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GOVERNMENT EFFORTS TO REALISE EDUCATIONAL EQUITY THROUGH TEACHER REDISTRIBUTION AND DIGITAL INFRASTRUCTURE IMPROVEMENT: A LITERATURE REVIEW ON STRATEGIES AND CHALLENGES IN REDUCING URBAN AND RURAL EDUCATIONAL DISPARITIES IN INDONESIA

Novalia Rachmah
Prodi Bisnis Digital, Politeknik Istikom Bina Citra Informatika
novaliarachmah@istikombci.ac.id

Indra Cahaya Tresna
Prodi Bisnis Digital, Politeknik Istikom Bina Citra Informatika
indracahayatresna@istikombci.ac.id

Tommi
Prodi Desain Komunikasi Visual, Universitas Pembangunan Jaya
tommi.siswono@upj.ac.id

Abstract

Educational equity in Indonesia still faces significant challenges, particularly regarding quality and access disparities between urban and rural areas. This study employs *a literature* review method to analyse the government's strategies in reducing these disparities through two main approaches: teacher redistribution and digital infrastructure improvement. The findings indicate that teacher redistribution programmes, such as the Frontline Teachers programme and the placement of civil servant teachers (PNS/PPPK), have improved the teacher-student ratio and brought qualified educators to remote areas. Meanwhile, strengthening digital infrastructure through the Palapa Ring project, school digitisation, and the provision of technological devices have opened up more equitable access to online learning. However, the implementation of these two efforts still faces challenges such as teacher resistance to placement in remote areas, limited supporting facilities, low digital literacy, and limitations in basic infrastructure such as electricity and internet connectivity. This study concludes that the success of educational equity requires integrated policy synergy, local government involvement, and support from various stakeholders to ensure the sustainability of the programme.

Keywords: educational equity, teacher redistribution, digital infrastructure, educational disparity, literature review

Introduction

Education is one of the fundamental pillars of national development and plays a strategic role in creating quality human resources. In the Indonesian context, education serves as the primary instrument for driving social progress, economic development, and strengthening democracy (Judijanto & Aslan, 2025) ; (Purike & Aslan, 2025) ; (Komari & Aslan, 2025) . However, on-the-ground realities reveal that equitable access to and quality of education remain significant challenges. Urban areas

tend to have better access to educational facilities, qualified teachers, and modern learning technologies, while rural and remote areas often lag behind due to limited infrastructure and human resources. This situation creates an educational gap that has the potential to widen social and economic disparities between regions (Mansur & Kurniawan, 2021) .

The educational gap between urban and rural areas can be observed through several indicators, such as school enrolment rates, graduation rates, literacy scores, and access to learning facilities. Data from the Central Statistics Agency (BPS) and the Ministry of Education and Culture (Kemendikbud) indicate that students in urban areas have greater access to qualified teachers, laboratories, libraries, and stable internet connections compared to students in rural areas (Ramadhan, 2021) . These disparities not only impact academic achievement but also opportunities to pursue higher education and compete in the job market. As a result, educational disparities have become one of the key barriers to equitable national development (Siahaan et al., 2025).

One of the strategies adopted by the government to reduce this gap is teacher redistribution. Teacher redistribution refers to efforts to transfer or place competent teachers to schools that lack teaching staff, particularly in remote, frontier, and outer regions (3T). The objective of this policy is to ensure that every student, regardless of location, has access to teachers who meet professional qualifications (Septiana, 2024) . However, the implementation of this policy faces challenges such as resistance from teachers to relocate to remote areas, logistical constraints, and limited supporting facilities at the placement locations (Aslan, 2019) . In addition to teacher redistribution, the government is also striving to develop and improve digital infrastructure in the education sector. The use of information technology, such as internet networks, computer hardware, and online learning platforms, is considered an effective way to expand access to quality education, especially in areas that are difficult to reach by physical transportation. Programmes such as *Merdeka Belajar (Freedom to Learn)* and *Digitalisasi Sekolah (School Digitalisation)* emphasise the importance of digital literacy for teachers and students. Digital infrastructure enables distance learning, access to global learning resources, and online teacher training (Aslan & Hifza, 2020) ; (Aslan & Setiawan, 2019) ; (Aslan et al., 2019) .

