to the Results section (page 9) and is addressed in the Discussion (page 13).
The inclusion of diagnostic information relating the performance of individual students in formative assessments to their EOC examination marks is not within the scope of the present study, but it is an issue that the authors are interested in pursuing. This point has been added to the Discussion section.

Information regarding the number of formative assessments per course has been addressed in the response to the comments of Referee 1 (see above).

Information regarding which attempt was used to determine performance in formative assessments has been added to the Methods section (page 8).

Typographical errors have been searched for and eliminated where found.