



Road Infrastructure Inequality and Dropout Rates in Isolated Areas: Tracking the Indonesian Literature

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Abstract

Limited access to land transportation due to the lack of adequate road infrastructure in isolated and remote areas contributes to the high dropout rates of students in such areas. Therefore, the government always promotes road infrastructure development in these isolated areas, increases economic growth, and provides development access in other sectors, including the education sector. Education is not just an obligation as the discourse echoed by the government, but it should be a right given by the state to its people. Therefore, this study aims to analyze the impact of infrastructure development inequality in isolated areas and the education sector, especially in increasing the dropout rates. This study uses a systematic literature review to investigate five writings. The data was driven using the assistance of Ferreira & Gignoux's (2011) theory of inequality of opportunity. The findings show that the construction of road infrastructure in remote and isolated areas dramatically affects the distribution of education, including efforts to reduce the dropout rate of children. The forms of benefits obtained by building road infrastructure are easy to access for students to places of learning, easy access for teachers and educators to reach isolated areas, ease of procurement of school facilities and infrastructure, which has an impact on increasing the quality of education and finally can help the community's economy so that children can be financed so as not to drop out of school.

Abstrak

Keterbatasan akses transportasi darat akibat minimnya infrastruktur jalan yang memadai di daerah-daerah terpencil dan terisolir menjadi salah satu penyumbang tingginya angka putus sekolah anak-anak di daerah tersebut. Oleh karena itu, saat ini pemerintah selalu mendorong pembangunan infrastruktur jalan di daerah-daerah terpencil, meningkatkan pertumbuhan ekonomi, dan memberikan akses pembangunan di sektor lain, termasuk sektor pendidikan. Pendidikan bukan sekedar kewajiban sebagaimana wacana yang didengungkan oleh pemerintah, tetapi harus menjadi hak yang diberikan oleh negara kepada rakyatnya. Oleh karena itu, penelitian ini bertujuan untuk menganalisis dampak ketimpangan pembangunan infrastruktur di daerah terpencil dan sektor pendidikan khususnya dalam menurunkan angka putus sekolah. Studi ini menggunakan tinjauan pustaka sistematis untuk menyelidiki lima tulisan. Data dan analisis menggunakan bantuan teori ketidaksetaraan peluang Ferreira & Gignoux (2011). Temuan menunjukkan bahwa pembangunan infrastruktur jalan di daerah terpencil dan terisolir secara dramatis mempengaruhi pemerataan pendidikan, termasuk upaya untuk mengurangi angka putus sekolah anak. Bentuk manfaat yang diperoleh dengan membangun infrastruktur jalan adalah kemudahan akses siswa menuju

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tempat belajar, kemudahan akses guru dan pendidik untuk menjangkau daerah terpencil, kemudahan pengadaan sarana dan prasarana sekolah, yang berdampak pada peningkatan mutu pendidikan. dan akhirnya bisa membantu perekonomian masyarakat agar anak bisa dibiayai agar tidak putus sekolah.

INTRODUCTION

In the era of globalization, the improvement of an area can be seen from the improvement of road infrastructure, which is one of the essential and vital aspects to accelerate national and regional development (Deichmann et al., 2005). Road infrastructure also plays a crucial role as one of the cogs of development (Sukwika, 2018). In general, the road as one of the transportation infrastructures in the life of the nation, the position and role of the road network is essentially related to the livelihood of the people and controlling the structure of regional development at the national level, especially concerning the realization of balanced inter-regional development and equitable distribution of development results, as well as increasing defence and security. State security is to realize long-term development plans and medium-term development plans that can lead to a prosperous Indonesian society based on Pancasila and the 1945 Constitution (Fajri, 2017). One of the benchmarks for a country's development is the success of education plans.

Education is an effort to glorify young people into adults. Through education, intelligent and skilled generations who are ready to determine the direction of this nation's development will be born (Ainiyah & Wibawa, 2013). It can be identified that most developed countries have outstanding quality education in terms of facilities, learning processes, curriculum, and student output. The world of education from time to time is constantly changing. We can see this from changes in curriculum, regulations, approaches to the learning process, and educational support facilities (Al-Tabany, 2017). The government does all this to compete with other nations in the world in responding to future challenges. Education is the key to the success of a nation's progress; therefore, our education must adapt to the dynamics of the times so our country does not lag behind other nations in the world (Sari, 2020).

In Indonesia, the distribution of education has not been fully felt in all regions, especially in remote areas (Ali, 2009). The gap between education on Java and other islands, especially in eastern Indonesia, is very high. Not only educational facilities such as physical buildings, but teaching staff in the east of Indonesia are lacking and the curriculum used is different (Sakti, 2007). Many things cause the uneven distribution of education throughout Indonesia, especially the region. The territory of Indonesia, which is separated by the ocean from one another, is a challenge for equal distribution of education in Indonesia. Apart from being separated by the sea, many areas are located in the middle of forests and highland/mountainous areas, so access to get there is difficult (Safarah & Wibowo, 2018). This is why the equitable distribution of development such as roads, electricity networks, and communication is essential for the government to achieve equal distribution of education for the entire community (Lestari & Destiningsih, 2021).

The meaning of Article 31 of the 1945 Constitution is that every citizen has the right to education without exception. However, education is the main factor in determining the progress of a nation. With a high level of education, the better the existing human resources, and in the end, the higher the creative power of Indonesian youth in filling the development of a nation (Atmanti, 2005). However, in Indonesia, it is still complicated to achieve excellence and quality education following national standards (Raharjo, 2012). In fact, with the condition of the country of Indonesia, which is very wide and consists of thousands of islands, from Sabang to Merauke, we are faced with various problems in providing education services for the community.

Various problems often hinder the improvement of the quality of national education, especially in disadvantaged or remote areas, which colour the journey of education in Indonesia. In a remote location, there are still many conditions where children have not been served by education, the dropout rate is still high, the problem of teacher shortages, and inadequate facilities and infrastructure. However, in some areas, especially urban areas, the supply of teachers is excessively different from those in remote areas (Nasir & Mujiati, 2020). Education in remote areas has a

negative impact, namely awareness of the importance of education is still lacking, and the economic inability of the family, as a result of education, which is felt to be very expensive (Surakhmad, 2009). In addition, other factors that cause children to drop out of school are environmental factors and the distance between home and school.

The dropout rate in Indonesia fluctuates. This means that from year to year, it has increased or decreased, until the last in 2014/2015, the Ministry of Education and Culture recorded that there were a total of 416,410 students from elementary to high school levels whose students could no longer attend a school or drop out (DO). Only less than 5% of approximately 30 million students in Indonesia. Although until 2014/2015, there was a decrease in the dropout rate, this problem must be addressed, and the primary concern, in this case, is the government in providing education. It is not only in remote or remote areas that the government must pay attention to but also in urban areas that lack school access. In some dropout cases, geographical factors are the most common factor in Indonesia. Remote areas, remote areas, or only a few schools can cause children to drop out of school. Therefore, the availability of road infrastructure is essential to minimize the number of children dropping out of school in Indonesia. Therefore, in this study, the authors are interested in raising the impact of road infrastructure development in isolated areas to reduce dropout rates.

Limited studies concerned the correlation between road infrastructure and dropout rates in Indonesian isolated areas. Meanwhile, the Indonesian geographical regions are dominated mainly by such conditions, especially in the isolated areas out of Java Island. Given this fact, it is pivotal to explore the issue through scientific investigations. A study conducted by Himawati (2021) mentions that external influences of the dropout students include parents' financial situations, insufficient road infrastructure, a lack of information and awareness about the importance of education for children and parents, as well as the environment's and relationships' impact on children. It was mentioned that road infrastructure is one of the causes of the increase of students who quit continuing their studies. This literature is insufficient to inform the readers about how things in isolated areas work, especially in road infrastructure and its influence on dropout rates. Therefore, this current study is trying to answer the question, "To what extent does the existing research discuss the road infrastructure influence on the increase of students' dropout rates in isolated areas in Indonesia?" The author hopes this article can become a reference for policymakers to recognize the importance of providing equal facilities for isolated students in remote areas.

METHODS

A systematic literature review was employed to identify how road infrastructure development can influence the dropout rates in isolated areas. The author sought to categorize the situation based on two aspects, namely conditional distributions and conditional means. This scrutiny is considered important as a report to the policymakers to give more attention to the isolated areas so that the students in those areas can experience equal education facilities and ultimately reduce the dropout rates. Five writings were taken as the data in this systematic literature review. The current systematic review used Marla et al.'s (2017) concept involving planning the review, conducting the review, and reporting and dissemination. In the planning process, the author selected keywords and databases. The keywords used to search the databases are "road infrastructure and dropout rates", "inequality infrastructure in Indonesian education", "road infrastructure in an isolated area and dropout rates", "Indonesian dropout students and road infrastructure", "inequality of road infrastructure in Indonesia", and "dropout students in an isolated area in Indonesia". After accomplishing the search, the author decided to take five writings as the data. The writings included in this review highlight the importance of road infrastructure to reduce the number of dropout students in remote areas. When conducting the review, the author deployed Ferreira & Gignoux's (2011) theory of inequality of opportunity, consisting of conditional distributions and conditional means. Eventually, the author reported and disseminated the result in this article.

FINDINGS AND DISCUSSION

From some search, the author reduced and selected the data that can provide some facts about the conditions of dropout rates students in isolated areas. The main reason was the road facilities that are far from residents and the quality of the road. The data is presented in the table below.

Table 1. Summary of the studies on dropout students in isolated areas due to road infrastructure

Writers	Year	Method	Inequality of opportunity		
			Conditional distributions	Conditional means	
Zainuri et al	2014	Qualitative method	Far distance from home to school and unavailability of public transportation.	socio-cultural environmental factors.	
Putri et al.	2018	Descriptive qualitative method	The long distance of residents to school as well as unavailability of public transportation.	Badly	damaged road conditions.
Azhima	2021	Qualitative approach	distance of place, remote living and schooling, and incomplete educational facilities and roads.	inadequate economy where income is still low.	
Rukmini	2021	Qualitative method	Far distance and expensive cost of transportation.	limited	parents' economic ability to meet transportation costs.
Himawati	2021	Qualitative approach	Far distance	Badly	damaged road conditions.

The Importance of Road Infrastructure Development

Physical and social infrastructure can be defined as the primary material needs of organizing the structural system needed for the economic guarantee of the public sector and the private sector as services and facilities required for the economy to function correctly (Ompusunggu, 2018). This term generally refers to technical or physical infrastructure that supports structural networks such as facilities such as roads, railways, clean water, airports, canals, reservoirs, dams, waste management, electricity, telecommunications, available ports, infrastructure other than facilitation. However, it can also support the smooth running of the community's economic activities, the distribution of the flow of production of goods and services, for example, that roads can facilitate transportation of raw material delivery to the factory and then for distribution to the market until it reaches the community (Gazali, 2017).

Physical facilities developed or required by public agencies for government to provide water, electricity, waste disposal, transportation and other services to facilitate social or economic goals are called infrastructure (Harvey & Knox 2012). As a result, infrastructure is a physical system required to meet the basic human needs in both the social and economic realms. According to Grigg (2000), the infrastructure system is defined as the basic facilities or structures, equipment, and installations built and needed to support society's social and economic systems.

People's lives are bolstered by the social and economic systems that are supported by the infrastructure system (Posumah, 2015). As a mediator between the economic and social systems that govern human life and the environment, infrastructure plays a crucial role in this case. The

infrastructure system relies on the natural environment. The financial system relies on the infrastructure system, which relies on the social system as its objects and targets (Setiyono, 2018).

The road is covered with a cable (Kusnandar, 2009). In order to support the expansion of an urban area, a city must have access to high-quality roads. Infrastructure for land transportation includes all road parts and components, complementary buildings and equipment for traffic on the ground surface (below and above water), and traffic below and above water. Roads also aim to support the city's role as a centre of growth and encourage equitable development within the town and its linkage to the hinterland.

Roads have a purpose and function for the economy of a region. These aims and procedures, among others:

- a) It has the ability to open access or entrances from one region to another, which is referred to as the land access function of the computer. This function is critical for increasing the gross domestic product (GDP) and reducing the number of lagging regions.

Roads serve as a conduit for local community services (community service function). The road can provide this job by providing its services in the course of product distribution, marketing, or other communal and economic activities.

- b) In addition, roads can serve as long-distance public transit routes and connect cities or regions that serve as interchange towns for long-distance transportation. Because of the advancement of motorized vehicle technology, particularly long-distance road transportation, the role of this road is critical for a major portion of the country.

The classification of functional roads in Indonesia based on the applicable laws and regulations are:

- a) An arterial road is a public road that serves the primary mode of [transportation] and has the characteristics of long-distance travel, a high average speed, and a small number of efficient access roads.
- b) A collector road is a public road that serves collector or divider transit and has the characteristics of travelling a moderate distance, travelling at a moderate average speed, and having a restricted number of access roads.
- c) Local roads are public highways that serve local transportation and feature short-distance travel, low average speed, and unrestricted entries.
- d) An environmental road is a public route dedicated to environmental mobility and features short travel distances and a low average speed.

Road grouping is intended to create legal certainty for road operations following the authority of the central government and regional governments, namely:

- a) National roads are arterial and collector roads that connect provincial capital cities to national strategic and toll roads.
- b) A provincial road is a collector route that connects the province capital to district/city capitals or between district/city capitals and provincial key roads in the principal road network system.
- c) District roads are local roads in the primary road network system that do not include roads connecting the district capital to the sub-district capital, inter-sub-district capitals, district capitals to local activity centres, or district capitals to inter-local activity centres, as well as public roads in the secondary road network system in district areas and district strategic roads.
- d) A city road is a public road that is part of the secondary road network system. It connects service centres inside the city, service centres with parcels, parcels with other parcels, and residential centres with each other.
- e) A village road is a public road that connects areas and/or communities within the village, as well as provides access to natural regions.

High Dropout Rates in Indonesia

According to the preamble to the 1945 Constitution, one of the Republic of Indonesia's purposes is to educate the populace. Education is a tool of achieving the state's objectives. According to Article 60(1) of the 1999 Human Rights Law, "every child has the right to receive education and instruction in the context of personal development consistent with his interests, abilities, and degree of intelligence." This can be understood to mean that every Indonesian child, regardless of social status, colour, ethnic origin, religion, or gender, has the right to a quality education tailored to their interests and abilities.

Dropping out of school is a severe problem because it is ironic with the government's continuous efforts to advance national education. Dropping out of school is a gap that prevents children from getting their rights. Various factors cause dropouts. Economic, psychological, and social environmental factors trigger a child not to continue their education. Economic factors drive most children who drop out of school, but few drop out of school due to psychological factors and the social environment.

The government's pursuit of education in order to educate the nation's lives can be observed in the Compulsory Education Program. From 1984 through 1993, the government implemented the Six-Year Basic Education Compulsory Education Program. In 1994, the government created the Nine-Year Compulsory Education Program, which targeted primary school students through junior high school. The Nine Years Compulsory Education Program aims to expand educational opportunities among all primary school age groups (7-15 years). Students enrolled in the program enable schools to provide a complete education and instruction.

The Indonesian government has budgeted 20% of the state budget for education. Compulsory education, which has legal force in its implementation, is still not optimal. The government's desire to free school-age children from the threat of dropping out of school has not been realized, even though the BOS Program has been launched. The policy to eliminate school fees has not been able to guarantee the completion of dropping out of school for children. The Nine-Year Compulsory Education Program and several laws that mandate the importance of education for children are still not optimal if you look at some children's reality, especially in rural areas that have dropped out of school.

The dropout rate describes the dropout rate at an education level and is the proportion of school-age children who are no longer in school or have not completed a certain level of education. This dropout phenomenon can be caused by several factors, including lack of parents' awareness about the importance of children's education, economic limitations, unfavourable geographical conditions, limited access to schools, long distances from schools, or lack of educational facilities in an area.

School participation is inversely related to dropping out. According to the level of education, three school-age groups are of concern in the twelve-year compulsory education program, namely the age group 7-12, 13-15, and 16-18 years. 12 and 13-15 years are pretty good, but it still needs to be improved for the 16-18 year age group. Based on BPS data (www.bps.go.id), the APS for the 7-12 and 13-15 years age group has reached more than 95 per cent; for the 16-18 year age group, it is still below 75 per cent. During the last 3 year period, there was an increase in the APS 16-18 years old, namely 71.42 per cent in 2017, increasing to 71.99 per cent in 2018, then rising again in 2019 to 72, 36 per cent. The dropout rate, especially for the 16-18-year-old group, is still relatively high based on the explanation above.

