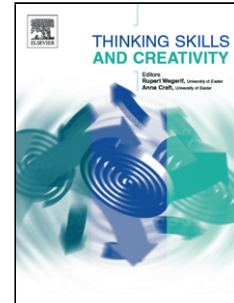


Accepted Manuscript

Title: The Effect of Mobile Problem-Based Learning Application *DicScience PBL* on Students' Critical Thinking

Authors: Nurul Syazwani Ismail, Jamalludin Harun, Megat Aman Zahiri Megat Zakaria, Shaharuddin Md. Salleh



PII: S1871-1871(18)30010-5
DOI: <https://doi.org/10.1016/j.tsc.2018.04.002>
Reference: TSC 503

To appear in: *Thinking Skills and Creativity*

Received date: 8-1-2018
Revised date: 10-4-2018
Accepted date: 17-4-2018

Please cite this article as: Ismail NS, Harun J, Zakaria MAZM, Salleh SM, The Effect of Mobile Problem-Based Learning Application *DicScience PBL* on Students' Critical Thinking, *Thinking Skills and Creativity* (2018), <https://doi.org/10.1016/j.tsc.2018.04.002>

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The Effect of Mobile Problem-Based Learning Application *DicScience PBL* on Students' Critical Thinking

Nurul Syazwani Ismail¹, Jamalludin Harun², Megat Aman Zahiri Megat Zakaria³,
Shaharuddin Md Salleh⁴

¹SM Sains Kepala Batas,

Kepala Batas, PENANG, MALAYSIA

^{2,3,4}Department of Educational Science, Mathematics and Creative Multimedia,

Faculty of Education, Universiti Teknologi Malaysia, JOHOR, MALAYSIA

Corresponding Author : Nurul Syazwani Ismail
wannyl13@yahoo.com

HIGHLIGHTS

- The app had a positive effect on the students' critical thinking. Analysis of the *t*-test found a significant difference ($p=0.000$, $t(35)=15.072$, $\alpha<0.05$) between the pre-test score (mean = 7.20, SD = 3.791) and the post-test score ($M = 29.97$, $SD = 7.578$).
- The findings showed that there were seven processes involved in the development of students' critical thinking during the intervention.
- A mobile problem-based critical thinking framework has been developed to promote critical thinking among students in Science subject.

ABSTRACT

The lack of applications using a more challenging approach, involving active learning as well as student-centred and problem-centred learning, can be seen in the existing mobile applications. Thus, this paper focused on the way the Problem Based Learning (PBL) environment was integrated into the design and development process of mobile apps for learning scientific terms. The app was tested by Form 2 students to find its effect on students' critical thinking and explore how the app helps them to think critically. The findings showed that the app had a positive effect on the students' critical thinking. Analysis of the *t*-test found a significant difference ($p=0.000$, $t(35)=15.072$, $\alpha<0.05$) between the pre-test score (mean = 7.20, SD = 3.791) and the post-test score ($M = 29.97$, $SD = 7.578$). Data from qualitative analysis also identified four features in this app that can help students improve their critical thinking skills. The findings also showed that there were seven processes involved in the development of students' critical thinking during the intervention. This study contributes a mobile problem-based critical thinking framework in learning science. In

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