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An Analysis of Factors Contributing to the Teacher Shortage in Rural Public Elementary Schools in Banyumas Regency

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Abstract

This study aims to analyze the factors contributing to the low teacher-to-student ratio in rural public elementary schools in Banyumas Regency, identify the associated risks, and evaluate the solutions implemented by schools and local authorities. A qualitative approach with an exploratory descriptive design was employed. Data were collected through in-depth interviews with school principals and triangulated with information from teachers and officials at the Banyumas Regency Education Office. Thematic analysis was conducted using NVivo 14 software for transcription, coding, visualization, and mapping. The findings indicate that the low teacher ratio is primarily influenced by three factors: (1) geographically isolated school locations, (2) challenges related to teachers' cultural adaptation in rural contexts, and (3) policy constraints, particularly regarding the appointment of non-permanent teachers. The consequences of this issue include reduced instructional quality, increased teacher workload, and disrupted student learning outcomes. Solutions currently implemented include the recruitment of teachers through government employment schemes (PPPK and PNS), reassignment of existing teachers, and improvement of school infrastructure. This study recommends the formulation of more equitable teacher distribution policies supported by collaboration between government stakeholders, educational institutions, and local communities.

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INTRODUCTION

Primary education plays a strategic role in human resource development and in enhancing national competitiveness. Equal access to quality primary education remains a national policy priority in line with global commitments to the Sustainable Development Goals (SDGs), particularly Goal 4, which emphasizes inclusive and quality education for all. In the Indonesian context, primary schools represent the largest share of educational institutions. According to the Basic Education Data, Central Java Province has 17,354 public elementary schools, with Banyumas Regency accounting for a significant portion, totaling 761 schools.

Given the large number of educational institutions, meeting the ideal teacher-student ratio presents a major challenge. According to Regulation of the Minister of Education and Culture (Permendikbud) No. 23 of 2013, Article 2 Paragraph (2), each elementary school must have at least one teacher per 32 students and a minimum of six teachers per school-except in designated special regions, where four teachers are permitted. Banyumas Regency, which is not classified as a special region, is expected to meet these requirements. However, Dapodik 2023 data indicates that eight public elementary schools in Banyumas have only four to five teachers: SD Negeri 3 Jingkang, SD Negeri 1 Pekuncen, SD Negeri Margasana, SD Negeri 1 Nusamangir, SD Negeri Sirau, SD Negeri 1 Sidabowa, SD Negeri 1 Randegan, and SD Negeri Cibun.

This gap between regulatory provisions and actual conditions points to structural issues that warrant deeper investigation. Schools experiencing teacher shortages are typically located in remote rural areas, characterized by limited access and underdeveloped socio-economic infrastructure (Ling et al., 2020). Geographic isolation, long commuting distances, inadequate transportation, and lack of supporting facilities are key factors contributing to the low teacher-to-student ratio in these regions (Adams & Woods, 2015; Sutomo & Siregar, 2022).

The issue of teacher shortages in rural schools is not unique to Indonesia but reflects a persistent global concern. Recent studies have shown that rural schools face more severe and enduring teacher shortages compared to urban and suburban counterparts (Ingersoll & Tran, 2023). High teacher turnover—particularly in rural schools with high poverty rates and large proportions of minority students—is a leading cause of the crisis. Moreover, limited classroom autonomy and teacher exclusion from decision-making processes further reduce teacher retention in remote areas.

Efforts to address rural teacher shortages should extend beyond recruitment to include strategies focused on teacher retention and improvements in working conditions. Research suggests that pre-service teachers from rural backgrounds who are enrolled in undergraduate programs and demonstrate strong critical thinking confidence are more likely to consider teaching in rural schools (Oyen & Schweinle, 2021). However, despite growing public awareness of this issue, concrete strategies and policy implementation remain limited at both national and global levels (Mitchell et al., 2022).

This situation directly affects the teaching–learning process and student academic outcomes. An imbalanced teacher–student ratio leads to increased teacher workload, reduced instructional interaction, and ultimately undermines learning effectiveness (Hojo, 2021). This disparity also widens the education gap between urban and rural areas, posing a significant barrier to achieving equitable and quality education for all.

Given the complexity of the issue, this study aims to analyze the factors contributing to the low teacher-to-student ratio in public elementary schools in Banyumas Regency. It also seeks to evaluate the structural and contextual challenges involved in achieving equitable teacher distribution. The findings are expected to inform adaptive, locally grounded policy formulation to improve the quality of primary education in rural areas.

METHOD

Participants and Samples

This study targeted public elementary schools in Banyumas Regency that were documented to have a low teacher-to-student ratio. Using a purposive sampling technique, participants were selected based on their relevance to the research focus. The sample included school principals, classroom teachers, and officials from the Banyumas Regency Education Office. These individuals were chosen for their capacity to provide in-depth perspectives on the teacher shortage issue within rural public elementary schools.

