Reviewer’s report

Title: The Collaborative Learning Development Exercise (CLeD-EX): an educational instrument to promote key collaborative learning behaviours in medical students

Version: 0 Date: 26 Dec 2019

Reviewer: Umatul Khoiriyah

Reviewer's report:

The manuscript describes the development of a collaborative learning instrument namely collaborative learning development exercise (CleD-Ex). The manuscript has been written systematically, however; some remarks are identified to improve the paper.

The main objective of the research and the research question were not stated clearly in the abstract as well as in the main text. Was the aim of the research to evaluate the validity of the CleD-Ex or were there other objectives?

Most of the content of the paper showed the process of development and validation of CleD-Ex, however; the validity framework applied in this research was not clear. It would be good if the authors could describe the specific framework for instances Kane's validity framework or other current validity framework recommended in medical education research (i.e. Cook &amp; Beckman, 2006). By using a specific framework, the research would be more rigorous and systematic.

In my opinion, the concept of collaborative learning described in the background needs to be more sharpen especially in terms of its connection with the other learning concepts such as critical thinking skill and self-directed learning. It is important since the authors measured the impact of the CleD-Ex by evaluating critical thinking and self-directed learning skill.

In the methods section

The authors mentioned the modified Delphi technique in this section. Even though it has been published in previous research, it would be good if the author could describe shortly regarding the expert contributed to this Delphi process.

It would be useful for the reader if the authors could describe all the research process in figure 1. I am not quite clear how many times students filled the CleD-Ex, how long the process from stage 1 to stage 3 was conducted, the information whether the control group receive feedback or not and other information in term of the research method.

Result section
The Cronbach alpha of students' evaluation was only 0.451. It seems that this CleD-Ex does not enough validity evidence for its construct. Please clarify for this result.

It would also be good if the authors show the reliability of each item in CleD-Ex.

Discussion section

The analysis regarding the discrepancy between tutor and self-evaluation needs to be more comprehensive. The authors should consider the other factors contributing to this condition.

The analysis regarding the connection of collaborative learning and critical thinking and self-directed learning also needs to be more elaborated with the theory.

The authors mentioned that this tool designed for the busy educational context. I noted in the analysis of utility and feasibility part (page 10) tutors provided feedback around 2-15 minutes for each student. Does it mean that the feedback process could take time around 100 minutes for a group consisting of 10 students? Please clarify this issue since it is one of the reasons for designing this new tool

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No

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I am able to assess the statistics

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