

# Review of: "Analyzing Students' Perceptions of Collaborative Tools for Automated Assessment of Programming Assignments in Distance Education"

Angelina Kirkova-Bogdanova<sup>1</sup>

<sup>1</sup> Medical University Plovdiv

Potential competing interests: No potential competing interests to declare.

The manuscript deals with the integration of Mattermost and DSLab to provide substantial improvement in student collaboration through active discussion, sharing, and editing of learning resources. As the authors point out, there is a small group of studies dealing with this collaborative tool. The research goal is clearly set, and the manuscript presents a comprehensive description and explanation of the design and the whole process of the study. What I appreciate most are the two channels of gathering primary data - a self-reported questionnaire (subjective) and the system's log files (objective). The results presented are exhaustive and detailed. Congratulations to the authors for the robust work done.

My comments and suggestions for improvement are:

1. Regarding the research hypothesis and questions. There are two approaches in research design - deductive, which is to set hypotheses and accept or decline them, and inductive approach, which is to have research questions and to seek answers. Here I see a mix of the two, which, to me, is not scientifically sound. Moreover, in case there is a scientific hypothesis, it should be detailed in statistical hypotheses.
2. About the questionnaire, the "Self-perception of learning" is measured by two items. To ensure reliability, we normally need at least three items to measure a characteristic.
3. A multivariate analysis, specifically factor analysis, was performed, but it is not clear whether it is confirmatory or explanatory factor analysis. Table 11 indicates that two factors were extracted in a questionnaire that intends to measure four hidden variables. Please discuss this further.

I read the manuscript with pleasure; it is detailed and well-written, worth publishing. Wish you success!