Materials and Apparatus

The primary instrument used in this study was a semi-structured interview protocol developed to explore the underlying factors contributing to teacher shortages, perceived risks, and potential policy or practical solutions. To support the qualitative data analysis, NVivo 14 software was employed for transcription, coding, thematic categorization, and visual representation of the data. The software also facilitated the creation of word clouds and hierarchical diagrams to map thematic relationships among the identified variables.

Procedure

Data were collected through in-depth, semi-structured interviews with school principals as key informants. The interview questions were designed to uncover detailed insights into institutional, geographic, and systemic challenges contributing to low teacher staffing levels. To enhance the validity and depth of the findings, triangulation was applied by including additional interviews with classroom teachers and representatives from the Education Office of Banyumas Regency. All interviews were conducted with informed consent and followed ethical guidelines for qualitative research.

Data Collection and Analysis

Interview data were audio-recorded, transcribed verbatim, and analyzed thematically using NVivo 14. The thematic analysis involved systematic coding of the transcripts, identification of emerging themes, and visualization of thematic patterns using digital tools. Key themes related to causes, consequences, and strategies regarding the teacher shortage were extracted. The use of hierarchical charts and word cloud visualizations helped highlight dominant issues and the interconnections between them. This process enabled a comprehensive and nuanced interpretation of the factors affecting teacher distribution in rural schools.

RESULTS

Interview transcripts were analyzed using NVivo 14 to facilitate systematic coding, visualization, and thematic mapping.

Word Cloud Visualization

The word cloud (Figure 1) generated from the interview data highlights the most frequently mentioned terms, such as teacher, ratio, education, school, and rural.

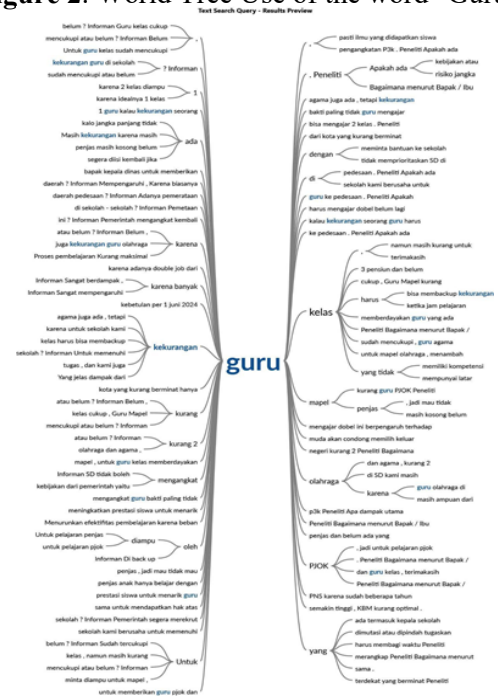
Figure 1. World Cloud

These keywords reflect the central themes in the participants' narratives concerning the shortage of teachers in public elementary schools in Banyumas Regency.

Word Tree: The Use of the Word "Teacher"

The word tree visualization for the term teacher (Figure 2) shows its syntagmatic connections to critical concepts including shortage, ratio, distribution, recruitment, and policy. This tree captures how frequently and in what contexts the word was used across different interviews.

Figure 2. World Tree Use of the word "Guru"



Project Maps

Figures 3 to 6 present visual guides representing the research focus areas:

Figure 3. Research Process

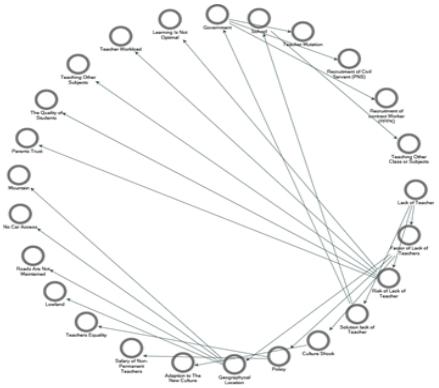


Figure 3 shows the overall research process, starting from problem identification, through interview data collection and analysis, to reporting.

Figure 4. Project Map of Teacher Shortage Factors

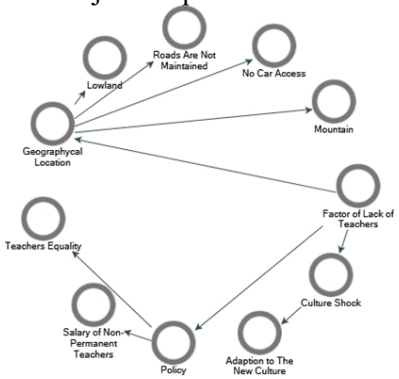


Figure 4 identifies the causal factors of the teacher shortage.

