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EJMSTE-14421-2022-R2

Assessing Students' Critical Thinking Skills Viewed from Cognitive Style: Study on Implementation of Problem Based e-Learning Model in Mathematics Courses

▶ Submission Details

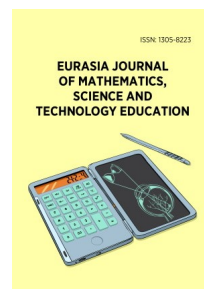
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▶ Manuscript Details

Type:	Research Article
Title:	Assessing Students' Critical Thinking Skills Viewed from Cognitive Style: Study on Implementation of Problem Based e-Learning Model in Mathematics Courses
Short Title:	--
Abstract:	The digitalization system that continues to roll has brought changes to the learning system, where face-to-face learning is replaced by an online system. On the one hand, learning experiences to acquire critical thinking (CT) skills as one of the essential skills of the 21st century must also be encouraged. The objective of this study is to assess students' CT skills in terms of cognitive style by implementing the problem based e-learning (e-PBL) model in mathematics courses. This study is an evaluative study with an experimental approach, where as many as 28 students as research samples were taken purposively from Mandalika University of Education, Indonesia. A set of instruments was prepared to measure every aspect of CT and cognitive style, including descriptive and statistical data analysis so that the results of the CT assessment were found. In general, the results of the CT evaluation show that e-PBL is effective in improving students' CT skills, so this is a recommendation to use e-PBL widely and intensively.
Keywords:	assessment, critical thinking skills, cognitive style, e-PBL model

▶ Reviewer Comments (2)

Comments from Reviewer 1	<p>▶ Recommendation: ACCEPT</p> <p>Thank you very much for addressing my comments on your previous draft. The addition of the validity information of the data and the limitations section are greatly appreciated.</p>
Comments from Reviewer 2	<p>▶ Recommendation: ACCEPT</p> <p>The results of this study indicate a new finding, the effect of the problem based e-learning model on the critical thinking skills of preservice teachers. I see the article has been fixed. The article is eligible to be published on EJMST.</p>



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▶ Topics

- Teaching/Learning Strategies
- Mathematics Education
- Assessment and Evaluation

▶ Suggested Reviewers / Conflict of Interests

SUGGESTED **Ni Nyoman Sri Putu Verawati** <veyra@unram.ac.id>

▼ Author's Statements *(Click here to display)***▶ Files**

Revised Manuscript: [manuscript-body-R2.docx](#)
Cover Page: [Cover Page.pdf](#)
Ethics Committee Approval Form: [Ethics Committee Approval.pdf](#)
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▶ Submitted PDF File

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▶ Previous Revisions (1)

▶ EJMSTE-14421-2022-R1

Submission ID: EJMSTE-14421-2022-R1

Editorial Decision: -

Manuscript Body: [manuscript-body-R1.docx](#)

Submitted PDF: [EJMSTE-14421-2022-R1.pdf](#)

Reviewer Comments:**Comments from Reviewer 1** (Recommendation: MINOR REVISION)

The authors of EJMSTE-14421-2022 "Assessing Students' Critical Thinking Skills Viewed from Cognitive Style: Study on Implementation of Problem Based e-Learning Model in Mathematics Courses." After reading this manuscript carefully, I find the manuscript is well written and the issues are interesting for readers to know more about critical thinking skills. Below are my comments as a consideration to improve the submitted manuscript.

Comment 1. In the Introduction section, authors narrate the importance of critical thinking skills to be trained and improved. It is in line with the current situation for facing e-learning, and the e-PBL model is assumed as an opportunity to develop students' critical thinking skills continuously. However, this part doesn't put elaboration in detail about FI and FD. Both possibly are emerged suddenly in the abstract and method parts. Please, author must give explanation briefly on the two variables in the Introduction part. In the information processing ways, cognitive styles are distinguished into FI and FD (Line 118-119). Please, provide explanation in detail about differences of the two.

Comment 2. In the method section, students' critical thinking skills are measured using tests for critical thinking skills on indicators of analysis, inferences, evaluation, and making decision (Line 173-176). Provide elaboration in detail why the indicators are employed here (it can be mentioned in Introduction section).

Comment 3. In the method section, using the same criteria in the LF range is different, "not good ($1.79 < LF < 2.60$), and not good ($LF < 1.79$)" (Line 180-181). Revise this part.

Comment 4. In the method section, provide scoring criteria (n-gain) according to Hake's formula (Line 190-191).

Comment 5. In the discussion section, I recommend authors to make strong findings with comparing the research findings and previous relevant studies.

Comments from Reviewer 2 (Recommendation: MAJOR REVISION)

1. The contents of the introduction presented need a connection with the research done. Page 3, What is the link between negative perceptions of mathematics and this study?
2. On page 3, the researcher stated that critical thinking is an urgent need, but his writings do not describe the essential critical of thinking that exists in students so that it is sampled. Low pretest graders are due to students not getting the material. Improved results could be because students have gained knowledge of mathematical materials.
3. There is no information about the validity of the instrument.

Comments from Reviewer 3 (Recommendation: MAJOR REVISION)

Thank you very much for a well-written manuscript that focuses on the impact of a Problem Based e-Learning model on students' critical thinking skills in mathematics. Please find my comments below:

1. Please strengthen the conceptual definitions of the "critical thinking skills" construct and its connections to mathematical thinking and reasoning, as well as problem solving. The NCTM competencies framework would be useful in making the meaningful connections.
2. Please strengthen the connections between critical thinking skills in mathematics and the assessment model.
3. It is unclear to me that whether the Kitpatrick's model was used to design and develop the e-PBL intervention? How did the intervention look like and how was it implemented? On p. 6, you stated "The e-PBL model is conducted on the material of a linear equation system, where the implementation of learning is carried out for four meetings (for assessment of process)". Please provide an explanation on the material. It looks like the intervention was short. What were revealed by your observations in terms of the process of implementation? Any feedback from the teachers and students?

the process of implementing any research from the literature and elsewhere.

4. It would be good to provide a description of the research context. Did the teachers and students in Indonesia perceive the value of e-PBL in the same way due to cultural differences? Was the model implemented using the local language?
5. Was the Critical Thinking Ability Tests validated in the context of Indonesia? What were the psychometric properties? Were the pre- and post-tests taken by your student participants in Bahasa Indonesia?
6. In Table 4, you presented the learning feasibility with the e-PBL model. Did the two observers code on an observational tool or protocol? What was the intercoder reliability?
7. You claimed that the e-PBL model improved students' critical thinking skills. But there was no control/comparison group. Change in students' critical thinking skills was only based on their pre- and post-intervention scores. There are other confounding various or rival hypotheses to be ruled out first. So making a causation in the context of your study is a bit premature.
8. Were there differences between male and female students in terms of their experiences and change in critical thinking skills in mathematics?
9. Did the two sets of data (assessment and observations) triangulate to help explain the findings?
10. Please strengthen your discussion and add limitations of your study. Thanks.

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