

Review of: "Improving Learning Outcomes through Well Designed MCQ Tests"

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Potential competing interests: No potential competing interests to declare.

I congratulate the author on the article that has been submitted. This article is good and has good novelty, in my opinion. However, I will provide input with the intention of making the article better in the future.

1. Don't write the title in abbreviated form; write it in complete form. For example, "MCQ" is written in full as "Multiple Choice Question."
2. Based on the title of this article, it seems as if this article discusses overall learning outcomes, but if we read this article completely, we will find that the learning outcomes referred to by the author are cognitive learning outcomes (this is very clearly visible from the level of Bloom's taxonomy used). Therefore, the author should mention that the learning outcomes referred to by the author are cognitive learning outcomes based on Bloom's taxonomy.
3. From the questions that have been given, they are in the form of cognitive learning outcomes. However, it is important to remember that in this context they are engineering students; they are used to and must be familiarized with questions in psychomotor form. For example, if the material is rote material, but the problem is to make them work, this reduces the opportunity for them to just answer.
4. So, this is the most important part for me to see. If you read this article, the questions are made with reference to the learning objectives. The questions should not be made based on learning objectives but should be made based on Learning Objective Indicators. Therefore, the author needs to detail the learning objectives in the form of learning indicators, which are broken down into learning indicators using a matrix called an evaluation grid (questions), as figure :

Evaluation Grid Matrix of

CLO (Course Learning Objective) :

No.	Indicator	Question	Criterion (C1,C2,C 3,C4,C5,C 6)	Answer
1	,.....
2
3
...

5. The number of indicators depends on our ability to break down CLO into small parts that cannot be divided further. However, indicators must be measurable.

6. In this way, the number of questions depends on the number of indicators, and in this way, it can be ensured that if all the questions can be answered, it means that all indicators of learning achievement can be achieved, and thus the achievement of learning outcomes can be measured.

7. It is recommended that before using the evaluation, an item test, validity test, and reliability test be carried out.

Hope it is useful.

Thank you

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