Reviewer's report

Title: Computer-based teaching is as good as face to face lecture-based teaching of evidence based medicine: A randomised controlled trial.

Version: 1 **Date:** 24 July 2006

Reviewer: James Wofford

Reviewer's report:

General

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

This is an experience worth reporting. This manuscript may add to the already large body of evidence of the effectiveness of computer-assisted education, most of it admittedly in nonmedical fields. All segments of the manuscript could be improved, and the discussion could better use other literature to project best future strategies for education. I would recommend revisions before further consideration for publication.

GENERAL COMMENTS
1. Teaching and learning through the web/computer is already a fact of life, and that we will be learning through computer is a foregone conclusion. Some would suggest that we have passed the issue of whether computers are more, or equally effective than â€œliveâ€□ means, and the debate has now moved on to determine which form and strategy of computer-assisted education is better. The implementation of the intervention may be as interesting to readers as the conclusion about equivalence of outcomes.
2. The language of computer-assisted education continues to be confusing. E-learning, computer-based teaching, computer-based session are all terms used in this manuscript and are vague enough that they undermine the readerâ€™s understanding of exactly what was done in this particular study. It would be better to be specific, and consistent throughout the manuscript. As a result, it is a bit confusing whether this is a trial of exactly the same lecture and content (computer versus noncomputerized) or whether there were other differences in the two interventions.
3. The literature review should be expanded, and several references are provided below that will at least point to the same ideas that the author have discussed.
4. Since this is an international readership, minor changes are needed to help readers from other countries who may not know the British system of medical education.
5. With regard to formatting of the manuscript, the section labels â€œObjectives, Design, â€¦â€□ for the abstract and mansucript do not match those required in the â€œInstructions for Authorsâ€□. The figure legend should be placed in the correct order, as required in the â€œInstructions for Authorsâ€□.

ABSTRACT
6. The word â€œconcealedâ€□ raises more questions than it is worth for the abstract. Employ it in the methods section of the manuscript, but not in the abstract.
7. International readers will not know what â€œfoundationâ€□ or â€œpostgraduate centerâ€□ means?
8. Here in the abstract as well as elsewhere in the manuscript, the comparison of â€œsessionâ€□ versus lecture suggests that the â€œsessionâ€□ is something different than a replication of the lecture. If it just the lecture, it might be less confusing to use the term â€œcomputer-based lectureâ€□ throughout the manuscript.
9. The results section of the abstract is thin. Consider including the recruitment rate, number of persons randomized, salient findings from the baseline characteristics.

INTRODUCTION
10. â€œTutored centred lecture based teachingâ€□ is an awkward word choice/description for the opening.

11. Given the widespread availability of the internet-based teaching/learning activities available, it is difficult to see how focusing on the difference postgraduates and undergraduates in medicine is important. I am not sure that the motives are different enough from students to postgraduates that we cannot learn from

educational strategies used for undergraduates or in other educational fields.

METHODS
12. When exactly was the trial conducted?
13. Information about the time involved and expense in developing the intervention would be useful to readers. The statement â€œEvery possible effort was made to ensure the lesson plans and educational content were equivalentâ€□ suggests that there were steps other than what you already described above? This information would help others developing computer-based lectures.
14. The specific questions about knowledge should be offered, perhaps in an appendix.
15. At which point were there drop outs?
16. For those who are not familiar with the format of Microsoft media player, was there simply overlay of the audio on the slide set. Was it an audio recording or â€œvideotapeâ€□?
17. What does this mean â€œdelivered to hospital computer clustersâ€□?
18. Were baseline characteristics collected as part of the initial pretest?
19. Multivariate analyses that controlled for the imbalance in baseline characteristics the two groups were apparently not performed. The sample size was small enough that it was probably not reasonable to do such analyses. However, as much imbalance as there was in the two groups, some discussion in how they differed and how it might have affected the results should be included at least in the discussion.
20. The concept of attitudinal gain as the desired outcome is suspect, as it suggests that attitudes should move only in one direction. For example, the item â€œclinical judgement is more important than EBMâ€□ would be highly controversial, whether or not the student was being â€œeducatedâ€□ to move his/her attitude in a certain direction. I am not sure what is being taught in either arm of the study, and what the researchers would consider an attitude gain in this case. Attitudinal change, positive or negative, may be a better gauge of whether the intervention had influence, and because the statistics were set up as two sided tests, this should be considered.

RESULTS
21. What was the distribution of participants by testing center or institution?
22. Baseline characteristics usually contain more (demographics). How were the baseline characteristics â€œSearched the literature for evidenceâ€□ determined? Is this part of the baseline questionnaire. Does this particular question mean ever searched the literature?
23. Epidemiology is a standard part of the US medical school curriculum. It should be explicit whether these issues of EBM, medical literature are taught in earlier years of medical training.

DISCUSSION
24. Why were three centers not included?
25. I am accustomed to reading at least one paragraph that acknowledges the limitations of the study. It should include the caveat of the small sample size, which deserves some discussion. Was there any effort to show how participants differed from nonparticipants? Why were so many missing? Perhaps, they were alerted that there would be an experiment before they actually attended. There are likely other caveats that should be shared with the reader that will enhance the credibility of the research effort.
26. Claiming uniqueness of â€œFirst trial of its kindâ€□ begs the question of how this is different from the plethora of educational interventions on the web. Are postgraduates really that different from other adult learners?
27. What is missing is lessons learned from the literature. The approach of emphasizing postgraduate education at the exclusion of studies targeting undergraduates misses the opportunity at learning from other studies, especially since the lecture is similar to the teaching strategy used in undergraduate education.

Other references that may be helpful

1: Spickard A 3rd, Smithers J, Cordray D, Gigante J, Wofford JL.
A randomised trial of an online lecture with and without audio.
Med Educ. 2004 Jul;38(7):787-90.
PMID: 15200403 [PubMed - indexed for MEDLINE]

2: Spickard A 3rd, Alrajeh N, Cordray D, Gigante J.
Learning about screening using an online or live lecture: does it matter?
J Gen Intern Med. 2002 Jul;17(7):540-5.
PMID: 12133144 [PubMed - indexed for MEDLINE]

1: Solomon DJ, Ferenchick GS, Laird-Fick HS, Kavanaugh K.
A randomized trial comparing digital and live lecture formats [ISRCTN40455708.

BMC Med Educ. 2004 Nov 29;4:27.
PMID: 15569389 [PubMed - indexed for MEDLINE]

2: Seabra D, Srougi M, Baptista R, Nesrallah LJ, Ortiz V, Sigulem D.
Computer aided learning versus standard lecture for undergraduate education in urology.
J Urol. 2004 Mar;171(3):1220-2.
PMID: 14767306 [PubMed - indexed for MEDLINE]

3: Williams C, Aubin S, Harkin P, Cottrell D.
A randomized, controlled, single-blind trial of teaching provided by a computer-based multimedia package versus lecture.
Med Educ. 2001 Sep;35(9):847-54.
PMID: 11555222 [PubMed - indexed for MEDLINE]

4: Santer DM, Michaelsen VE, Erkonen WE, Winter RJ, Woodhead JC, Gilmer JS, D'Alessandro MP, Galvin JR.
A comparison of educational interventions. Multimedia textbook, standard lecture, and printed textbook.
Arch Pediatr Adolesc Med. 1995 Mar;149(3):297-302.
PMID: 7532074 [PubMed - indexed for MEDLINE

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)

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article of limited interest

Quality of written English: Acceptable

Statistical review: No

Declaration of competing interests:

I declare that I have no competing interests