Technology has great potential in overcoming geographical and time barriers in the teaching and learning process. With reliable internet connectivity, schools in remote areas can access the same learning materials as schools in urban areas. Platforms such as Rumah Belajar, virtual classroom services, and the use of cloud-based Learning Management Systems (LMS) make the distribution of learning materials more efficient and equitable. However, for technology to truly reduce disparities, there must be policy support to ensure equitable internet access and training in the use of technology for educators .

Achieving equitable education through teacher redistribution and strengthening digital infrastructure is not an easy task. Budget constraints, complex bureaucracy, infrastructure disparities between regions, and socio-cultural resistance are major obstacles. In certain areas, teachers face difficulties adapting to local culture, while on the other hand, community acceptance of new teachers is not always smooth. Meanwhile, technical aspects such as electricity availability, internet connectivity, and maintenance of digital devices pose serious challenges for the implementation of the digitalisation of education programme.

The Indonesian government has established various regulations and programmes to promote equitable education, ranging from the National Education System Law, the National Medium-Term Development Plan (RPJMN), to affirmative action policies for the 3T regions. Teacher redistribution is regulated through the Teacher Transfer Mechanism, the placement of civil servant teachers through the Civil Service Recruitment Examination (CPNS) and the Public Service Professional Recruitment (PPPK), as well as the Frontline Teacher Programme (GGD). Meanwhile, the strengthening of digital infrastructure is realised through the Palapa Ring project, the provision of ICT for schools, and partnerships with the private sector to provide educational internet access (Daeng, 2023) . In addition to the central government's role, local governments have significant authority in teacher placement and the management of local educational facilities. Collaboration between the central government, local governments, the private sector, and non-governmental organisations can accelerate educational equity. Technology companies can provide digital infrastructure, NGOs can support teacher training, and the community can be involved as partners in ensuring the sustainability of the programme (Abbas et al., 2022).

Amid global developments and the 4th Industrial Revolution, the education system is required to adapt to technological changes and future competency demands. This research is significant as it focuses on two key aspects of education equity—teacher redistribution and infrastructure digitalisation—which are highly relevant to the global vision of education.

Research Method

This study employs a *literature review* method with a descriptive-analytical approach to examine government strategies in achieving educational equity through teacher redistribution and digital infrastructure improvement, particularly in the context of reducing disparities between urban and rural areas in Indonesia. Data sources were obtained from academic books, national and international scientific journals, official government reports, previous research findings, and relevant publications from institutions related to the topic (Eliyah & Aslan, 2025) . Data collection was conducted through systematic searches in academic databases such as Google Scholar, Garuda, and official ministry portals, using relevant keywords. The collected

data were analysed using content analysis techniques to identify themes, strategies, outcomes, and challenges emerging in the literature, which were then synthesised to obtain a comprehensive overview that can serve as a basis for policy recommendations (Maulina, 2021) .

Results and Discussion

Government Efforts in Teacher Redistribution to Reduce Urban and Rural Educational Disparities

The Indonesian government has acknowledged that the educational gap between urban and rural areas is one of the main obstacles to achieving equitable quality education nationwide (Riofita, 2016) . One of the primary causes of this disparity is the uneven distribution of educators, where qualified and competent teachers tend to be concentrated in urban areas, while many rural areas, particularly those classified as 3T (frontier, remote, and underdeveloped), face a shortage of professional teachers. Therefore, the government has taken strategic steps in the form of teacher redistribution as a solution to reduce this disparity (Hidayat, 2023) .

Teacher redistribution is a mechanism aimed at placing or transferring teachers from areas with sufficient or even excess teaching staff to areas facing teacher shortages. This approach aims to ensure that every school, especially those in rural areas and 3T regions, can obtain teachers who meet professional qualification standards, thereby improving the quality of education and narrowing the education gap (Yusuf, 2023) .

Teacher redistribution policies in Indonesia are regulated through several instruments, including the Frontline Teacher Programme (GGD), the Teacher Transfer Programme, and the placement of teachers under the Government Employee with Work Agreement (PPPK) scheme. The Frontline Teacher Programme specifically targets the placement of competent young teachers in areas with limited access and inadequate facilities. This program is supported by special incentives to attract competent teachers willing to teach in areas requiring extra attention (Riofita, 2016) .

