Reviewer's report

Title: A randomised-controlled trial of two educational modes for undergraduate evidence-based medicine teaching and learning

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Reviewer: Henry Mandin

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The manuscript defines the question for investigation well. The methods are appropriate. The manuscript adheres to relevant standards for reporting data and deposition. However, the discussion and conclusions are not entirely supported by the data.

Major Compulsory Revisions.

On page 3 the authors state that "there is some evidence from western populations that students in a problem based learning (PBL) curriculum become better at problem solving and self-directed learning than those in a traditional curriculum;3-5 there is little evidence to support the generalisability of these findings across cultures."

In fact other reference state that there is no evidence that PBL curricula lead to better problem solving or self-directed learning (Advances in Health Sciences Education 2004; 9: 257. Also Cunnington et al, 1996; Albanese & Mitchell, 1993; Colliver, 2000; Newman, 2004; Vernon & Blake, 1993).

There is also recent evidence that the type of diagnostic problem solving learned in PBL curricula (hypothetico-deductive reasoning) is the least successful of all diagnostic strategies (Heemskerk, Norman, Chou, Mintz, Mandin, McLauglin in Advances in Health Sciences Education, 2007).

Given such evidence, as well as the recent review article by Kirschner et al ("Why Minimal Guidance During Instruction Does not Work: An Analysis of the Failure of Constructivist, Discovery, Problem-based, Experiential, and Inquiry-based Teaching" Educational Psychologist 2006; 41(2):75 - 86), the authors need to consider other possible reasons for their results.

In their conclusion, the authors state "--- our study also draws attention to the importance of locating teaching methods within their social and cultural context, so to take advantage of students existing epistemological beliefs."

Although social and cultural context may in part explain the results, the authors should consider other possibilities. In the face of some of the references cited above, one distinct possibility is that some of the original assumptions of PBL have been proven to be untenable, and that curricular changes away from PBL
may well resolve the problems identified by the students in the present study. Thus, the possible solution to the findings in this manuscript is not simply "--- a hybrid format comprising of a prefacing lecture followed by a small group PBL session." In view of the evidence cited by Kirschner et al, small groups may need to reject the minimal guidance advocated by PBL curricula, and instead substitute small group tutors who have process expertise as well as the content expertise to identify misconceptions, diagnose their cause, and provide immediate feed-back that will correct the misconceptions.

The authors adequately state the limitations of the study. Although they acknowledge work upon which they are building, clearly some references that are very pertinent to their topic have been missed.

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests.