Reviewer’s report

Title: Using Cognitive Theory to Facilitate Medical Education

Version: 3

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Reviewer: Carole L Yue

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Major compulsory revisions:
1. The authors have added central questions, but the questions are still vague. For example, #3, be more specific—perhaps something along the lines of “what are the differences in how experts and novices process information?”

2. Also, some of the statements are a bit strong; CLT has suggested answers, but not answered all these questions fully.

3. In the section “Cognitive Load Theory, a hint for proper instruction”, the authors bring up their second question: “Why do some curriculums seem attractive, but not effective?” The authors then go on to discuss intrinsic load and PBL, but there is no adequate response to the “why” of that question. If the authors wish to use the organ-systems-based curriculum as an example, it would be more convincing to go into more detail about how the program “seemed to integrate basic science knowledge and clinical knowledge together, but actually the information did not translate into integration within learners.” What do you mean by integration? What studies evaluated this program? How do you know that the reason it failed is that it exceeded students’ WMC? This kind of detail would be more informative and relevant than the metaphor of a foreign language student learning grammar. The same logic applies to PBL...be more clear about what is attractive about this method. The authors may also be interested in the literature on desirable difficulties (e.g. Bjork, 1994), which shows that learners and instructors tend to prefer learning conditions that result in fast acquisition, even when long-term learning is superior in more difficult conditions (i.e., conditions that promote germane, rather than extraneous, load).

4. In the section “Schema, distinguishing experts from novices”, the authors make the statement “Experience might be the most significant difference between experts and novices.” Given the authors’ preceding discussion of schematic representations, perhaps this statement would be more relevant if it replaced “experience” with “mental organization” or something that connects more closely to the topic discussed.

5. The conclusion seems choppy and does not clearly answer the questions posed in the introduction.

Minor Essential Revisions:
1. Method: Could you clarify what you mean by “when needed”? Needed to narrow down the search parameters?
2. Also, it seems a bit strange that the authors make a strong case for the value of memorizing, but then spend the rest of the paper talking about curriculums designed to promote reasoning. Perhaps the authors could make this connection a little more clear?

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

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests.