

Comparative Analysis of Secondary School Teachers' Competency in Literacy and Numeracy: A Cross-National Evidence from Indonesia and Afghanistan

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ABSTRACT

Purpose – This study aims to analyze and compare the competencies of secondary school teachers in teaching literacy and numeracy in Indonesia and Afghanistan.

Methods – Employing a descriptive comparative quantitative approach, the study involved 200 teachers from both countries selected through a stratified random sampling technique. Data were collected using questionnaires, classroom observations, and semi-structured interviews, and analyzed using descriptive statistics to compare the mean competency scores.

Findings – The findings revealed that teachers in Indonesia demonstrated higher competency scores in literacy (71.4) and numeracy (68.3) compared to teachers in Afghanistan, who scored 62.8 in literacy and 59.7 in numeracy. Indonesian teachers also reported greater participation in professional training, more frequent use of educational technology, and a stronger application of contextual approaches in their teaching practices. The study underscores the importance of continuous professional development, resource support, and context-based pedagogical approaches in enhancing teacher competencies.

Research Implications – These findings contribute to the formulation of more responsive educational policies and open avenues for further research within broader geographical and socio-cultural contexts.

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Introduction

Improving the quality of education is a primary goal in the development of human resources across nations, including Indonesia and Afghanistan. One of the key indicators of educational quality is teacher competence in teaching the foundational skills of literacy and numeracy to students. Literacy and numeracy are not merely the abilities to read, write, and calculate; rather, they form the essential foundation for understanding more advanced concepts across various disciplines. A study by Kan et al. (2022) revealed that student learning outcomes in Afghanistan—both in alternative learning centers and formal schools—remain generally low, indicating weak foundational skills, one of which stems from limited teacher competence. This situation highlights that challenges in mastering literacy and numeracy remain highly relevant, particularly in developing and post-conflict countries such as Afghanistan.

On the other hand, the Indonesian context demonstrates complex dynamics in students' literacy and numeracy achievement, particularly when viewed through multigrade educational practices, as noted by Maquiling (2024). Assessment results indicate that students require substantial support in numeracy and show weaknesses in foreign language literacy. This reinforces the premise that teacher competence plays a crucial role in ensuring classroom learning effectiveness. Furthermore, Piper et al. (2018) emphasized that teacher professional training, structured learning guidelines, and the provision of textbooks serve as essential "raw materials" for improving students' literacy and numeracy outcomes, especially in East African countries. These findings reflect the importance of a systemic approach to enhancing teacher competence—a challenge that remains significant in both Indonesia and Afghanistan.

The urgency of this study arises from the substantial gap between policy and implementation in basic education. Kumar and Chowdhury (2023) highlighted that, despite progress in educational participation rates in India, a learning crisis persists—particularly in literacy and numeracy mastery, which are strongly influenced by family background, attendance, and teacher quality. Similarly, a report by Zhang, Jin, and Fan (2024) in Morocco found that students' reading motivation and educational expectations greatly affect their literacy levels, which in turn reflect the degree to which teachers can effectively guide learning. These findings reaffirm that teacher competence is a central variable in improving the quality of basic education, directly linked to students' literacy and numeracy achievements.

This study gains its significance from comparing two countries with distinct social, cultural, and geopolitical contexts yet facing similar challenges in teacher competence. Afghanistan, as a post-conflict nation, struggles with the provision of qualified teachers and conducive learning environments. Conversely, Indonesia—despite having a relatively stable educational infrastructure—continues to face quality challenges in remote and

marginalized regions. As noted by Nguyen and Dang (2023) in the context of Vietnam, the development of mathematical competency standards among students heavily depends on teachers' ability to apply appropriate methods. Therefore, this cross-country comparison is expected to provide a more comprehensive understanding of how local contexts influence teachers' ability to teach literacy and numeracy effectively.

Previous literature has largely focused on student achievement without thoroughly examining teacher competence as a key variable. For example, studies by Sumra, Ruto, and Rajani (2015) in Tanzania, and Stancea et al. (2025) in Romania, emphasized student outcomes and regional disparities rather than the capacity of teachers as the primary agents of learning. This research seeks to fill that gap by highlighting teacher competence not only in terms of formal qualifications but also in relation to pedagogical practices applied in the classroom. Additionally, it considers factors influencing teacher competence, such as professional development, use of technology (as in the study by Mtani et al., 2024), and culturally and linguistically responsive approaches, as emphasized by Alimi et al. (2020) in the Nigerian context.

