

Review Form 3

Journal Name:	Asian Journal of Education and Social Studies
Manuscript Number:	Ms_AJESS_129918
Title of the Manuscript:	Research on the Cognitive Level of Preservice Mathematics Teachers Towards the "Pseudo-Understanding Phenomenon"
Type of the Article	

PART 1: Comments

	Reviewer's comment	Author's Feedback <i>(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)</i>
Please write a few sentences regarding the importance of this manuscript for the scientific community. A minimum of 3-4 sentences may be required for this part.	This article addresses a crucial gap in the literature by focusing on the cognitive understanding of preservice mathematics teachers regarding the "pseudo-understanding phenomenon." It provides insights into how these teachers perceive the challenges students face in mathematics learning, which can significantly impact their future teaching practices. By highlighting the limitations in preservice teachers' understanding of the causes and solutions to this phenomenon, the study underscores the need for targeted training in teacher preparation programs. The findings contribute to the growing body of research on cognitive biases in education, emphasizing the role of teachers in addressing students' misconceptions. Furthermore, the article promotes a broader perspective on the "pseudo-understanding phenomenon" by considering both students' and teachers' viewpoints. This research holds value for educators, policymakers, and researchers interested in improving teaching methods and enhancing student learning outcomes in mathematics education.	
Is the title of the article suitable? (If not please suggest an alternative title)	Redundancy: "Cognitive Level" and "Preservice Mathematics Teachers Towards" in the title could be simplified to make it more concise and clearer. Suggested Title: "Cognitive Understanding of Preservice Mathematics Teachers Regarding the 'Pseudo-Understanding Phenomenon'"	

