Author's response to reviews

Title: Challenging students to formulate written questions: a randomized controlled trial to assess learning effects

Authors:

Marleen Olde Bekkink (Marleen.OldeBekkink@radboudumc.nl)
Rogier A. R. T. Donders (Rogier.Donders@radboudumc.nl)
Jan G. Kooloos (Jan.Kooloos@radboudumc.nl)
Rob M. W. de Waal (Rob.deWaal@radboudumc.nl)
Dirk J. Ruiter (Dirk.Ruiter@radboudumc.nl)

Version: 4 Date: 19 February 2015

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

Thank you very much for your e-mail sent on 27 January concerning our paper (ID:1942910181145409). We have received the comments made by the reviewers and are very pleased that we have been offered the opportunity to revise the manuscript in accordance with their helpful suggestions. Please find our answers to the comments and questions below.

Reviewer 1

1.1 A minor revision was requested: a declaration of ethical approval or informed consent. The revised version contains information about the ethical approval procedure and informed consent obtained by participants. The methods section contains a clear view on how involved participants were informed and the study is discussed along a peer reviewed checklist in order to make the treatment of involved participants transparent.

We thank the reviewer for this comment.

1.2 Introduction

Line 37: ‘quantity of small group dialogue is crucial’ is not substantiated by the work of Raut et al. This study does not explore quantity of dialogue of participation of group members in the discussions.

The work of Dr Raut and colleagues was cited to support the statement that quality of the group dialogue is crucial for the progress of the learner. Raut et al. conducted a study in which they invited students to participate in group discussions preceded by a pretest and followed by a posttest. Student questionnaires revealed huge agreement (95.74%) on the opinion that group discussion helped them to remember the contents of the topic. The majority of students (97.84%) agreed that group discussion had helped them to improve their communication skills. The original sentence in our manuscript was as follows: “The quantity and quality of such small-group dialogue are crucial for the progress of a learner with respect to all competences i.e. knowledge, metacognitive skills and attitude.” We agree with reviewer 1 that Raut et al. did not explore quantity of the dialogue. In the revised version of the manuscript, we have therefore deleted the word ‘quantity’.

1.3 Line 67-69: the remark about motivation suggests that motivation differences between female and male students is examined in this study or the only reason for performance differences. In the discussion, motivation is suggested as one of different explanations.

A better theoretical framework for the exploration of the impact of the intervention on male and female performances would be the finding in many studies that female students largely perform better than male students.

Gender differences in performance seem to be multifactorial, including e.g. the quantity and quality of motivation (intrinsic versus extrinsic) and degree of mental maturation. In the
introduction, we mention ‘motivation’ to clarify why we performed a subgroup analysis according to gender. Based on our experience, we feel that male students need more and/or other challenges to motivate them to learn. We think these differences are highly interesting and relevant as we are looking for challenges to stimulate and engage our students. However, as reviewer 1 emphasizes, it is known from the literature that male students generally perform less well than female students. The fact that female students’ score did not increase as a result of the intervention could be explained by the ceiling effect, as female students already perform better in comparison with their male colleagues. This was emphasized in the discussion of our manuscript.

1.4 Methods

Line 145: obtained (period should be added).
A period at the end of the line was added.

1.5 Discussion

Line 270. ‘were’ should be ‘where’.
This spelling error has been corrected.

Reviewer 2

2.1 Overall comments
The authors have executed an interesting study with a nice design. My main comment is that the authors need to be cautious while stating that their intervention was directly responsible for the performance outcome. They are justified in suggesting the possibility, but should not make strong claims for the same. The article is definitely publishable, but with recognition of the limitations of the study. We agree with reviewer 2 that a major limitation of this study is the intervention being small and she is right to point that the results need to be interpreted with caution. We have emphasized this in the discussion of the revised manuscript.

2.2 Apart from the specific comments below, I have provided suggestions in the text in the pdf version of the manuscript.
We would like to thank reviewer 2 for providing detailed comments in the manuscript. These suggestions were used to improve the manuscript.

2.3 Introduction:
The introduction is well-written. I suggest to add the effect of this intervention on student intrinsic motivation, especially because the authors link the differences in male and female motivation to the learning outcomes in the results and discussion. This suggestion has been added to the introduction of the revised manuscript.

2.4 I find the intervention too small to conclude with certainty that this intervention actually resulted in a better performance.
In the discussion of the revised manuscript, we have highlighted that the results need to be interpreted with caution because of the small intervention.
2.5 Also, if the authors performed the intervention only during the “tumour progression” session, I find it strange that they chose the score on “tumour pathogenesis and progression” as an outcome measure. I suggest that the authors rerun their statistics after extracting the scores of the students only on the examination questions assessing “tumour progression”.

We thank the reviewer for this comment, because we did not realize we were using these terms inconsistently. In the methods section, we referred to the outcome measure as: “Score on tumour pathology”, but in the results section we wrote: “Score on tumour progression”, which is confusing. “Tumour pathology (pathogenesis and progression)” and “Tumour progression” refer to the same topic. All examination questions included in the analysis relate to the topic of the small-group session in which the intervention took place. We have changed the designation throughout the manuscript in order to clarify this.

2.6 The discussion section needs complete reorganization. I suggest to delete the subheadings in this section. They interrupt the flow of the discussion. I suggest the following structure in the following sequence: what this study adds to the literature, summary of findings along with comparison to other studies having similar or different results and explanations for the same, the interpretation of the effects of gender, implication of the study for educational practice, strengths and limitations.

The discussion section was reorganized thoroughly according to the suggestions of the reviewer. For the sake of clarity we prefer to maintain the subheadings, but they were formulated according to the suggested wording of the reviewer.

2.7 I suggest rewriting the limitations section. I think the authors should highlight that their interventions was a small (one ten minute question generating session) and hence there is a chance that the results they report are coincidental. The limited generalizability of these results is, in my opinion, the second limitation of this study.

The limitation session has been rewritten. We agree that the intervention was small; however, we would like to mention that students were instructed to think about the extra questions at the beginning of the SGW (2 hours). At the end of the SGW, students individually wrote down at least one of their collected questions, and immediately after the plenary selected the two best ones per SGW were chosen after a short discussion (ten minutes). As we commented in 2.1 and 2.4, we have highlighted in the revised manuscript that the results need to be interpreted carefully.

In terms of generalizability, we feel this intervention is generalizable, because the process of asking questions is not specific to the topic, nor to the session. This approach can be used in other themes of the course and in other small-group settings, such as a problem-based learning, a team-based learning and in an interactive lecture setting.

2.8 References

Reference 19 has been quoted again as reference 36. I think the authors meant the following reference: Kusurkar RA, Croiset G, Galindo-Garre F, Ten Cate O: Motivational profiles of medical students: association with study effort, academic performance and exhaustion. BMC Med Educ 2013, 13:87.

Reference 36 was quoted erroneously. It has been replaced by the correct reference in the revised manuscript. We apologize for the inconvenience.
2.9 Use of language: Needs a grammar and language check.
   The language and grammar have been checked and corrected by a native English speaker.

We hope that, with these corrections, the revised manuscript will be accepted for publication in 
*BMC Medical Education* and we are looking forward to hearing your decision.

Yours sincerely, on behalf of all authors,

Professor Dirk Ruiter, MD, PhD  
Emeritus Professor of Pathology  
Radboud University Medical Centre