

Promoting the Strategic Education Policy: How to Resolve the Teacher Shortage in Indonesia?

Yayah Rahyasih¹, Mochammad Devi Cahya Ruhimat², Li Kunmei³

Educational Administration, Indonesia University of Education, Indonesia^{1,2}

Guang Xi University of Foreign Languages, China³

Email: rahyasih@upi.edu

Draft article history
Submitted: 08-03-2025;
Revised: 04-04-2025;
Accepted: 06-04-2025;

ABSTRACT: This study aims to formulate strategic policy recommendations to address the teacher shortage issue in Indonesia. A scoping review method was employed to explore how other countries tackle similar challenges. Articles were sourced from the Scopus database using the Harzing Publish or Perish (PoP) tool. From an initial total of 79 articles, a three-stage selection process based on inclusion criteria narrowed the sample down to 15 articles for in-depth analysis. The findings reveal that various countries implement nine short-term strategies and six long-term preventive strategies to manage teacher shortages. Based on this review, the study proposes seven strategic policy recommendations: 1) evaluating the effectiveness of the teacher recruitment system, 2) resolving ambiguities regarding teacher academic qualifications, 3) improving teacher compensation, 4) developing diverse recruitment schemes, 5) providing specialized training for prospective teachers tailored to specific regional contexts, 6) offering scholarships for prospective teachers, and 7) creating a teacher management application. These strategies are highly relevant and valuable for consideration by education policymakers. Rather than merely replicating other models, this study emphasizes the importance of contextual alignment between international insights and the unique challenges faced in Indonesia. Further research is recommended in the form of quasi-experimental studies and qualitative inquiries to explore the perspectives of policymakers and teachers on the proposed strategies.

Keywords: Education policy, Human resource management of education, Scoping review, Teacher recruitment

ABSTRAK: Penelitian ini bertujuan untuk merumuskan rekomendasi kebijakan strategis guna mengatasi permasalahan kekurangan guru di Indonesia. Metode yang digunakan adalah scoping review untuk mengidentifikasi bagaimana negara lain menangani isu serupa. Artikel yang dianalisis diperoleh dari basis data Scopus melalui aplikasi Harzing Publish or Perish (PoP). Dari total 79 artikel awal, dilakukan proses seleksi tiga tahap berdasarkan kriteria inklusi hingga tersisa 15 artikel yang dikaji secara mendalam. Hasil kajian menunjukkan bahwa negara-negara tersebut menerapkan sembilan strategi jangka pendek dan enam strategi pencegahan jangka panjang untuk mengatasi kekurangan guru. Berdasarkan temuan tersebut, penelitian ini merekomendasikan tujuh kebijakan strategis, yaitu: 1) evaluasi efektivitas sistem rekrutmen guru, 2) penyelesaian ketidakjelasan terkait kualifikasi akademik guru, 3) peningkatan kompensasi guru, 4) pengembangan berbagai skema rekrutmen, 5) pelatihan khusus bagi calon guru sesuai karakteristik daerah penugasan, 6) pemberian beasiswa bagi calon guru, dan 7) pengembangan aplikasi manajemen guru. Ketujuh strategi ini relevan dan bernilai tinggi untuk dipertimbangkan oleh para pengambil kebijakan pendidikan. Alih-alih meniru, studi ini menekankan pentingnya kontekstualisasi antara temuan global dan permasalahan spesifik di Indonesia. Penelitian lanjutan disarankan dalam bentuk studi kuasi-eksperimental serta penelitian kualitatif untuk mengeksplorasi pandangan pembuat kebijakan dan guru terhadap strategi yang diusulkan.

Kata kunci: Kebijakan pendidikan, Manajemen sumber daya manusia pendidikan, Rekrutmen guru, Scoping review.

INTRODUCTION

Human resources (HR) is a key factor for every organization to achieve its goals (Amjad et al., 2021; Jones et al., 2019; Mohiuddin et al., 2022) in various sectors of the world (Teräs et al., 2020). Because the activity of managing other resources - such as technology, still relies on human roles (Dixit & Sinha, 2020; Owenvbiugie & Ekhaise, 2019). This is despite the current trend of Artificial Intelligence (AI) assistance in various sectors of human life (Ågerfalk, 2020; Trollice et al., 2021). The trend only confirms that human intelligence can utilize AI, not that human roles can be replaced by AI (Korteling et al., 2021). Trusting HR as a key aspect to achieving organizational goals, in turn, requires policymakers to give full attention to Human Resource Management and Development (HRMD) in every organization (Hamouche, 2021; Kartakusumah et al., 2023). In implementing HRMD, policy makers need to be able to ensure that balances take place (Yanti et al., 2022). In labor procurement, for example, policy makers must ensure that the workforce obtained in a certain period of time is balanced with the needs of the organization (Terziev et al., 2017).

HRMD in the education sector in Indonesia is part of the government's authority (Presiden Republik Indonesia, 2023). This includes the procurement of teachers (Presiden Republik Indonesia, 2021), which is a profession that requires special expertise, because it carries out a very heavy task, namely educating, teaching, directing, training, assessing, and evaluating students (Astiti et al., 2018). As the 'spearhead' in the implementation of national education (Presiden Republik Indonesia, 2021) to realize high-quality human resources in the future (Bappenas, 2023). In other words, teachers are human resources in the field of education who carry the obligation to create future human resources. However, despite the heavy task of teachers, HRMD in the context of teachers is not free from various problems.

According to the Ministry of Education and Culture (Kemendikbud), there are currently 3.385.200 teachers in Indonesia (Kemendikbud, 2024). Problems with teacher recruitment (Sari & Mujahidun, 2018), low teacher professionalism (Kemendikbud, 2023; Rihada et al., 2021), low effectiveness in training for teachers and prospective teachers (Tuasikal et al., 2021), rotation and transfer of positions (Sahlim, 2023), buying and selling of positions (Pujileksono, 2022), low support from local governments in using regional autonomy authority (Masyhuda et al., 2023), corruption in various sectors including education (Bappenas, 2021), low teacher compensation (Dhobith, 2024) resulting in a human rights crisis in certain teacher entities (Saputra et al., 2023), penetration of power generated by political movements (Hamidah, 2020; Monoarfa et al., 2022) into the organization of education (Rasyidi et al., 2021), also disparities in access to schools (Sulistiyosari et al., 2023) that make teachers' tasks difficult - all are HRMD education issues that create severe challenges for teachers. Then recently, it was found that there are 2.161.791 teachers needed in state schools in Indonesia (Kemendikbud, 2023).

For information, teachers in Indonesia are grouped into two categories, namely state civil apparatus (ASN) teachers consisting of Civil Servants (PNS) Government Employees with Work Agreements or PPPK (Presiden Republik Indonesia, 2023), and non-ASN teachers. Teachers are entitled to an income above the minimum living needs, and to social welfare guarantees (Undang-Undang Nomor 14 Tahun 2005 Tentang Guru Dan Dosen). The policy explicitly guarantees teachers' welfare, without mentioning the difference between ASN teachers and non-ASN teachers. However, the fact that the welfare of non-ASN teachers is poor in Indonesia is an open secret (Dhobith, 2024).