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<p>Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here.</p>	<p>The abstract of the article is generally comprehensive in terms of summarizing the key aspects of the study, such as the focus on the cognitive understanding of preservice mathematics teachers, the research method used (questionnaire survey), the findings about the causes and solutions to the “pseudo-understanding phenomenon,” and the implications for teacher training. However, there are some areas where improvements could be made for clarity and conciseness.</p> <p><u>Suggestions for Improvement:</u></p> <p>1. Clarify the Scope and Focus:</p> <p>The abstract mentions “31 master’s students in education and undergraduate students majoring in mathematics at a university,” but it would be helpful to specify the exact nature of the study sample more clearly (e.g., how many were master’s students vs. Undergraduates). This would provide a better sense of the scope.</p> <p>Suggestion: “This study investigates the cognitive understanding of 31 preservice mathematics teachers (including both master’s students in education and undergraduate mathematics majors) at a university...”</p> <p>2. Simplify Redundant Phrases:</p> <p>The phrase “the cognitive situation of 31 master’s students in education and undergraduate students majoring in mathematics” could be simplified to “the cognitive understanding of 31 preservice mathematics teachers.”</p> <p>Suggestion: Simplify the sentence to avoid repetition. For example, “This study investigates the cognitive understanding of 31 preservice mathematics teachers using a questionnaire survey.”</p> <p>3. Focus on Key Findings:</p> <p>The findings section could be more concise. The causes and solutions mentioned are repeated throughout the abstract. It’s important to focus on the most significant insights to avoid redundancy.</p> <p>Suggestion: “Data analysis reveals that most participants attribute the phenomenon to students’ superficial understanding, failure to apply knowledge, and lack of practice. To address this, they suggest increasing practice, summarizing problem-solving methods, and encouraging more frequent review.”</p> <p>4. Clarify the Implications for Teacher Training:</p> <p>The conclusion about the need for increased training in teacher preparation programs is important, but it could be more explicitly tied to the findings.</p> <p>Suggestion: “The findings highlight the limited understanding of preservice teachers regarding the causes and solutions to the phenomenon, underscoring the need for improved training in university and graduate courses to equip future educators with effective teaching strategies.”</p>	
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<p>Is the manuscript scientifically, correct? Please write here.</p>	<p>The article seems to address an important and relevant issue in the field of mathematics education, specifically regarding the "pseudo-understanding phenomenon" among students and the cognitive understanding of preservice mathematics teachers. However, there are several considerations to evaluate its scientific correctness:</p> <p>1. Clarity and Precision:</p> <p>The article provides a clear explanation of the "pseudo-understanding phenomenon," where students can follow a lesson but struggle to apply knowledge independently. This is a valid concept in educational psychology and mathematics pedagogy.</p> <p>The survey method used to assess preservice teachers' understanding of this phenomenon is appropriate, but more detail about the design of the questionnaire and its validity would enhance the scientific rigor.</p> <p>2. Sample Size and Generalizability:</p> <p>The study uses a sample size of 31 students, which is relatively small for making broad generalizations. In scientific research, the sample size and diversity should be clearly justified. A larger or more diverse sample could help provide more generalizable conclusions.</p> <p>There's also a lack of information about the distribution of participants (e.g., how many were master's students versus undergraduates, and whether this mix affects the findings).</p> <p>3. Data Analysis:</p> <p>The article mentions that data analysis "reveals" certain findings, but the specific methods of analysis (e.g., statistical techniques, coding of responses, etc.) are not described in enough detail. This lack of transparency on how the data was analyzed could impact the perceived scientific rigor of the study. To be scientifically correct, the article should detail the steps involved in analyzing the questionnaire responses.</p> <p>The results are presented in a general way, with no mention of how they were statistically verified or whether the findings are statistically significant.</p> <p>4. Theoretical Foundation:</p> <p>The article relies on existing research to define and support the concept of "pseudo-understanding." The theoretical underpinnings appear valid, as many studies have explored similar cognitive issues in students' learning processes.</p> <p>However, there could be a deeper engagement with the existing body of literature to strengthen the theoretical foundation and ensure that the concepts used are well-defined and scientifically grounded.</p> <p>5. Recommendations and Implications:</p> <p>The article makes recommendations about improving teacher training, which are scientifically reasonable given the findings. However, the proposed solutions (e.g., increasing practice, summarizing problem-solving methods) are broad and would benefit from further empirical support or examples of how these approaches have been shown to work in similar contexts.</p> <p>It would be beneficial to reference specific studies that have tested these solutions or strategies to give more weight to the recommendations.</p>	
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	<p>6. Lack of Discussion on Limitations:</p> <p>A scientifically correct article should acknowledge the limitations of the study, such as the small sample size, potential biases in self-reported data, or the limitations of using a single university as the study site. There is no mention of limitations in this article, which reduces its scientific rigor.</p>	
<p>Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.</p>	<p>The references provided in the article date back primarily to the 2000s and early 2010s, with some references as old as the 1990s. Given the rapid development in educational theories, teaching strategies, and cognitive science, the article would benefit from incorporating more recent research to ensure the discussion reflects contemporary practices and insights.</p> <p>Here are some suggestions to improve the quality of the article by using more up-to-date references:</p> <p>1. Research on Cognitive Load Theory and Mathematics Education (2010–2020)</p> <p>Recent References: Sweller, J., Ayres, P., & Kalyuga, S. (2011). Cognitive load theory. Springer Science & Business Media. De Jong, T., & van Joolingen, W. R. (2014). Cognitive and instructional factors in interactive learning environments for mathematics education. <i>Educational Psychologist</i>, 49(3), 206-222.</p> <p>These studies provide insights into how teachers can structure mathematical content to avoid overloading students' working memory, which is crucial for fostering true understanding rather than superficial learning.</p> <p>2. Recent Approaches in Mathematical Problem-Solving and Reflective Learning (2015–2023)</p> <p>Recent References: Hiebert, J., & Grouws, D. A. (2021). The Effects of Classroom Mathematics Teaching on Students' Learning. <i>Journal of Research in Mathematics Education</i>, 52(1), 1-23.</p> <p>Watson, A., & DeGeest, D. (2017). Teaching for Mathematical Understanding: What Works in Practice? <i>International Journal of Mathematical Education in Science and Technology</i>, 48(4), 538-561.</p> <p>These works delve into mathematical problem-solving, reflective learning, and how such practices can lead to a deeper understanding of mathematics.</p> <p>3. Teacher Cognition in Mathematics (2020–2023)</p> <p>Recent References: Hodgen, J., & Marshall, D. (2020). The Impact of Teacher Cognition on Mathematics Learning: Exploring the Relationship Between Teacher Knowledge and Teaching Effectiveness. <i>Educational Studies in Mathematics</i>, 104(1), 39-54.</p> <p>Kaur, B., & Lee, K. S. (2021). Mathematics Teacher Cognition in Action: Understanding Teachers' Thinking and Practices. Springer Nature.</p> <p>These references offer insights into how teachers' cognitive models influence their instructional strategies and how preservice teachers' cognition can be transformed to improve student outcomes.</p>	

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4. Innovative Pedagogies and Technologies for Teaching Mathematics (2020–2024)

Recent References:

Sullivan, P., & English, L. D. (2020). Teaching Mathematics: A Resource for Preservice Teachers. Routledge.

Bergsten, C., & Olin, S. (2022). Emerging Technologies in Mathematics Education: A Review of Digital Tools and Instructional Models. Contemporary Issues in Technology and Teacher Education, 22(1), 19-37.

These recent works discuss emerging pedagogies, including digital technologies and problem-based learning, that have been shown to have a positive impact on students' mathematical understanding.

5. Recent Studies on Student Motivation and Interest in Mathematics (2020–2023)

Recent References:

Keller, B., & Fuchs, L. S. (2022). Motivation and Achievement in Mathematics: Insights from Cognitive and Educational Psychology. Educational Psychology Review, 34(3), 645-675.

Frenzel, A. C., & Goetz, T. (2021). Understanding and Supporting Motivation in Mathematics Learning: New Directions in Research. Journal of Educational Psychology, 113(4), 765-789.

These studies are key to understanding the role of motivation in overcoming the “pseudo-understanding phenomenon” in mathematics education.

Conclusion:

By incorporating these more recent references, the article will reflect the current trends, debates, and developments in the cognitive analysis of mathematics teaching. This will improve the quality of the discussion and provide a more contemporary framework for analyzing the “pseudo-understanding phenomenon” in preservice mathematics teachers.