Figure 5. Project Map of the Risk of Teacher Shortage

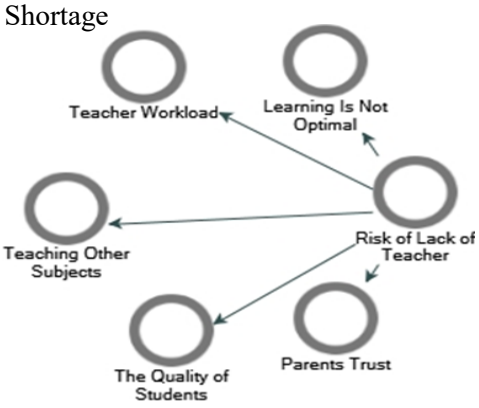


Figure 5 maps out the associated risks and consequences of the shortage.

Figure 6. Project Map Solutions to Teacher Shortage

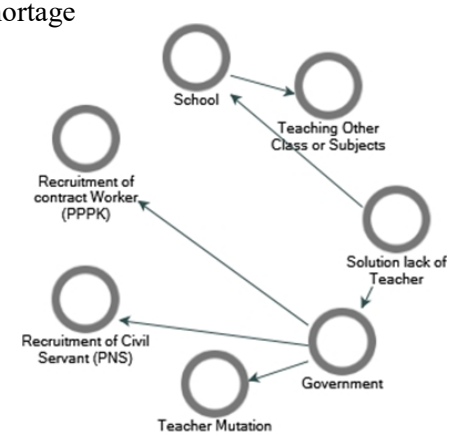


Figure 6 outlines proposed strategies for addressing the problem.

Hierarchy Diagrams

Figure 7 illustrates the comprehensive structure of causes, risks, and solutions. Specific causes are detailed in Figure 8, which includes:

Figure 7. Teacher Shortage Hierarchy Diagram

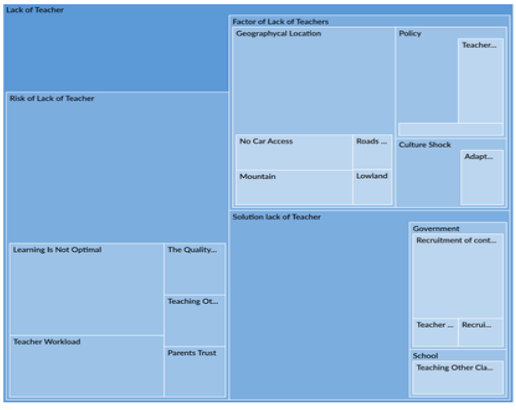
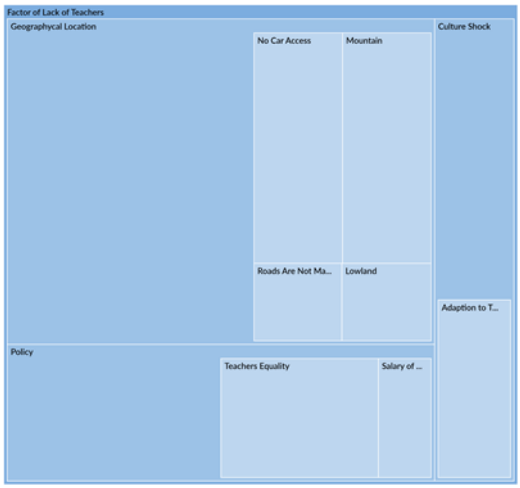


Figure 8. Teacher Shortage Factor Hierarchy Diagram



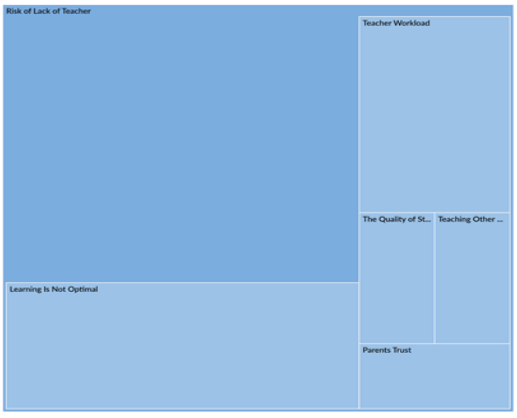
Remote school locations: One principal stated, "Our school is in a remote location that can only be reached by motorcycle. Most teachers are from the city and are unwilling to be placed here. Only those who live nearby are willing."