Responding to the findings of the data on teacher needs for public schools, the Director General of the Directorate of Teachers and Education Personnel (Dirjen GTK) of the Ministry of Education and Culture, Research and Technology of the Republic of Indonesia (Kemendikbud) explained that it will mitigate 1.294.422 ASN teachers, including PPPK who passed in 2021 totaling 293.860 people, and PPPK in 2022 totaling 250.432 people, as well as non-ASN teachers who are known to be 363.760 people (Kemendikbud, 2023). Since non-ASN teachers are not included in the number of 1.294.422 people, the cohesion obtained from this information is that 544.292 ASN teachers will be filled for the needs of 2.161.791 people. The 544.292 total results from the combination of PPPK teachers in 2021 and 2022. If this action is successful, then 1.617.499 teachers to serve in state schools will still be needed.

At the same time, the Director General of GTK of the Ministry of Education and Culture also pointed out that there is an excess of 41.284 ASN teachers. Then the excess of non-ASN teachers in public schools is 166.010. From this information, 41.284 excess ASN teachers can be added to the 544.292 PPPK 2021 and 2022 figures. But 166.010 non-ASN teachers cannot be added specifically, as they are included in the 363.760 non-ASN teachers mentioned earlier. With an escalation of 544.292 PPPK teachers in 2021 and 2022, and 363.760 non-ASN teachers, 908.052 people - in this synthesis, could potentially fill the needs of 2.161.791 teachers in the state schools. This means that there is still a need for 1.253.739 teachers to work in the state schools.

On the other hand, one of the problems identified in the recruitment of PPPK teachers in 2021 and 2022 is the low interest of applicants to fill position formations with certain placements (Kemendikbud, 2023) In response to these findings, the Director General of GTK plans to do four things. First, accelerate the fulfillment of teachers in the autonomous region of Papua, a province located at the eastern tip of Indonesia with the worst Education Index (IP) gap (Tasyirifah & Pitaloka, 2023). Second, organizing scholarships with service bonds. Third, the placement of teachers in regional formations that lack enthusiasm. And fourth, providing additional incentives for teachers in special areas (Kemendikbud, 2023).

In addition, conditions outside of national education planning such as teachers moving, resigning, and dying can occur at any time. Meanwhile, ASN teacher recruitment is conducted centrally with limited frequency (Kemendikbud, 2023) by the national government (Presiden Republik Indonesia, 2023). The other

various issues highlighted in the third paragraph also exacerbate the effectiveness of teacher procurement in Indonesia.

At this point, three HRMD problems in education in Indonesia have been identified. First, there is a large shortage of teachers. Second, teacher shortages often occur at any time while ASN teacher recruitment is carried out centrally with limited frequency. Third, there is low interest from applicants to fill teacher positions in certain areas. This means that there is no real solution to the problem of the high demand for teachers in Indonesia. One of the reasons for this is the relatively low interest of applicants to become teachers in certain areas. Then, even if the large number of teachers needed at any one time is met, the need for teachers that can arise incidentally cannot be resolved. This indicates weaknesses in teacher management in Indonesia. The strategy of automating non-ASN teachers to become ASN teachers is believed to help, but the number of existing non-ASN teachers cannot answer all the needs. The forced automation of non-ASN teachers into ASN teachers can also have an impact on professionalism that cannot be ensured (Kemendikbud, 2023). In addition, the ASN teacher recruitment mechanism, which is designed with a confrontation of authority between the central government and local government authority due to autonomy (Pujileksono, 2022), is allegedly a potential bias in determining the number of ASN teacher vacancies.

From this HRMD issue in the education sector, this research is related. A study needs to be conducted to examine how countries that have faced similar issues address their teacher shortages. This includes the strategies they use to meet the teacher's demands that can occur at any time. Then, based on the results of this review, with strict adaptation and contextualization, it is necessary to propose a policy design to address the problem of teacher shortages in Indonesia. This stage is based on Nir's (2019) note which states that adapting educational policies from various other countries allows certain countries to learn from successful reforms in other specific countries.

The urgency of this research is based on a consideration. If the shortage of teachers is ignored nationally, the losses in the education sector in Indonesia could become a persistent threat. Chaos in HRMD in education, such as teachers being overworked (Mena, 2022) leading to work stress (Karakitapoğlu-Aygün et al., 2024), poor quality of learning (Kemendikbud, 2023), and educational inequity due to the uneven distribution of educators. Some of these threats have already occurred in Indonesia, and others have the potential to occur in the future. Therefore, there are problems that need to be addressed currently, as well as other potential problems that need to be avoided. This research will contribute to solving the identified problems.

RESEARCH METHOD

A qualitative approach of the Scoping Review (SR) method with Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) protocol was used (Alotaibi & Alshehri, 2023; Chaka, 2023). The choice of this method was based on the nature of the research question (Creswell & Creswell, 2018) which

was to examine how other countries around the world have addressed teacher shortages in relevant past research articles. This approach is different from a systematic literature review (SLR) which most reports quantitatively include the author or result of previous research to map further research recommendations.

A scoping review was used to identify sources of answers to the main research question from previous literature (Duong et al., 2023; Scholtz & Spies, 2023). Article data mining was conducted from the Scopus database with the help of Harzing's Publish or Perish or PoP (Hutson et al., 2022) using keywords according to the research question. The authors choose PoP and ignore the searching manually like directly from the Scopus database, because PoP can retrieve a lot of articles based on the keyword utilized, and also can support the discovery of previous articles that can be compared with research that will be carried out (Osunsan et al., 2022).

Research Questions

This research aims to propose a strategic education policy design to address the problem of teacher shortage in Indonesia. To achieve the research objective, the transnational paradigm is used following the view of Nir (2019) that adapting education policies allows certain countries to learn from successful reforms in certain other countries. There is also a phenomenon that shows that education reforms in various countries are supported by external sources, namely 'best practices' in education in other countries. However, country adapters must be mindful of the local context, including cultural and infrastructural considerations. So that the adapted education policy does not become a top-down instruction model that is irrelevant to teachers on the ground (Portnoi, 2016).

Based on the research objectives and the paradigm used, the research questions were set (Charli et al., 2022) into two points: (1) How many strategies have countries worldwide implemented to address teacher shortages? Second, by considering the data generated to answer the first research question with rigorous adaptation and contextualization, (2) How can strategic policy recommendations be developed for addressing teacher shortages in Indonesia based on global best practices?

Systematic Searching Strategy

There are three stages used in the systematic search process, namely identification, screening, and feasibility or inclusion (Mengist et al., 2020). The three stages were set to ensure that the articles obtained from the Scopus database actually contained relevant data and were suitable for answering the second research question.