This study also stems from the reality that many educational interventions are unsustainable and lack measurable impact. For instance, Khalid et al. (2019) reported in their study on the implementation of Literacy and Numeracy programs in Punjab, Pakistan, that although the results were positive, program success depended heavily on continued support and local stakeholder engagement. The inability to sustain such interventions can hinder long-term educational quality improvement. This provides an important lesson that enhancing teacher competence must be seen as a long-term, measurable, and systematic investment.

Based on the above discussion, this research aims to conduct a comparative analysis of secondary school teachers' competence in teaching literacy and numeracy in Indonesia and Afghanistan. The main focus is to assess similarities and differences in pedagogical approaches, professional training, access to learning resources, and students' learning outcomes. The study also examines social and policy-related factors that influence teacher competence in both countries. The findings are expected to contribute meaningfully to the development of contextual and data-driven educational policies, particularly in enhancing teacher capacity.

Based on the foregoing, the research questions are formulated as follows; 1) What is the level of secondary school teachers' competence in teaching literacy and numeracy in Indonesia and Afghanistan?; 2) What factors influence teacher competence in both countries?; 3) What are the similarities and differences in literacy and numeracy teaching approaches used by teachers in the two countries?; and 4) What strategies can be implemented to enhance teacher competence based on cross-context learning between Indonesia and Afghanistan?.

Methods

This study employed a descriptive comparative quantitative approach to analyze secondary school teachers' competence in literacy and numeracy in Indonesia and Afghanistan. The research design adapted the competency assessment framework used in previous studies by Kan et al. (2022) and Cheung et al. (2021), in which literacy and numeracy teaching were evaluated through performance-based assessments and competency indicators measuring both pedagogical and content-related skills.

The research subjects consisted of secondary school teachers from two regions: Nangarhar Province in Afghanistan and the Special Capital Region (DKI) of Jakarta in Indonesia. A total of 200 teachers were selected using a stratified random sampling technique, categorized according to their years of teaching experience and formal educational background. The instruments used included closed- and open-ended questionnaires designed based on the framework of Piper et al. (2018) concerning professional training and the use of instructional guides, as well as a classroom observation rubric developed following the LINUS approach, as applied by Musliman et al. (2013). Data collection was conducted in three stages; First, a preliminary survey was administered to identify teachers' perceptions of their ability to teach literacy and numeracy, following the procedure used by Khalid et al. (2019); Second, direct classroom observations were carried out to assess the implementation of literacy and numeracy instruction in teachers' daily classroom practices; and Third, semi-structured interviews were conducted with 20 teachers from each country to explore in greater depth the teaching strategies they employed. This process reflected a data triangulation approach, as also utilized by Kumar and Chowdhury (2023).

Quantitative data were analyzed using descriptive statistics to compare mean competency scores between the two countries, while qualitative data were analyzed using a thematic coding approach to identify consistent or divergent pedagogical patterns across contexts. Throughout the process, instrument validity was maintained by aligning the indicators with those established in prior studies and adapting them to local contexts. This approach ensured that the research process could be replicated in different geographical and social settings while maintaining methodological integrity.

Result

This study produced descriptive data on the level of secondary school teachers' competence in teaching literacy and numeracy in Indonesia and Afghanistan. The competency assessment, based on a 100-point scale, showed that the average literacy competence score of teachers in Indonesia was 71.4, while in Afghanistan it was 62.8. In terms of numeracy, teachers in Indonesia achieved an average score of 68.3, compared to 59.7 in Afghanistan.

According to the categories defined in the research instrument, scores above 70 are classified as “competent”, while scores between 60–69 are categorized as “moderately competent.” Therefore, overall, teachers in Indonesia demonstrated higher levels of competence in both literacy and numeracy compared to their counterparts in Afghanistan.

Table 1. Average Competency Scores of Teachers in Literacy and Numeracy

Country	Literacy	Numeracy
Indonesia	71.4	68.3
Afghanistan	62.8	59.7

In terms of technological readiness, teachers in Indonesia demonstrated a higher level of preparedness. A total of 66% of Indonesian teachers reported feeling confident in using technology such as projectors, computers, and educational software to support literacy and numeracy instruction. In contrast, only 21% of teachers in Afghanistan expressed the same level of confidence. Indonesian teachers were also more familiar with online learning platforms that facilitate interactive numeracy activities. One mathematics teacher in Jakarta stated, *“I use Quizziz and GeoGebra to teach fractions and geometry, and the students are very enthusiastic.”* Conversely, a teacher in Afghanistan remarked, *“Electricity and the internet are not always available. We cannot rely on technology for teaching”*.