Cultural adaptation: Another participant added, "Being assigned to a new area requires teachers to adjust to local habits and norms in the learning process." Policy constraints on non -permanent teacher recruitment: A participant mentioned, "We are not allowed to hire honorary teachers now because we can't ensure proper salaries, and BOS (School Operational Assistance) funds can no longer be used for this."

Risks of Teacher Shortage

Figure 9 displays a hierarchy diagram outlining the consequences of the teacher shortage.

Figure 9. Hierarchy Diagram of Teacher Shortage Risk



The hierarchy diagram outlining the consequences of the teacher shortage, such as:
Decline in educational quality, increased teacher workload, disruption to student learning outcomes, decreased parental satisfaction.

A teacher stated: "Ideally, every class has its own teacher. But here, with a shortage, some teachers have to manage two classes and must leave one class to handle administrative duties, which compromises learning."
Another said: "We don't have a PE teacher. So classroom teachers are assigned to teach physical education, even though they lack the necessary expertise."

Proposed Solutions

Figure 10 maps out possible solutions across two levels:

Figure 10. Teacher Shortage Solution Hierarchy Diagram

Government-level efforts: These include the appointment of Pegawai Pemerintah dengan Perjanjian Kerja (PPPK), the placement of new civil servant teachers (PNS), and improvements to rural infrastructure and teacher distribution systems. School-level efforts: Include inter-school collaboration to share subject teachers and having principals participate in teaching roles.

As shared by a school head: "The government has started to appoint PPPK teachers, although it's been years since we've had any new civil servant teachers."
Another noted: "We coordinate with nearby

schools to share teachers. Sometimes principals also step in to teach when there's no one else available."

DISCUSSION

The findings of this study reveal that the shortage of teachers in public elementary schools in rural Banyumas Regency is influenced by structural, geographic, and regulatory factors. Geographic isolation, inadequate infrastructure, and inflexible national recruitment policies have significantly hampered the schools' capacity to fulfill the required teacher-to-student ratio mandated by the Ministry of Education and Culture.

These results are in line with the work of Ling et al. (2020), who noted that rural schools commonly face logistical and systemic barriers, such as limited road access and poor public transportation. Adams & Woods (2015) and Sutomo & Siregar (2022) have similarly highlighted how such factors affect the equitable distribution of educational personnel in rural Indonesia. The inability to recruit non-permanent (honorary) teachers due to funding regulations further complicates the issue. This is supported by the direct testimony of participants who indicated that BOS funds are no longer authorized for teacher recruitment, which disproportionately impacts schools in remote locations.

Furthermore, the problem is not unique to Indonesia. Ingersoll & Tran (2023) emphasize that rural schools globally face more severe and persistent teacher shortages than urban or suburban schools. High turnover rates, poverty-related stressors, and a lack of teacher autonomy all contribute to reduced teacher retention in remote areas.

As shown in this study, the consequences of these shortages are profound. Learning outcomes suffer, teacher workloads increase, and the overall quality of education declines. These findings are in line with Hojo (2021), who argued that poor teacher-to-student ratios result in decreased instructional effectiveness and widen educational disparities between rural and urban areas.

Efforts to resolve the issue must address not only recruitment but also long-term retention. Oyen & Schweinle (2021) argue that pre-service teachers from rural backgrounds with strong critical thinking confidence are more likely to serve in rural schools, underscoring the need for locally contextualized teacher education programs.

Despite increased public and academic attention to this issue, Mitchell et al. (2022) note that concrete strategies remain limited. This study's findings support the view that policy reform must focus on both short-term solutions-such as PPPK appointments-and long-term strategies, including incentives for rural service and community-based teacher training.

In conclusion, a comprehensive and adaptive policy framework is required to ensure equitable distribution of qualified teachers in rural areas. Addressing this issue is vital for achieving SDG 4: inclusive and quality education for all.

CONCLUSION

This study concludes that the low teacher-to-student ratio in rural public elementary schools in Banyumas Regency is caused by a combination of geographical, cultural, and policy-related factors. Geographical barriers, such as difficult terrain and limited transportation access, significantly hinder teacher deployment. Cultural challenges arise when teachers are required to adjust to unfamiliar rural environments. Additionally, national policies restricting the recruitment of honorary teachers contribute to the shortage. These conditions have led to an increased workload among existing teachers, decreased teaching quality, and weakened student academic performance. In response, the government has implemented teacher recruitment programs (PPPK and PNS) and conducted teacher reassignment to underserved areas. At the school level, strategies include assigning teachers to teach multiple subjects or manage multiple classes.

However, these efforts remain insufficient to fully resolve the issue. A more comprehensive approach is necessary, involving improved infrastructure, flexible and responsive recruitment policies, and sustained support for teachers working in remote areas. Cross-sectoral collaboration is essential to ensure fair and sustainable distribution of educators across rural regions.

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