Author's response to reviews

Title: Evaluation of a web-based ECG-interpretation programme for undergraduate medical students

Authors:

Mikael Nilsson (mikael.nilsson@karolinska.se)
Gunilla Bolinder (gunilla.bolinder@karolinska.se)
Claes Held (claes.held@karolinska.se)
Bo-Lennart Johansson (bo-lennart.johansson@karolinska.se)
Uno Fors (uno.fors@ki.se)
Jan Ostergren (jan.ostergren@karolinska.se)

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Author's response to reviews: see over
To the Editorial Team
BioMed Central

Dear Editorial Team!

Thank you for the review of our paper entitled EVALUATION OF A WEB-BASED ECG-INTERPRETATION PROGRAMME FOR UNDERGRADUATE MEDICAL STUDENTS. We have now revised the manuscript taking the reviewers comments into account. Below we describe the changes made on a point by point basis and, when appropriate, provide our responses to the comments from the reviewers (in black).

The revised manuscript is attached. We hope that the manuscript is now suitable for publication.

With kind regards

Mikael Nilsson

**Reviewer's report**
**Title:** Evaluation of a web-based ECG-interpretation programme for undergraduate medical students
**Version:** 2 Date: 2 October 2007
**Reviewer:** Paul Bradley

**Reviewer's report:**

The paper does not set out an explicit research question to be answered by the study.

This was a preliminary evaluation of the potential of the Web based ECG programme to improve learning outcomes during the course of internal medicine. This is now explained in the manuscript.

There is only numerical description of the students involved in the two arms of the study.
There are no descriptive statistics of the demographics of the study populations.

Demographics are now included on page 5

It is unclear, but presumed, that both groups are 6th semester Karolinska students, the difference being the site of their rotation.

This is correct and explained on page 5 under “Test settings”
Individual semi-structured interviews are described but there is no mention of an analysis of these interviews and no presentation of qualitative data.

The interviews are now better described on page 5 under “Test settings”

(2) How much conventional instruction was provided. Was the web based training a replacement for potential teaching or an adjunct?

Both the intervention group and the control group had received a 15 hour long course in ECG-interpretation during the 5th semester. This information is now included on page 6.

The web based training was thus an adjunct which is explained on page 5 “Test settings”.

There is no indication of variance for the diagnostic test.

The standard deviation is now added on page 5

There is no indication of student learning per se, as there was no pre-test post-test comparison for either group.

This is correct and in a current larger study we have now included pre and post study tests.

(3) The authors fail to comment on the potential impact of 15 of the students not participating in the diagnostic test (that is, the 12 who had not tested the program and the 3 who had but who missed the test) might have had on the results.

This is now commented on page 7 in the first paragraph of the discussion as follows: “However a limitation with this study is that some of the students did not perform the voluntary diagnostic test and that a pretest was not performed. Additional studies are needed to assess the possible advantages with web-based ECG-learning and if it can replace conventional learning.”

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

Figure 3 is too small to read

The figure is not intended to be read but just to describe the graphical layout of the programme.

Figure 4 needs better layout

Modified

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)
(4) I think that the possibility of 'volunteer bias' should be specifically addressed in the discussion section. 20/32 students in the intervention group voluntarily used the Internet resource, and 17/20 of these completed the assessment, in which their mean score was significantly higher than control. But the higher mean score may reflect the fact than volunteers on the whole tend to represent the better students.

The reviewer may be right in this assumption but there is also data indicating the opposite. For example Hahne et al. did not show that students who participate or agree to use e-learning are better students than those who do not use e-learning.


This has now been commented upon on page 8 in the discussion.

In the class. The 12 students who didn't use the resource were not assessed further- would the mean score actually have been higher than control had the non-responders also been tested? Especially since 25/30 in the control group sat the test- a wider sample than 17/20 'volunteers'. However this potential bias, provided it is acknowledged, should not invalidate the study findings, although it does make them appear less robust. Would a randomised study have been feasible? Probably not...

The limitations has now been acknowledged in the discussion (see answers above to reviewer 1 and 2)

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

Discretionary Revisions (which the author can choose to ignore)
Suggest that last sentence in Background section of abstract be changed as follows: 'Furthermore, Internet-delivered education may be more effective than traditional teaching methods due to greater immediacy, improved visualisation and interactivity'.
Changed as suggested

Suggest that introductory statements in Background section of paper proper, from the word 'Worldwide' to '...certain electrocardiographic abnormalities' be omitted, since they are broad generalisations without any real relevance to the subject of the paper. Would suggest as opening sentence: 'Our experience, together with existing research, suggests that most medical students do not feel competent in their interpretation of ECG.'

Partly changed as suggested

Reviewer's report
Title: Evaluation of a web-based ECG-interpretation programme for undergraduate medical students
Version: 2 Date: 18 October 2007
Reviewer: Daniel Sigulem

Reviewer's report:
Is the question posed by the authors new and well defined?
Yes, although it is not exactly a new issue, as e-learning solutions have been extensively studied, the authors define the problem and the context in which the research was held very clearly.

2. Are the methods appropriate and well described, and are sufficient details provided to replicate the work?
Yes, the methods are appropriate to assess the stated objectives, which were to measure the acquisition of specific skills.

3. Are the data sound and well controlled?
Yes, they seem to be.

4. Does the manuscript adhere to the relevant standards for reporting and data deposition?
Yes.

5. Are the discussion and conclusions well balanced and adequately supported by the data?
Yes, the discussion and conclusion bring relevant issues, such as the concern with the ones who chose not to participate with pedagogical principles.

6. Do the title and abstract accurately convey what has been found?
Yes

7. Is the writing acceptable?
Yes.

Discretionary Revisions: none
Minor Essential Revisions: review punctuation, review the use of the word development in methods/abstract (Was the programme developed or only evaluated?)

We have changed the word to evaluated.