Regarding the challenges faced by teachers in teaching literacy and numeracy, the findings revealed that educators in both countries encountered similar types of obstacles but at different scales. In Indonesia, 47% of teachers identified the wide range of student abilities as the main challenge, whereas in Afghanistan, 72% of teachers cited the lack of resources as the primary barrier. In this regard, Maquiling (2024) also highlighted that in multilevel classrooms, challenges in numeracy increase significantly due to the difficulty of developing strategies suitable for all students. A teacher from Bogor noted, *“In one class, there can be students who can only count up to ten, while others already understand division, so I really have to be flexible”*. Similarly, a teacher in Kabul said, *“We don’t have enough books. Sometimes three students share one book, and even that one is already damaged.”*

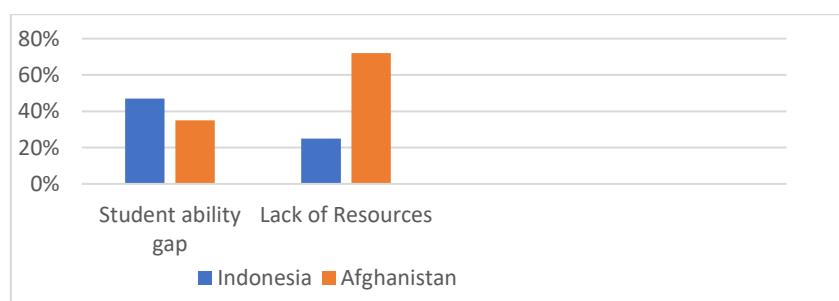


Figure 1. Major Challenges in Teaching Literacy and Numeracy

Overall, the findings of this study indicate significant variations in teaching practices, technological readiness, participation in professional training, and access to educational resources between teachers in Indonesia and Afghanistan. Nevertheless, there are also notable similarities in teachers' commitment and motivation to improve the quality of their teaching, as reflected in interview excerpts from both countries. These results provide a strong foundation for further analysis and for developing more contextualized policy reflections aimed at enhancing teacher competence in the areas of literacy and numeracy.

Discussion

The findings of this study reveal significant differences in the level of secondary school teachers' competence in teaching literacy and numeracy between Indonesia and Afghanistan. The average competence score of Indonesian teachers falls within the "competent" category, while that of Afghan teachers is categorized as "moderately competent." This finding aligns with the study by Kan et al. (2022), which reported that basic learning outcomes in Afghanistan remain low, even in accelerated learning centers (ALCs). This suggests that educational challenges in Afghanistan are not limited to students but also stem from the capacity and readiness of teachers to effectively deliver literacy and numeracy instruction.

In the Indonesian context, these findings support Maquiling's (2024) study, which indicates that although many students still require substantial support in literacy and numeracy, teachers in Indonesia have better access to training and learning resources, including the use of technology and interactive media. The fact that Indonesian teachers demonstrate a higher level of contextual teaching methods is also consistent with the pedagogical approach recommended by Piper et al. (2018), emphasizing structured instructional guides, continuous professional development, and classroom supervision.

A particularly noteworthy difference lies in the level of teacher training participation between the two countries. With 84% of Indonesian teachers reporting participation in training programs within the past two years—compared to only 27% in Afghanistan—the results highlight the importance of continuous professional development, as emphasized in the studies by Khalid et al. (2019) and Kumar & Chowdhury (2023). The availability of both online and offline teacher training contributes significantly to improving teachers' pedagogical competence and content mastery. This finding reinforces that teacher capacity-building is not a one-time effort but an ongoing process requiring sustained support systems and enabling educational policies.

Another important finding concerns the low level of technological readiness among Afghan teachers. This confirms the results of Mtani et al. (2024) in Tanzania, which showed that teachers' technological literacy has a direct impact on the effectiveness of literacy and numeracy instruction, particularly for students with special learning needs. While

Indonesian teachers have begun to adopt platforms such as GeoGebra and online quizzes to support numeracy learning, Afghan teachers still face severe infrastructural barriers. This difference not only indicates a resource gap but also a digital readiness gap, which is increasingly relevant in the era of technology-based education.

In terms of pedagogical approaches, Indonesian teachers tend to employ constructivist and contextual learning strategies, as also recommended by Cao Thi et al. (2023). Teachers use real-life objects and everyday situations to explain mathematical and linguistic concepts. In contrast, a more traditional approach—dominated by memorization and lecturing—remains prevalent in Afghanistan. This pedagogical difference likely contributes to the variation in competency scores, consistent with Musliman et al. (2013), who found in the Malaysian context that teaching approaches aligned with students' spatial intelligence can significantly enhance literacy and numeracy achievement.