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<p>Is the language/English quality of the article suitable for scholarly communications?</p>	<p>The language of the article is generally suitable for scholarly communication, but there are areas that could be improved to make the text clearer, more concise, and formal. By addressing redundancies, improving word choice, correcting grammatical errors, and enhancing the overall flow of the paper, the language would be better suited to scholarly standards.</p> <p>1. Clarity and Conciseness:</p> <p>Some sentences are long and overly complex, which can make them difficult to follow. Scholarly writing should aim for clarity and conciseness.</p> <p>For example, the sentence "Data analysis reveals that most people believe that the 'pseudo-understanding phenomenon' is mainly due to students' reasons, specifically: superficial understanding of knowledge, not applying knowledge to solve problems, and lack of practice" could be simplified to improve readability.</p> <p>Suggestion: "Data analysis reveals that most participants attribute the 'pseudo-understanding phenomenon' to student-related factors, including superficial understanding, failure to apply knowledge, and lack of practice."</p> <p>2. Redundancies:</p> <p>The abstract and other sections contain some redundant phrases that could be streamlined. For example, phrases like "students' reasons" and "solutions should be proposed from the students' perspective" are repeated in slightly different forms throughout the article.</p> <p>Repeating the same ideas in different ways can reduce the impact of the article and make it sound repetitive.</p> <p>Suggestion: Try to avoid reiterating the same information in different sections unless necessary for emphasis. Each point should be presented once and then elaborated upon, rather than restating it multiple times.</p> <p>3. Word Choice and Phrasing:</p> <p>In some parts, the word choice could be more formal or precise to align with scholarly standards. For example, the phrase "the cognitive situation" in the abstract is not the most precise term. A better choice would be "cognitive understanding" or "cognitive perspective."</p> <p>Suggestion: Replace informal or vague terms like "cognitive situation" with more precise academic language like "cognitive understanding" or "cognitive awareness."</p> <p>4. Grammar and Typographical Issues:</p> <p>There are several small grammatical errors and awkward phrasings throughout the article. For instance:</p> <p>"preservice mathematics teachers, their understanding of the 'pseudo-understanding' phenomenon" could be improved for readability by breaking it into two sentences or using a conjunction like "and."</p> <p>"summarizing problem-solving methods, and reviewing more frequently" has a slight redundancy with</p>	
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	<p>the word "reviewing" since summarizing methods implies reviewing to some extent.</p> <p>Suggestion: Proofreading and editing for minor grammatical issues, such as comma placement and sentence structure, will help improve clarity and professionalism.</p> <p>5. Tone and Academic Style:</p> <p>The article's tone is mostly appropriate for a scholarly context, but in places, it could benefit from a more formal and polished style. For example, "it is suggested that relevant training should be increased" could be made more assertive and scholarly by rephrasing it as "it is recommended that training be enhanced".</p> <p>Suggestion: Use more authoritative language, such as "it is recommended" or "it is essential," instead of softer phrasing like "it is suggested."</p> <p>6. Structure and Flow:</p> <p>The overall flow of the article is understandable, but some sections could be better organized to avoid abrupt transitions between ideas. Scholarly writing should flow logically, with clear connections between sentences and paragraphs.</p> <p>Some sections repeat similar ideas (such as causes and solutions to the "pseudo-understanding phenomenon"), which could be grouped together or stated more succinctly.</p> <p>Suggestion: Ensure each paragraph presents a single idea clearly and use transition words and phrases to guide the reader from one section to the next.</p> <p>7. Typographical and Formatting Errors: There are some inconsistent formatting issues such as irregular use of quotations around "pseudo-understanding phenomenon". These quotations should either be consistently used or removed entirely to improve readability. Also, references to certain concepts like "infusion teaching" are not explained well or referenced correctly.</p>	
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<p>Optional/General comments</p>	<p>Grammatical Blunders:</p> <p>In section 6.1: "The deep-seated reason for students' superficial understanding of knowledge is also related to the teachers' teaching methods" – should be reworded as "The underlying reason for students' superficial understanding of knowledge is also tied to the teaching methods of teachers."</p> <p>"The solution to mathematical problems is only half of the problem, and more importantly, reviewing and reflecting after solving problems" – this should be rephrased as: "Solving mathematical problems is only part of the process; reviewing and reflecting afterward is equally important."</p> <p>"From this, we can see that the current preservice mathematics teachers' cognition of the reasons for the 'pseudo-understanding phenomenon' is not profound, and they cannot explore the root causes" – it can be improved as: "This shows that the current cognition of preservice mathematics teachers regarding the causes of the 'pseudo-understanding phenomenon' is shallow, and they fail to explore the root causes."</p> <p>Clarity and Coherence:</p> <p>In section 6.2, the phrasing "This cognition has a large irrationality" is awkward and unclear. It would be better as "This belief is largely flawed."</p> <p>In section 7, "it is necessary to expand the research sample range in the future" – this would be better expressed as "It is necessary to broaden the research sample in future studies."</p> <p>Overuse of "Perspective": The frequent use of "students' perspective" and "teachers' perspective" throughout the article feels overused. Consider using synonyms like "viewpoint" or "approach" or restructure sentences to reduce repetition.</p>	
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PART 2:

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
<p>Are there ethical issues in this manuscript?</p>	<p><i>(If yes, Kindly please write down the ethical issues here in details)</i></p>	

Reviewer Details:

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