Identification

The identification stage aims to find research data through the keywords developed. Taking into account that relevant research articles will be included in the review stage (Cooke et al., 2022). After searching article data from the Scopus

database with the help of Harzing's Publish or Perish (PoP), 79 published research articles were successfully extracted.

Screening

The main purpose of the screening stage is to ensure that the extracted and compiled articles have a high level of relevance to the research topic. Screening was done through two stages, namely abstract screening and screening of all parts of the article. Of the 79 articles that had been successfully extracted in the previous stage, 2 articles were detected as missing URL links, making accessibility difficult, and 17 other articles did not meet the inclusion criteria because they were proceeding articles. Therefore, 19 articles were excluded before the screening began. After screening the abstracts, 31 articles were excluded because they discussed recruitment not in the education sector. As a result, 29 articles were left to be considered for the second stage of screening treatment, i.e. eligibility assessment through a thorough content review. The inclusion and exclusion criteria of the articles are presented in Table 1.

Eligibility

In this second screening stage, the eligibility of the article is assessed by reviewing all parts of the article in full. This stage is very important, to further ensure that the inclusion criteria are met. After reviewing all the articles, 14 of them only provided explanations covering HRMD theories in general without providing explicit information on strategies to address teacher shortages - either through recruitment or other approaches. Therefore, these 14 articles were excluded. Finally, 15 articles met the inclusion criteria and were selected as the main data sources. The entire systematic search process, encompassing three stages, is visualized in Figure 1.

Table 1. The Criteria of Inclusion and Exclusion

Aspect	Inclusion	Exclusion
Source Type	Peer-reviewed journal article	Books, article proceedings, Missing Link URLs, Duplicate articles.
Publication Year	Journal articles published from January 2014 – August 2024	Journal articles published before January 2014
Language	English	Other languages (e.g. Chinese, Russian, Spanish)
Context	Human Resource Management and Development in education	Human Resource Management and Development in other or private sectors
Publisher Category	Publisher Indexed by Scopus	Publisher that are not indexed by Scopus

Source: Modified from Tan et al. (2022)

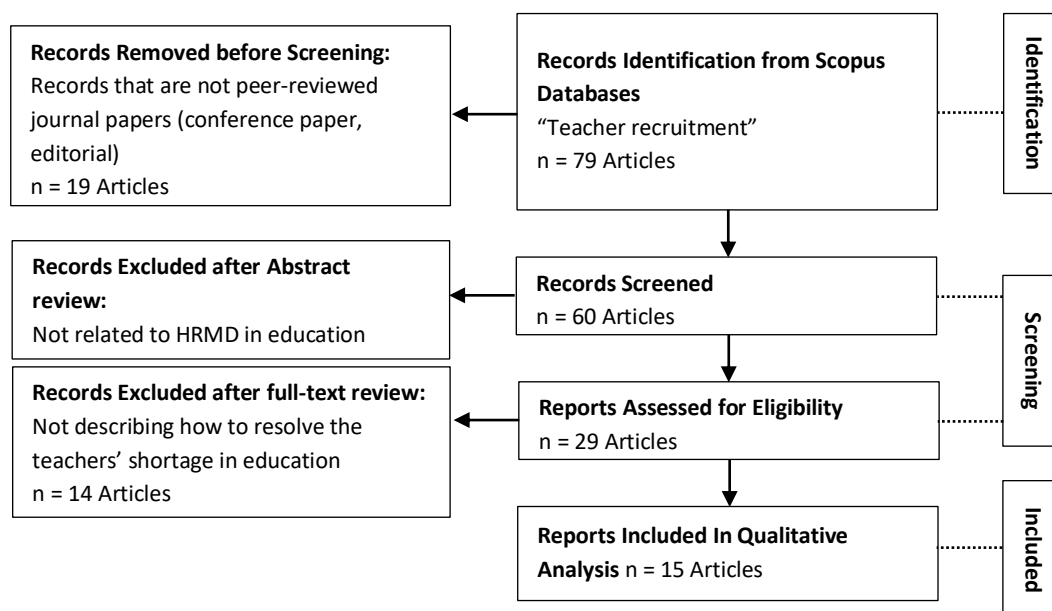


Figure 1. Flow Diagram of The Proposed Searching Study

Articles published before 2014 may offer relevant significance. but we exclude articles from that time period on the grounds of theoretical novelty. Then, the selection of articles in English was based on the consideration of absorbing ideas for solving the teacher shortage problem using a global perspective, which is reflected in English as the most popular and widely used international language in accredited international research publications.

RESULT AND DISCUSSION

The author conducted an in-depth analysis of 15 selected articles. The results of the metadata extraction of these articles are shown in Table 2.

Table 2. Reviewed Articles

No	Author (Year)	Background	Aim & Method of Research	The Result
1	Hüsgen (2016)	Study of the role of native teachers in the Moravian education system.	Analyze the recruitment, training, and position of native teachers in missionary societies through Historical and document analysis in the Danish West Indies in the 19th century	Native teachers were recruited from the local population and trained through teacher training institutes by the Mico-Charity Society.
2	O'Doherty & Harford (2018)	Crisis in teacher recruitment and retention in Ireland, particularly at	Analyze the patterns of teacher recruitment and the challenges faced in the education system in Ireland	The crisis in teacher recruitment is addressed through improving teacher education policies and

		secondary school level.	through case studies and secondary data	the attractiveness of the profession.
3	Smith et al. (2023)	Gaps in recruitment and retention of French as a second language teachers in Canada.	Identify standards and practices in FSL teacher education programs in Canada, through Environmental analysis and stakeholder interviews	Revise entry requirements, program structure and practicum opportunities to improve recruitment.
4	Gjefsen (2020)	The impact of salary increases on teacher recruitment and student achievement in underprivileged schools.	Evaluating how wage increases affect teacher quality and student learning outcomes through a Difference-in-Differences approach in Oslo, Norway	A 5% wage increase encourages the recruitment of highly qualified teachers.
5	Castro (2020)	The limited labor market conditions pose challenges in teacher recruitment.	Investigating how principals make hiring decisions amid a teacher shortage through qualitative interviews in Oklahoma, United States	The creative and transactional methods to address the shortage of teachers
6	Christensen et al. (2019)	The decline in interest among high school students in pursuing a teaching profession.	Identifying factors that predict high school students' willingness to consider the teaching profession in Utah, USA, through surveys and regression analysis	Factors such as community support, self-confidence, and encouragement from family influence students' interest in choosing the teaching profession
7	Egan (2019)	The decline in the number of students in the physical education teacher education (PETE) program at the university	Proposing the role of high school teachers as recruitment agents to attract students to the PETE program in Idaho, USA through interviews and surveys with high school physical education teachers	Utilizing teachers as active recruiters by providing recruitment campaign materials such as posters and webinars
8	Hamdan et al. (2014)	The need for high-quality teachers to teach in urban schools with challenging environments	Identifying the recruitment and support processes in alternative teacher certification programs in urban high schools in the US, through case	Strategic recruitment through strict selection and special training to meet the challenges in urban schools

