Reviewer's report

Title: Using Cognitive Theory to Facilitate Medical Education

Version: 2 Date: 16 January 2014

Reviewer: Carole L Yue

Reviewer's report:

Major compulsory revisions:
1. This paper contains a great deal of information about the history of medical education, but the purpose for all this information is unclear at times. It seems that one point they are trying to make is that memorizing is an important component of medical education, and certain types of instructional techniques are more supportive of memorizing than others. A second point seems to be that CLT should be considered in more types of instruction. Both of these points are valid, but they are not clearly connected or consistently supported in a way that ties these points together. If the authors intend to bring up each method in reference to cognitive load and make instructional recommendations for different types of learning, that approach should be consistent across sections. For example, CLT was not mentioned at all in the clinical reasoning section, and its relation to the method is not fully explained in some of the other sections.

Minor Essential Revisions:
1. Clarity throughout the paper can be improved; for example, in the first paragraph under CLT, a Hint for Proper Instruction—clarify the directionality of the effects you’re discussing, e.g., “Learning processes could be affected…” (How?) or “Inappropriate teaching methods will even increase the extraneous cognitive load” (What kind of methods?).

2. The definition of extraneous load is different here than how it is usually described in the literature. Extraneous cognitive load refers to those mental activities that the learner engages in, but which do not promote learning (e.g., learning useless terms; processing an uninformative image). The working memory load experienced by learners, which the authors refer to as extraneous cognitive load, is actually the total cognitive load (intrinsic, extraneous, and germane, which the authors do not even mention).

3. Explain what you mean by guidance when discussing Clark et al. (in Schema section)

4. “They present experience to medical students in experts developed schemes.” (in worked example section) Please edit or elaborate.

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.