The government also conducts planned transfers and placements of civil servant teachers based on school and regional needs. This arrangement is made by considering the availability of teachers in their home regions and the needs of the destination regions, as well as various administrative aspects. The growing placement of PPPK teachers also provides opportunities to fill vacancies in hard-to-reach areas (Ramadhan et al., 2025) .

However, the implementation of teacher redistribution faces various practical challenges. One of the main obstacles is resistance or unwillingness among teachers to be transferred to rural areas or 3T regions with limited facilities, accessibility, and living amenities. Many teachers are reluctant to leave urban areas that offer greater comfort and better access to public facilities, healthcare, and socio-economic opportunities

(Wahyuni & Arifin, 2020) . In addition to personal resistance, technical challenges such as inadequate transportation, lack of suitable housing for teachers in the assigned areas, and poor school conditions also pose significant obstacles to the implementation of redistribution. These conditions affect teachers' motivation and impact their teaching performance as well as the duration of their assignments in those areas (Kemendikbud, 2021) .

Enhancing the motivation of teachers willing to be assigned to 3T areas is a government priority through the provision of additional incentives, such as special allowances, health facilities, and ongoing training. These incentives are expected to reduce the disparity in attracting teachers to remote areas while improving the quality of education there (Aslan, 2016) .

The teacher redistribution strategy also includes continuous professional training and development so that teachers assigned to 3T areas continue to receive competency improvement ( ) even though they are located far from urban centres. Online training and mobile learning are among the methods widely used to maintain the quality of teachers working in remote areas. Monitoring and evaluation of teacher redistribution by the government through provincial and district/city education offices are crucial to ensuring the success of this programme. This evaluation covers aspects such as teacher availability, teacher satisfaction with their placement, and the impact on student learning outcomes in the placement areas (Hakim et al., 2023) .

From a policy perspective, synergy between the central government and local governments is a crucial factor. Local governments play a role in supporting teachers who are placed through the provision of local facilities and the management of educational administration. The involvement of local governments in teacher redistribution ensures that policies align with on-the-ground needs and the local socio-cultural context (Megawati, 2025) .

Therefore, teacher redistribution as an instrument for educational equity yields positive results in several aspects, such as improving the teacher-to-student ratio in rural areas and increasing learning participation. However, the sustainability of these positive impacts depends on the success in addressing infrastructure challenges and teacher welfare aspects (Muthmainnah, 2025) . The placement of teachers in remote areas also opens up opportunities for the development of contextual learning innovations tailored to local conditions. Teachers who understand the culture and needs of the area can provide a more relevant and effective educational approach, which ultimately reduces the educational gap between urban and rural areas (ILO, 2017) .

It is also important to note that teacher redistribution must be accompanied by improvements in supporting infrastructure, such as school facilities, learning technology, and digital access, so that the presence of teachers who have been placed can be optimally utilised. Joint efforts between teacher redistribution and

improvements in learning facilities are key to creating true educational equity (Ramadhani, 2023) .

Overall, the government's efforts in teacher redistribution are a vital strategic step in reducing educational disparities between urban and rural areas in Indonesia. Despite facing various challenges, this policy continues to evolve and improve, supported by various incentive programmes and teacher training. The success of teacher redistribution is expected to serve as a crucial foundation for educational quality equity and the enhancement of national human resources in the future.

Improving Digital Infrastructure for Educational Equity

Improving digital infrastructure is one of the crucial efforts undertaken by the Indonesian government to achieve educational equity between urban and rural areas. Due to geographical distance and limited physical access, which still hinder the distribution of conventional learning resources, digital technology is expected to serve as a bridge enabling the fair and equitable distribution of knowledge across the entire country (Suryani, 2020) .

The government has initiated various programmes to build and develop digital infrastructure, such as the Palapa Ring project, which aims to provide fast and stable internet networks to remote areas. With adequate connectivity, schools in rural areas can connect to various educational resources and online learning platforms, opening up access opportunities that were previously closed due to a lack of communication facilities. In addition to developing internet networks, providing technological devices such as computers, tablets, and access to digital learning platforms has become a key focus in strengthening digital education infrastructure. The government, through the Ministry of Education and Culture, has launched a school digitalisation programme that supplies hardware and software to educational institutions in need (Subroto, 2023) .

Adequate digital infrastructure influences the quality of learning by providing innovative and interactive learning materials. Teachers and students can use various educational applications, video tutorials, and interactive learning modules that are more engaging than conventional methods. This opens up opportunities for students in remote areas to receive an education that is comparable to that in urban areas (Adams & Mair, 2020) .

The government has also developed government platforms such as Rumah Belajar, which provides a variety of free digital learning resources that can be accessed by all students and teachers in Indonesia. This platform enriches the teaching and learning process and bridges the gap in physical teaching materials in rural schools with structured and adaptive content (UNESCO, 2021) .

Digitalisation of learning also provides opportunities for teacher training and competency enhancement through online training. With good infrastructure, teachers in remote areas can participate in online training and workshops that improve their

pedagogical and technical skills without having to leave their areas of assignment. However, the development of digital infrastructure faces major challenges such as the availability of stable electricity in rural and remote areas. Inadequate electricity infrastructure is a major obstacle to the use of digital technology in these schools, so digitalisation improvement projects must be integrated with improvements to other basic facilities (Tumiran, 2024) .

Another challenge is the lack of digital knowledge and skills among teachers and students. Low digital literacy levels in some areas make it difficult to optimally utilise available technology. Therefore, in addition to physical infrastructure development, human resource capacity building is a crucial aspect in successfully implementing digitalisation in education (World Bank, 2018) . The uneven availability of internet signals is also a technical issue that requires innovative solutions, such as the use of satellite technology or alternative networks that can reach remote areas. Some regions require approaches tailored to their geographical conditions, so digitalisation programmes must be flexible and adaptable to the local context. (Brown, 2020) .

The role of local governments is crucial in supporting the strengthening of digital infrastructure by managing local resources and facilitating improvements to supporting facilities and infrastructure. Synergy between central policies and their implementation at the local level is key to the successful expansion of educational technology. Collaboration with the private sector and non-governmental organisations is also part of the government's strategy to accelerate the development of digital infrastructure for education. Various partnerships in the provision of internet networks, technological devices, and digital training for teachers and students have contributed significantly to accelerating the equitable access to digital education (Rosmana, 2022) .

Several studies indicate that the use of digital technology in education can improve learning effectiveness and student motivation. Multimedia-based and interactive materials enhance concept understanding and enrich learning experiences, so that digitalisation does not merely serve as an access tool but also as a stimulus for improving education quality (Sudjana, 2019) . However, the sustainability of digital infrastructure management remains a concern. Long-term planning is needed regarding device maintenance, technology updates, and sustainable funding so that investments in educational digitalisation do not stop at the facility construction stage but continue to evolve according to the needs of the times (Nay & Dopo, 2024) .

Overall, the government's efforts to improve digital infrastructure for educational equity represent a strategic step aligned with the direction of educational transformation in the digital age. By addressing existing technical and human capital challenges, educational digitalisation will become a key driver in reducing educational disparities between urban and rural areas while enhancing the quality of Indonesia's human resources across the board.

Conclusion

The literature review findings indicate that the government's efforts in redistributing teachers and improving digital infrastructure have played a significant role in reducing educational disparities between urban and rural areas in Indonesia. Teacher redistribution through programmes such as Guru Garis Depan, civil servant/PPPK teacher transfers, and special incentives have successfully improved the teacher-student ratio in 3T areas and brought competent educators to previously underserved regions. Meanwhile, strengthening digital infrastructure through the Palapa Ring project, school digitalisation, and the provision of technological devices have opened access to online learning and expanded equitable learning resources for students in remote areas.

Although these achievements are commendable, the implementation of both strategies still faces challenges, including teacher resistance to being assigned to remote areas, limited supporting facilities, low digital literacy among teachers and students, and inadequate basic infrastructure such as electricity and internet connectivity. These obstacles require a more integrated policy approach, where teacher redistribution is accompanied by physical infrastructure development, digital competency training, and cross-sector collaboration to ensure programme sustainability.

Overall, the equalisation of education through teacher redistribution and the improvement of digital infrastructure are complementary strategic steps. The success of these programmes depends not only on the provision of human resources and technology, but also on adaptive policy support, active participation from local governments, and the involvement of the community and the private sector. With sustained commitment and strengthened synergy among stakeholders, the educational gap between urban and rural areas in Indonesia can narrow further, thereby realising the vision of equitable educational quality for all Indonesians.

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