			studies of three alternative teacher certification pathways	
9	Hubbard et al. (2015)	The challenge of recruiting and retaining STEM teachers in schools that need them	Proposing STEM teacher recruitment and retention practices through university collaboration programs in Texas, USA, through descriptive research	Mentorship programs, scholarships, and the involvement of STEM teachers as supporting practitioners
10	Jameson et al. (2019)	The shortage of special education teachers in rural and remote areas	Analyzing the effectiveness of federal grants in recruiting special education teacher candidates in the US through a study of alternative certification programs based on distance education	Federal funding increase recruit teachers through community-based programs and distance training
11	Jessie & Peter (2015)	The use of promotional videos by the Singapore Ministry of Education to build the image of teachers as caring educators	Analyzing the construction of teacher identity in the Singapore Ministry of Education recruitment video through multimodal analysis of recruitment promotional video content	Focus on building a teacher identity centered on students and values of care through promotional videos
12	Klassen et al. (2021)	The crisis of the shortage of quality teachers in England affecting national educational attainment	Evaluating teacher recruitment strategies and comparing them with the Health sector in England through public policy analysis and available recruitment strategies	An approach based on financial incentives, but it does not take into account the teacher's personality aspects.
13	Shuls & Maranto (2014)	Schools with high needs often struggle to attract quality teachers.	Comparing the effectiveness of mission-based and material-based incentives in teacher recruitment in the US through content analysis of school recruitment websites	Mission-based approaches are more effective in attracting quality teachers to low-income schools

14	Whitfield et al. (2021)	Shortage of quality STEM teachers in schools with high needs	Analyzing the impact of the Noyce scholarship on the recruitment and retention of STEM teachers in at-risk schools in Texas, USA through a mixed-methods longitudinal study	Financial incentives help teachers recruitment.
15	Wronowski (2018)	The shortage of teachers in high-risk urban schools affects student achievement	Developing a model for teacher recruitment and retention based on characteristics and best practices in urban schools in the US, through a grounded theory approach, interviews, and observations of successful teachers.	Focus on the personal characteristics of the teacher, cultural awareness, and effective relationships with students

How many Strategies have Countries Worldwide Implemented to Address the Teacher Shortage?

Each study reviewed was conducted in different countries, interpreting theories related to the policy, social, and cultural contexts in which the research was carried out. Then the articles have diverse research objectives and promote different results as well. On one hand, this diversity creates a certain complexity in the scope review to find the concept of alleviating specific teacher shortages. But on the other hand, this diversity becomes a unique aspect that promises the construction of a comprehensive concept. Because the approaches to addressing the issue of teacher shortages are developing from heterogeneous and multidimensional perspectives. The most prevalent theme for addressing the shortage of teachers is dominated by recruitment approaches. Although the recruitment approach is implemented through various procedures. Based on the typology of the discussions in the articles above, we are categorizes the concept of addressing the teacher shortage issue into short-term recruitment strategies and long-term recruitment strategies to prevent teacher shortages.

Addressing The Teacher Shortage Issue into Short-Term Recruitment Strategies

To address the urgent shortage of teachers in the short term, there are 9 strategies implemented by various countries around the world, namely: 1) Establishing teacher recruitment policies (O'Doherty & Harford, 2018) quickly, 2) Revising entry requirements and the structure of teacher recruitment programs (Smith et al., 2023), 3) Increasing teacher salaries (Gjefsen, 2020) creatively and transactionally to improve teachers' welfare (Castro, 2020; Klassen et al., 2021; Whitfield et al., 2021) through funding from both central and local governments (Jameson et al., 2019). 4) Involving active teachers as recruiters for new teachers

(Hubbard et al., 2015) and providing teacher recruitment campaign materials such as posters and webinars (Egan, 2019), 5) Special training for prospective teachers in urban schools (Hamdan et al., 2014) including a distance learning training model (Jameson et al., 2019), 6) Scholarships for prospective teachers (Hubbard et al., 2015), 7) Designing promotional videos for teacher recruitment (Jessie & Peter, 2015), 8) Mission-based approaches are more effective in attracting quality teachers to underprivileged schools (Shuls & Maranto, 2014), and 9) Empowering indigenous communities to engage in teacher recruitment from the local population (Hüsgen, 2016).

Long-term Recruitment Strategies to Prevent Teacher Shortages

Unlike short-term strategies that are suitable for addressing the shortage of teachers within a short deadline, long-term strategies are more oriented towards a preventive approach to prevent future teacher shortages. From the reviewed articles, the authors identified 6 strategies used by various countries around the world, namely: 1) Focusing on the development of teacher identity and profiles centered on students and values of care (Jessie & Peter, 2015), 2) Enhancing the attractiveness of the teaching profession through the socialization of the teaching profession in secondary schools (O'Doherty & Harford, 2018), 3) Stimulating community support, self-confidence, and encouragement from students' families to foster students' interest in choosing the teaching profession (Christensen et al., 2019), 4) Opening internship programs to increase future recruitment opportunities (Smith et al., 2023), 5) Focusing on the personality characteristics of prospective teachers (Klassen et al., 2021), cultural awareness, and effective relationships with students (Wronowski, 2018), and 6) Facilitating teacher training through various empowerable training institutions (Hüsgen, 2016).

How Can Strategic Policy Recommendations be Developed for Addressing the Teacher Shortage in Indonesia based on Global Best Practices?

The discussion in this section is outlined as a proposed national education policy model on teacher recruitment, formulated based on the findings and sub-discussions from the previous sections. But considering the need for strict adaptation and contextualization when internalizing recruitment concepts from various countries into the context of the national education system in Indonesia – as a transnational study, the proposed national education policy recommendations must be connected to relevant issues, as well as the current national education policy on teacher recruitment. Based on that paradigm, the author proposes the following strategic steps.

Evaluation of the Effectiveness of the Teacher Recruitment System Policy

The chaos that has arisen in teacher management in Indonesia indicates that there are weaknesses in the existing teacher recruitment system and policies. In the case of the new teacher recruitment policy design that needs to be established as noted by O'Doherty & Harford (2018), the new recruitment system policy needs to be formulated based on the evaluation results of the previous education

recruitment system policy. This is very important to ensure the sustainability aspect between educational policies (Ball, 2021; Bennett & Lumb, 2019; Koedel et al., 2017; Margetts et al., 2024).

Resolve Ambiguities in Teacher Academic Qualification Standards

Law Number 14 of 2005 on Teachers and Lecturers (UU No. 14 of 2005) has been a policy regulating the academic qualification standards for teachers in Indonesia for two decades. It is stated that to become a teacher, one must have at least a bachelor's degree from an education-related study program. But empirical studies show that graduates of higher education institutions not from teacher education programs can easily become certified teachers – if they pass the Teacher Professional Education (PPG). Actually, the teaching profession should be regarded as expert and specialized like that of a doctor (Klassen et al., 2021). In this context, the strategy of revising the entry requirements to become a teacher, as well as revising the structure of the teacher recruitment program promoted by Smith et al. (2023) can be adapted.

Improvement of Teacher Compensation

Research by Castro (2020), Gjeffen (2020), Klassen et al. (2021), and Whitfield et al. (2021) found that the increase in teacher wages provided creatively and transactionally to welfare teachers—both through central and regional government funding (Jameson et al., 2019)—has added evidence that quality educators can be provided alongside adequate compensation. This is in line with the issue of low teacher compensation in Indonesia, which remains low (Aziz, 2019; Ulfah et al., 2016), particularly for non-ASN teachers (Christa, 2024; Saputra et al., 2023). However, it should be noted that the increase in incentives offered for the teaching profession has proven to increase the number of applicants for teaching positions, but does not guarantee long-term teacher retention (Whitfield et al., 2021). Mission-based approaches are more effective in improving teacher retention (Shuls & Maranto, 2014).

Development of Teacher Recruitment Strategies

In the digital era, the mobilization of information and data is dominated by visual displays that can generate better public interest. Designing promotional recruitment videos for teachers, as reviewed by Jessie & Peter (2015), is believed to be one of the effective alternatives for teacher recruitment. Especially considering Indonesia as the country with the highest number of internet users in Asia. In addition to promotional videos, empowering teachers or civil society to engage in the recruitment of new teachers as proposed by Hubbard et al. (2015), and Hüsken (2016), is suitable for use in Papua or other remote areas with limited human resources. This approach can be supported by providing teacher recruitment campaign materials such as posters (Egan, 2019), for example.

Special Training for Prospective Teachers Based on the Characteristics of the Assignment Area

Hamdan et al. (2014) emphasize the urgency of specialized training for prospective teachers in urban schools. Because the geographical, social, and cultural conditions in urban areas in the US are known to pose greater challenges for the role of teachers. In the context of a vast country with regions that vary – both geographically, socially, and culturally, such as in Indonesia, the characteristics between regions are certainly very diverse. For the effectiveness of the teacher's role to be contextual, prospective teachers assigned to urban schools need to be trained through different training compared to teachers assigned to rural schools. In the training for teachers who will be assigned to urban schools, the remote training model (Jameson et al., 2019) tends to be effectively used due to the availability of technological infrastructure such as adequate signal. But in the training of teachers who will be assigned to rural schools.

Scholarships for Prospective Teachers

The research of Hubbard et al. (2015) proves that scholarships for prospective teachers in Texas, USA, successfully encourage high school students to choose the teaching profession as their career. Various scholarships have been organized by both the government and private institutions in Indonesia. But the scholarship quota for the teacher candidate scheme still shows fluctuations. Thus, since the provision of quality teachers is a national development priority, the scholarship quota for prospective teachers needs to be continuously increased.

Creating a Teacher Management Application

The recruitment of ASN teachers in Indonesia is conducted centrally with limited frequency (Kemendikbud, 2023) by the national government (Presiden Republik Indonesia, 2021). Meanwhile, unplanned conditions such as teachers transferring, resigning, and passing away can occur at any time. However, educational activities in schools require teachers every day. This creates the need for the development of an application system that contains teacher data so that education policymakers can obtain effective data for assigning teachers to specific schools in real-time. Currently, there is a website for the Educator and Education Personnel Factual Verification System (Verpal PTK) as a data center that also provides national teacher data. But data updates can only be done on a scheduled basis, whereas the need to update data about teachers who have passed away, resigned, or other unforeseen circumstances can occur at any time.

At the same time, Law Number 20 of 2023 on the management of the State Civil Apparatus (ASN) establishes provisions to respond to the needs of teachers that may arise at any time, as stated in Article 46 point 4 regarding talent mobility. It is explicitly explained within it that based on the Merit system, with the authority of the president or delegation of authority to the Minister of Education, talent mobility – for example, to fill teacher vacancies – can be carried out within a single government agency, between government agencies, or outside government agencies (Presiden Republik Indonesia, 2023). However, the existence of operational guidelines on talent mobility is still unknown. With the recommendation to create a real-time teacher management application, the

operational guidelines for talent mobility can also serve as a technical reference within it.

CONCLUSION

The in-depth coverage review method used in this study successfully identified 9 short-term strategies implemented by various countries around the world to address the teacher shortages they are experiencing, as well as 6 strategies they use to prevent future teacher shortages. Using a transnational paradigm to adapt education policies accompanied by a link and match between the best practices found and empirical problems in Indonesia, the results of this study propose strategic policy recommendations to address the ongoing teacher shortage in Indonesia through 7 approaches; 1) Evaluation of the Effectiveness of the Teacher Recruitment System Policy. 2) Resolving Ambiguity in Teacher Academic Qualification Standards. Currently, bachelor's degree graduates from non-education programs can still become teachers in Indonesia. 3) Improving Teacher Compensation, which is known to be still low, 4) Developing Diverse Teacher Recruitment Strategies – to reach more applicants, 5) Special Training for Teacher Candidates Based on Assignment Area Characteristics. Due to the diverse geographical typologies, social climates, and cultures between regions in Indonesia. 6) Scholarships for Teacher Candidates, and 7) Development of a Teacher Management Application to facilitate quick decision-making in addressing sudden teacher vacancies without relying on a centralized teacher recruitment schedule. Although there are other steps mentioned in the reviewed literature, these 7 strategies were chosen due to their relevance to the context of teacher management issues in Indonesia.

The results of this research are highly valuable and can serve as a reference for education policymakers in Indonesia, as well as education policymakers in other developing countries facing similar issues. Instead of directly transferring educational policies from one country to another—similar to the imitation process—this transnational study exemplifies link and match as a strict selectivity between the identified policy strategies and various issues of teacher needs and teacher management in Indonesia. Finally, we recommend two further research. First, a quasi-experimental study to prove the effectiveness of each approach in addressing teacher shortages and reducing retention rates. Second, qualitative research that can describe the perspectives of policymakers and teachers on each promoted approach.

ACKNOWLEDGMENTS

The author sincerely thanks all parties who supported this study, especially the academic team and colleagues for their valuable input. Appreciation is also extended to data sources and referenced authors. It is hoped that this research contributes to strategic policy formulation and inspires further in-depth studies on teacher shortages.

REFERENCES

- Ågerfalk, P. J. (2020). Artificial intelligence as digital agency. *European Journal of Information Systems*, 29(1), 1–8. <https://doi.org/10.1080/0960085X.2020.1721947>
- Alotaibi, N. S., & Alshehri, A. H. (2023). Prosper and Obstacles in Using Artificial Intelligence in Saudi Arabia Higher Education Institutions—The Potential of AI-Based Learning Outcomes. *Sustainability (Switzerland)*, 15(13). <https://doi.org/10.3390/su151310723>
- Amjad, F., Abbas, W., Zia-UR-Rehman, M., Baig, S. A., Hashim, M., Khan, A., & Rehman, H.-. (2021). Effect of green human resource management practices on organizational sustainability: The mediating role of environmental and employee performance. *Environmental Science and Pollution Research*, 28(22), 28191–28206. <https://doi.org/10.1007/s11356-020-11307-9>
- Astiti, N. W. P., Wilian, S., & Sridana, N. (2018). The impacts of professional allowances and working motivation towards teachers' working performance at senior high schools in Mataram, Indonesia. *IOSR Journal of Research & Method in Education (IOSR-JRME)*, 8(3), 69–76. <https://doi.org/10.9790/7388-0803046976>
- Aziz, A. (2019). Manajemen Kompensasi Guru Anak Usia Dini Dalam Perspektif Islam. *Al Athfal: Jurnal Kajian Perkembangan Anak Dan ...*, 2(2), 1–19.
- Ball, S. J. (2021). Response: Policy? Policy research? How absurd? *Critical Studies in Education*, 62(3), 387–393. <https://doi.org/10.1080/17508487.2021.1924214>
- Bappenas. (2021). *Penetapan Rencana Aksi Nasional Tujuan Pembangunan Berkelanjutan/ Sustainable Development Goals*. 206.
- Bappenas. (2023). *Penduduk Berkualitas menuju Indonesia Emas*. 74.
- Bennett, A., & Lumb, M. (2019). Policy misrecognitions and paradoxes: Developing more contextually attuned access and equity policies in Australian higher education. *Policy Futures in Education*, 17(8), 966–982. <https://doi.org/10.1177/1478210319831579>
- Castro, A. J. (2020). Tensions Between What Principals Know and Do: The Role of Labor Market Conditions on Teacher Recruitment and Hiring Tensions Between What Principals Know and Do: The Role of Labor. *Leadership and Policy in Schools*, 00(00), 1–24. <https://doi.org/10.1080/15700763.2020.1833352>
- Chaka, C. (2023). Fourth industrial revolution—A review of applications, prospects, and challenges for artificial intelligence, robotics and blockchain in higher education. *Research and Practice in Technology Enhanced Learning*, 18. <https://doi.org/10.58459/rptel.2023.18002>
- Chaniago, N. S., Syahputra, R., Nasution, M. A., Sanawi, F., Siahaan, A., & Nasution, I. (2023). Analysis of Legal Basis in Education: Study of Law, Policy and Deviance in Education. *AL-ISHLAH: Jurnal Pendidikan*, 15(2), 2103–2113. <https://doi.org/10.35445/alishlah.v15i2.2673>
- Charli, M. S., Eshete, S. K., & Debela, K. L. (2022). Learning How Research Design Methods Work: A Review of Creswell's Research Design: Qualitative,

- Quantitative and Mixed Methods Approaches. *The Qualitative Report*, 27(12), 2956–2960. <https://doi.org/10.46743/2160-3715/2022.5901>
- Christa, A. V. (2024). Hardiknas 2024, P2G: Guru Honorer Masih Jauh dari Sejahtera. *Beritasatu.Com*, 1–1.
- Christensen, S. S., Davies, R. S., Harris, S. P., Hanks, J., & Bowles, B. (2019). Teacher Recruitment: Factors That Predict High School Students' Willingness to Become Teachers. *Education Sciences*, 9(4), 282. <https://doi.org/10.3390/educsci9040282>
- Cooke, S., Nelson, D., Green, H., McPeake, K., Gussy, M., & Kane, R. (2022). Rapid systematic review on developing web-based interventions to support people affected by cancer. *BMJ Open*, 12(9), 1–10. <https://doi.org/10.1136/bmjopen-2022-062026>
- Creswell, J. W., & Creswell, J. D. (2018). Research Design Qualitative, Quantitative, and Mixed Methods Approaches. In *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (5th Editio). Sage publications.
- Dhobith, A. (2024). Analisis Kebijakan Gaji Guru Honorer Terhadap Kesejahteraan Hidup Guru Honorer Di Indonesia. *Jurnal Paramurobi*, 7(1), 44–62.
- Dixit, R., & Sinha, V. (2020). Addressing Training and Development Bottlenecks in HRM: Facilitating a Paradigm Shift in Building Human Capital in Global Organizations. In M. A. Turkmenoglu & B. Cicek (Eds.), *Contemporary Global Issues in Human Resource Management* (pp. 141–161). Emerald Publishing Limited. <https://doi.org/10.1108/978-1-80043-392-220201012>
- Duong, Q. H., Pham, T. N., Reynolds, L., Yeap, Y., Walker, S., & Lyons, K. (2023). A scoping review of therapeutic reasoning process research. *Advances in Health Sciences Education*, 28(4), 1289–1310. <https://doi.org/10.1007/s10459-022-10187-7>
- Egan, C. (2019). Declining Numbers in PETE Programs: Secondary Teachers as the Front Line of Recruitment. *Journal of Physical Education, Recreation & Dance*, 90(7), 6–7. <https://doi.org/10.1080/07303084.2019.1639435>
- Gjefsen, H. M. (2020). Wages, Teacher Recruitment, and Student Achievement. *Labour Economics*, 65(April), 101848–101848. <https://doi.org/10.1016/j.labeco.2020.101848>
- Hamdan, K., Aguilar, J., Yee, P., Nee, A., Benitez, X., Medina, C., & Sapp, J. (2014). Recruitment, Selection, Placement, and Support in the Preparation of Quality of Urban Secondary Teachers. In A. I. Lahera, K. Hamdan, & A. H. Normore (Eds.), *Advances in Educational Administration* (Vol. 21, pp. 221–237). Emerald Group Publishing Limited. <https://doi.org/10.1108/S1479-366020140000021023>
- Hamidah, D. (2020). Kebijakan Pendidikan Dalam Kebijakan Publik. *Jurnal Serunai Administrasi Pendidikan*, 9(1), 34–44.
- Hamouche, S. (2021). Human resource management and the COVID-19 crisis: Implications, challenges, opportunities, and future organizational directions. *Journal of Management and Organization*, 799–814. <https://doi.org/10.1017/jmo.2021.15>

- Hubbard, K., Embry-Jenlink, K., & Beverly, L. (2015). A University Approach to Improving STEM Teacher Recruitment and Retention. *Kappa Delta Pi Record*, 51(2), 69–74. <https://doi.org/10.1080/00228958.2015.1023139>
- Hüsken, J. (2016). The Recruitment, Training and Conflicts surrounding “Native teachers” in the Moravian Mission in the Danish West Indies in the Nineteenth Century. *Itinerario*, 40(3), 451–465. <https://doi.org/10.1017/S0165115316000656>
- Hutson, J., Jeevanjee, T., Graaf, V. Vander, Lively, J., Weber, J., Weir, G., Arnone, K., Carnes, G., Vosevich, K., Plate, D., Leary, M., & Edele, S. (2022). Artificial Intelligence and the Disruption of Higher Education: Strategies for Integrations across Disciplines. *Creative Education*, 13(12), 3953–3980. <https://doi.org/10.4236/ce.2022.1312253>
- Ismawati, E., Hersulastuti, Amertawengrum, I. P., & Anindita, K. A. (2023). Portrait of Education in Indonesia: Learning from PISA Results 2015 to Present. *International Journal of Learning, Teaching and Educational Research*, 22(1), 321–340. <https://doi.org/10.26803/ijlter.22.1.18>
- Jameson, J. M., Walker, R. M., Farrell, M., Ryan, J., Conradi, L. A., & McDonnell, J. (2019). The Impact of Federal Personnel Preparation Grants on Special Education Teacher Candidate Recruitment for Rural and Remote Alternative Teaching Pathways. *Rural Special Education Quarterly*, 38(4), 201–209. <https://doi.org/10.1177/8756870519860514>
- Jessie, N. W. Q., & Peter, T. C. S. (2015). “Every Teacher, a Caring Educator”: A Multimodal Discourse Analysis of a Teacher Recruitment Video in Singapore. *Multimodal Communication*, 4(1). <https://doi.org/10.1515/mc-2015-0003>
- Jones, K. M. L., Rubel, A., & LeClere, E. (2019). A Matter of Trust: Higher Education Institutions as Information Fiduciaries in an Age of Educational Data Mining and Learning Analytics. *Journal of the Association for Information Science and Technology*, 1–19. <https://doi.org/10.1002/asi.24327>
- Karakitapoğlu-Aygün, Z., Erdogan, B., Caughlin, D. E., & Bauer, T. N. (2024). Transformational leadership, idiosyncratic deals and employee outcomes. *Personnel Review*, 53(2), 562–579. <https://doi.org/10.1108/PR-07-2022-0470>
- Kartakusumah, B., Kholik, A., & Lathifah, Z. K. (2023). *Bibliometric Analysis: Developments in Research on Human Resource Management in Higher Education Based on the Google Scholar Database*. 07(04), 1263–1275.
- Kemdikbud. (2023). *Rapor Pendidikan Indonesia tahun 2023*. 2023.
- Kemendikbud. (2023). *Rakor Penataan Manajemen ASN: Visi Besar Pemenuhan Kebutuhan Guru dan Tenaga Kependidikan*. Kemdikbud.Go.Id. <https://www.kemdikbud.go.id/main/blog/2023/11/rakor-penataan-manajemen-asn-visi-besar-pemenuhan-kebutuhan-guru-dan-tenaga-kependidikan>
- Kemendikbud. (2024). *Data Guru*. Kemendikbud. <https://dapo.kemdikbud.go.id/guru>
- Klassen, R. M., Rushby, J. V., Durksen, T. L., & Bardach, L. (2021). Examining Teacher Recruitment Strategies in England. *Journal of Education for Teaching*, 47(2), 163–185. <https://doi.org/10.1080/02607476.2021.1876501>

- Koedel, C., Li, J., Springer, M. G., & Tan, L. (2017). The Impact of Performance Ratings on Job Satisfaction for Public School Teachers. *American Educational Research Journal*, 54(2), 241–278. <https://doi.org/10.3102/0002831216687531>
- Korteling, J. E. (Hans), van de Boer-Visschedijk, G. C., Blankendaal, R. A. M., Boonekamp, R. C., & Eikelboom, A. R. (2021). Human- versus Artificial Intelligence. *Frontiers in Artificial Intelligence*, 4(March), 1–13. <https://doi.org/10.3389/frai.2021.622364>
- Margetts, F., Whitty, S. J., & Van Der Hoorn, B. (2024). A leap of faith: Overcoming doubt to do good when policy is absurd. *Journal of Education Policy*, 39(2), 191–213. <https://doi.org/10.1080/02680939.2023.2198488>
- Masyhuda, M. A., Hasbullah, Mustainah, Hj., Daswati, & Ahsan, S. C. (2023). Policy Implementation Basic Education Driving School Program (DSP) in Palu City. *International Journal of Applied Sciences and Biotechnology*, 11(2), 116–122. <https://doi.org/10.3126/ijasbt.v11i2.55846>
- Maury Mena, S. C. (2022). Administration, competencies and management in educational institutions in Colombia. *Sociology International Journal*, 6(5), 265–271. <https://doi.org/10.15406/sij.2022.06.00298>
- Mengist, W., Soromessa, T., & Legese, G. (2020). Method for conducting systematic literature review and meta-analysis for environmental science research. *MethodsX*, 7, 100777. <https://doi.org/10.1016/j.mex.2019.100777>
- Mohiuddin, M., Hosseini, E., Faradonbeh, S. B., & Sabokro, M. (2022). Achieving Human Resource Management Sustainability in Universities. *International Journal of Environmental Research and Public Health*, 19(2). <https://doi.org/10.3390/ijerph19020928>
- Monoarfa, H., Tambingon, H. N., & Rotty, V. N. J. (2022). Intervensi Politik Dalam Dunia Manajemen Pendidikan Di Indonesia Haris. *Jurnal Pendidikan Dan Konseling*, 4(5), 5894–5899.
- Nir, A. E. (2019). *Professional Political and Contextual Considerations of Policy Borrowing*. Oxford University Press. <https://doi.org/10.1093/acrefore/9780190264093.013.731>
- O'Doherty, T., & Harford, J. (2018). Teacher recruitment: Reflections from Ireland on the current crisis in teacher supply. *European Journal of Teacher Education*, 41(5), 654–669. <https://doi.org/10.1080/02619768.2018.1532994>
- Osunsan, O. K., Ijjo, A. T., Mugisha, J. F., Samuel, P., & Muhwezi, M. (2022). Publish or Perish': A Systematic Review. *Journal of Social Sciences and Management*, 1(September), 1–22.
- Owenvbiugie, R. O., & Ekhaise, R. E. (2019). Human resource management motivational strategies for enhancing business educators' job performance in tertiary institutions in Edo and Delta states, Nigeria. *Journal of Education and Learning (EduLearn)*, 14(1), 140–147. <https://doi.org/10.11591/edulearn.v14i1.14072>
- Portnoi, L. M. (2016). *Patterns of Educational Reform and Policy Borrowing BT - Policy Borrowing and Reform in Education: Globalized Processes and Local*

- Contexts* (L. M. Portnoi, Ed.; pp. 175–198). Palgrave Macmillan US. https://doi.org/10.1057/978-1-137-53024-0_7
- Presiden Republik Indonesia. (2021). *Peraturan Pemerintah Republik Indonesia Nomor 57 Tahun 2021 Tentang Standar Nasional Pendidikan* (Patent No. PP No. 57 Tahun 2021). Sekretariat Negara Republik Indonesia.
- Presiden Republik Indonesia. (2023). *Undang-Undang Republik Indonesia Nomor 20 Tahun 2023 Tentang Aparatur Sipil Negara*. 202875, 1–44.
- Pujileksono, S. (2022). Korupsi Melalui Jual Beli Jabatan Di Pemerintah Daerah Dalam Perspektif Sosiologi. *Journal of Urban Sociology*, 5(2), 91. <https://doi.org/10.30742/jus.v5i2.2508>
- Rasyidi, R., Sukarno, S., & El Widdah, M. (2021). Politik Dan Kebijakan Pendidikan Islam Di Indonesia. *Jurnal Literasiologi*, 6(2), 132–142. <https://doi.org/10.47783/literasiologi.v6i2.258>
- Rihada, A. M., Jagat, R. S. A., & Setiabudi, D. I. (2021). Refleksi guru dalam pengembangan pembelajaran berdasarkan hasil PISA (Programme for International Student Assessment). *Jurnal Pendidikan Dan Kebudayaan*, 1(Juli), 1–8.
- Sahlim, M. (2023). *Analisis Pelaksanaan Rotasi dan Mutasi Jabatan di Lingkungan Pemerintah Daerah Kabupaten Subang dihubungkan dengan Undang – Undang Nomor 5 Tahun 2014 tentang Aparatur Sipil Negara*. Universitas Islam Negeri Sunan Gunung Djati Bandung.
- Saputra, M. A. D. C., Saputri, S. C. A., & Bimantara, D. (2023). Hak Gaji Guru Honorer Berdasarkan Aspek Keadilan dan HAM. *AL-MIKRAJ Jurnal Studi Islam Dan Humaniora* (E-ISSN 2745-4584), 4(1), 796–805. <https://doi.org/10.37680/almikraj.v4i1.4140>
- Sari, K. Pamungkas., & Mujahidun. (2018). Manajemen Rekrutmen Profesional Guru Jenjang Pendidikan Dasar Muhammadiyah Kabupaten Magelang. *The 8th University Research Colloquium 2018 Universitas Muhammadiyah Purwokerto*, 87–93.
- Scholtz, S. E., & Spies, R. (2023). Where Is the Research about Stepmothers? A Scoping Review. *Psych*, 5(1), 209–223. <https://doi.org/10.3390/psych5010016>
- Shuls, J., & Maranto, R. (2014). Show Them the Mission: A Comparison of Teacher Recruitment Incentives in High Need Communities. *Social Science Quarterly*, 95(1), 239–252. <https://doi.org/10.1111/ssqu.12011>
- Smith, C., Masson, M., & Kristmanson, P. (2023). A Course or a Pathway? Addressing French as a Second Language Teacher Recruitment and Retention in Canadian BEd Programs. *Canadian Journal of Education*, 46(2).
- Sulistiyosari, Y., Wardana, A., & Dwiningrum, S. I. A. (2023). School zoning and equal education access in Indonesia. *International Journal of Evaluation and Research in Education*, 12(2), 586–593. <https://doi.org/10.11591/ijere.v12i2.22488>
- Tan, S. C., Lee, A. V. Y., & Lee, M. (2022). A systematic review of artificial intelligence techniques for collaborative learning over the past two decades.

- Computers and Education: Artificial Intelligence*, 3(September).
<https://doi.org/10.1016/j.caeai.2022.100097>
- Tasyirifiah, T., & Pitaloka, A. F. (2023). Dampak Pemberlakuan Sistem Zonasi terhadap Daya Saing Pelajar di Indonesia. *AI-DYAS*, 2(2), 381–391.
<https://doi.org/10.58578/alldyas.v2i2.1200>
- Teräs, M., Suoranta, J., Teräs, H., & Curcher, M. (2020). Post-Covid-19 Education and Education Technology ‘Solutionism’: A Seller’s Market. *Postdigital Science and Education*, 2(3), 863–878. <https://doi.org/10.1007/s42438-020-00164-x>
- Terziev, V., Banabakova, V., Stefanov, S., & Georgiev, M. (2017). The job contest—An efficient technology for selecting staff in the organization KNOWLEDGE – International Journal. *Knowledge-International Journal*, 20.1(December), 487–493.
- Trolice, M. P., Curchoe, C., & Quaas, A. M. (2021). Artificial intelligence—The future is now. *Journal of Assisted Reproduction and Genetics*, 38(7), 1607–1612. <https://doi.org/10.1007/s10815-021-02272-4>
- Tuasikal, A. R. S., Hartoto, S., Prakoso, B. B., Kartiko, D. C., & Hariyanto, A. (2021). The Analysis on Teaching Skills and Learning Effectiveness of Internship Students. *Cakrawala Pendidikan*, 40(3), 650–658.
<https://doi.org/10.21831/cp.v40i3.40466>
- Ulfah, C., Yuliejantiningsih, Y., & Soengeng, A. (2016). Pengaruh Kompensasi Dan Motivasi Kerja Terhadap Profesionalisme Guru PAUD Di Kecamatan Ungaran Barat Kabupaten Semarang. *Jurnal Manajemen Pendidikan*, 5(2), 229–241.
<https://doi.org/10.7868/s0320930x16050042>
- Undang-Undang Nomor 14 Tahun 2005 Tentang Guru Dan Dosen, Pub. L. No. 14 of 2005, 1 (2005).
- Undang-undang Nomor 14 Tahun 2005 Tentang Guru dan Dosen, 14 of 2005 1 (2005).
- Whitfield, J., Banerjee, M., Waxman, H. C., Scott, T. P., & Capraro, M. M. (2021). Recruitment and Retention of STEM Teachers through the Noyce Scholarship: A Longitudinal Mixed Methods Study. *Teaching and Teacher Education*, 103(103361), 1–11. <https://doi.org/10.1016/j.tate.2021.103361>
- Willén, A. (2021). Decentralization of wage determination: Evidence from a national teacher reform. *Journal of Public Economics*, 198, 104388. <https://doi.org/10.1016/j.jpubeco.2021.104388>
- Wronowski, M. L. (2018). Filling the Void: A Grounded Theory Approach to Addressing Teacher Recruitment and Retention in Urban Schools. *Education and Urban Society*, 50(6), 548–574.
<https://doi.org/10.1177/0013124517713608>
- Yanti, E., Intan, R. S., Hendra, T., Marsidin, S., & Rezo, P. (2022). Effect of Recruitment on Employee Performance. *Jurnal Manajemen Pendidikan*, X(1), 2022.