The significance of these findings lies in their ability to provide an empirical portrait of teachers' competence in two countries with markedly different educational and political contexts. The main contribution of this research is the demonstration that investment in teacher training, resource provision, and the development of contextual pedagogical approaches directly contributes to improved teacher competence. In the long run, such improvements also affect student achievement, as shown in prior studies (Cheung et al., 2021; Stancea et al., 2025).

Furthermore, this study contributes to theoretical understanding by showing that literacy and numeracy cannot be separated from broader social, economic, and policy contexts. As highlighted by Nahuelquín et al. (2024), teachers' formal education levels and government policies have a substantial influence on students' foundational competencies. In this regard, Indonesia has a relative advantage due to more stable educational policies and a sustained focus on teacher training, whereas Afghanistan remains in the early stages of rebuilding its post-conflict education system. This study suggests that without systemic interventions, classroom-level improvements alone will not yield optimal results.

The practical implications of this research are substantial. *First*, the findings can serve as a foundation for governments and international donor agencies to design more targeted teacher training programs in Afghanistan—focusing not only on technical instruction but also on context-based pedagogical approaches and classroom practices. *Second*, for Indonesia, the findings highlight the need to maintain and expand access to professional development programs that have proven effective in enhancing teacher competence. Such training should be regularly updated to align with evolving technologies and curriculum changes. Additionally, the study emphasizes the importance of strengthening educational technology infrastructure. Amid global trends in educational

digitalization, disparities in technological access—such as those found in Afghanistan—pose a significant barrier to improving teacher competence. In line with Mtani et al. (2024), teacher technological literacy programs are an urgent necessity that must be addressed through cross-sectoral collaboration, including support from the private sector, NGOs, and international organizations.

However, this study also has certain limitations. One key limitation lies in its geographical scope, which was restricted to two provinces as data collection sites. Although the samples were representative, the findings may not fully reflect the national conditions in either Indonesia or Afghanistan. Moreover, the absence of longitudinal data limits the ability to observe changes in teacher competence over time. As a cross-sectional study, it captures only a snapshot, preventing assessment of the long-term effects of training or interventions. Another limitation concerns measurement constraints, as competency assessments relied on teachers' self-perceptions and limited classroom observations—though data triangulation was pursued through interviews and observations to strengthen validity.

These limitations open opportunities for future research that is broader both geographically and methodologically. Subsequent studies could integrate richer quantitative and qualitative data and examine the direct relationship between teacher competence and student learning outcomes. Furthermore, there is potential to develop adaptive teacher competency assessment instruments that are sensitive to local socio-cultural contexts, as demonstrated by Nguyen and Dang (2023) in their development of mathematical competency instruments in Vietnam.

In conclusion, the results of this study affirm that teacher competence is a key factor in the success of literacy and numeracy education at the secondary level. The findings show that countries with strong investments in teacher training and resource provision tend to have teachers who are more competent in teaching literacy and numeracy. This research also makes an important contribution by expanding our understanding of cross-national variations in teacher competence and by offering strategic insights for policymakers, academics, and educational practitioners in designing contextual and sustainable interventions for teacher development.

Conclusion

This study presents a comparative analysis of secondary school teachers' competencies in teaching literacy and numeracy across two different national contexts—Indonesia and Afghanistan. The main findings indicate that teachers in Indonesia demonstrate higher levels of competence compared to those in Afghanistan, both in literacy and numeracy aspects. This disparity can be attributed to several factors, including the availability of professional training, access to educational technology, the adoption of contextual pedagogical approaches, and more stable and structured

educational policies. In contrast, teachers in Afghanistan face multiple challenges, such as limited access to training opportunities, insufficient learning resources, and the persistence of traditional, rote-based teaching practices.

The primary contribution of this study to the field lies in providing cross-national empirical evidence on the relationship between teacher competence and the broader educational ecosystem, while also emphasizing the need for systemic interventions to enhance the quality of foundational instruction. Moreover, this research enriches the existing literature—which has predominantly focused on student learning outcomes—by positioning teachers as the central agents who determine the quality of educational processes. These findings reinforce arguments from previous studies that improving teacher competence must be a policy priority to achieve sustainable and equitable learning outcomes. Given the limitations in geographical coverage and research design, it is recommended that future studies expand to include a broader range of regions and employ longitudinal approaches to measure the long-term impact of teacher training on student achievement. Furthermore, there is a need to develop teacher competency assessment instruments that are more adaptive to local socio-cultural contexts, ensuring that the results are both valid and contextually grounded for evidence-based policymaking. Future research could also explore the implementation of educational technology interventions tailored to regions with limited access, such as those faced by teachers in Afghanistan. By broadening the scope and deepening the analytical approach, such studies can make a more substantial contribution to formulating practical solutions for improving global education quality, particularly in developing and post-conflict countries.

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