

Comparison of chemistry students in solving algorithmic, conceptual and open-ended problems

The article went through 4 rounds of review and all 3 reviewers agreed in advance to publish their review reports without disclosing all identities.

The authors agreed to disclose the reviewers' reports and their responses to the reviewers' comments.

Disclaimer: The peer review report content is the entire copy of the reviewers' and authors' comments. Typing and punctuation errors are not edited.

ROUND 1

Reviewer A: Rusly Hidayah

Recommendation: Revisions Required

Add a table regarding the number of algorithmic, conceptual, and open-ended problems and provide examples of each problem.

No Reviewer Files

ROUND 2

Reviewer A: Rusly Hidayah

Recommendation: Accept Submission

Good.

No Reviewer Files

Reviewer B: Anonymous

Recommendation: Revisions Required

The study provides some interesting insights into students' performance on different types of chemistry problems. Some suggestions for improvement:

- Proofread carefully to correct minor grammatical errors
- Provide more details on the development and validation of the assessment instrument
- Discuss limitations of the study and potential directions for future research
- Strengthen connections between results and implications for chemistry education

[Reviewer Files](#)

Reviewer C: Anonymous

Recommendation: Revisions Required

The research conducted presents very interesting results. However, there are several aspects that need more detailed explanation, such as the gap between this research and previous studies, the reasons for selecting the sample, the sample characteristics, material characteristics, the types of measurement instruments used, and a more detailed discussion supported by accurate evidence. The author should explain how the results of this research compare to previous studies and clarify its contribution to the novelty of research findings. In my opinion, the characteristics of the sample and the topics addressed play a major role in the findings of this research.

[Reviewer Files](#)**ROUND 3****Reviewer B: Anonymous****Recommendation: Revisions Required**

The article presents an important contribution to the understanding of chemistry students' problem-solving abilities, specifically comparing their performance on algorithmic, conceptual, and open-ended problems. The data collection and analysis are sound, and the findings provide valuable insights. However, the article could benefit from the following improvements:

1. Language and Grammar: There are several grammatical errors and awkward phrases. A thorough proofreading is necessary to enhance clarity.
2. Methodology: More detail is needed regarding the design and validation of the test instruments, as well as the scoring criteria for the open-ended problems.
3. Results and Discussion: The discussion of the results could be expanded, particularly concerning students' challenges with open-ended problems. Adding qualitative insights from student interviews would strengthen this section.
4. Conclusion: The conclusion should include more specific recommendations for educational practices based on the findings.

Overall, this is a strong study that can contribute to improving chemistry education with some revisions.

[Reviewer Files](#)**Reviewer C: Anonymous****Recommendation: Accept Submission**

The author has revised the article, improving both its overall quality and addressing substantial issues effectively. However, several areas still need further attention, including:

Study Objectives: The study aims to:

- i) Identify the level of student achievement in algorithmic problems
- ii) Identify the level of student achievement in conceptual problems
- iii) Identify the level of student achievement in open-ended problems
- iv) Compare student achievement across algorithmic, conceptual, and open-ended problems.

Despite these objectives, the conclusion does not adequately reflect the study's findings. Instead, the author focuses too heavily on recommendations for future research, neglecting a clear explanation of the study's outcomes.

Table Formatting: Tables 4, 5, and others are presented in image format, which does not conform to academic writing guidelines. Proper formatting of tables is required to meet the standards of professional writing, and the current presentation suggests a lack of attention to detail.

Inappropriate References: Table 3 contains incorrect references. Surif et al. (2014) in Table 3 discuss the frequency and percentage of student success across three types of questions, but there is no mention of whether students were able or unable to solve the questions.

Incorrect Chemical Symbol: There is an error in one of the chemical symbols used. Please be more careful with scientific notations to ensure accuracy.

[Reviewer Files](#)

ROUND 4

Reviewer B: Anonymous**Recommendation:** Accept Submission

It is acceptable now.

No Reviewer Files

Reviewer C: Anonymous**Recommendation:** Accept Submission

I am happy with the revisions.

No Reviewer Files

ARTICLE ACCEPTED