According to Cahyani et al. (2019), a dropout child is someone who has left school before completing his studies, or it can also be said that a school-age child is no longer in school and does not get a diploma. The factors that influence dropouts are lack of interest and willingness to go to school. Students are not interested in school, unable to attend/take lessons, family economics, inattentive parents, and the children's play environment. The factor analysis results showed that the most dominant factor affecting children dropping out of school at the junior high school level was

the lack of parental attention. In contrast, the middle-level children were less interested and willing to go to school.

Saepuloh & Suherman (2018), in their research, say that the causes of the dropout rate in Tangerang City are: (1) The economic condition of the community is weak; (2) Support from parents and the living environment is still lacking; (3) Education programs from the government are limited, so it has not been able to reach all the underprivileged communities. Astari et al. (2013), in their research, said that the variables that affect children dropping out of primary education are the ratio of students to schools in each sub-district, the percentage of students to teachers in each sub-district, the number of heads of families with the father's last education in elementary or junior high school, the illiteracy rate. And the average number of family members. The ratio of students to teachers in each sub-district is the variable that has the greatest influence compared to the other four significant variables.

Road Infrastructure Development as an Effort to Reduce Drop Out Rates in Isolated Areas

At present, the availability of education services at the primary school level is quite good, as can be seen in the high SD net enrollment rate (93%).⁹ However, the availability and affordability of education services for SMP/MTs and SMA/MA levels in some areas are still significant obstacles in ensuring Indonesia can achieve universal secondary education (PMU) for all children. In particular, this situation impacts several groups of children, such as children in 3T or isolated or remote areas. In many cases, children and youth in rural and remote areas often find it difficult to access education services after completing primary school education. The same thing can happen to children who have completed junior high school education due to the lack of a high school that is affordable or close to where they live. For example, a child who wants to access vocational education cannot do so because the nearest SMK is in the district capital, too far to travel. Children with disabilities who want to go to special schools also often end up not going to school because no special schools are easily accessible from their homes.

In the book written by Handoko, it is stated that Disadvantaged Regions are defined based on social, economic, cultural, and regional conditions (inter-and intra-spatial functions in terms of nature, human aspects, and population infrastructure). Determining disadvantaged areas uses criteria based on six approaches: the community's economy, human resources, infrastructure (infrastructure), local financial capabilities (fiscal), accessibility, and regional characteristics. Development policies and strategies for disadvantaged regions aim to solve problems faced by underprivileged areas in general. In the form of partiality, acceleration, and community empowerment tailored to the needs and conditions of each region. The priority programs that must be implemented by the government and local governments are local economic development, community empowerment, development of border areas to cut isolation, handling remote indigenous communities (KAT), development of border areas, development of infrastructure and facilities, and disaster prevention and rehabilitation.

In the Development of Disadvantaged Regions, funding sources come from the state revenue and expenditure budget (APBN), regional revenue and expenditure budget (APBD), special allocation funds (DAK), private and public funds, as well as other legitimate revenue funds. Policyholders both at the centre and in the regions should be able to accelerate the development of disadvantaged areas following their respective situations, conditions, and characteristics so that they can have a real influence on the equal distribution of educational opportunities. Especially for primary education, the government should pay special attention to road infrastructure development for the area. In-Law Number 50 concerning primary education, it is stated that basic education is a low level of education. Primary education has a level to foster interest, hone thinking skills, exercise the body and instincts. In essence, the basic education unit aims to lay the foundations of abilities such as the ability to educate knowledge, personality, noble character, and skills to live

independently and participate in further education. For this reason, to achieve national education goals, the role of teachers in the learning and teaching process is significant.

The criteria for remote or underdeveloped areas are how difficult access to transportation is due to the unavailability of highways. Depending on a particular schedule, depending on the weather, the only access is by foot, which has tremendous obstacles and natural challenges (Waygood & Susilo, 2015). The area is unavailable and very limited in public, educational, electricity, health, information and communication, and clean water facilities. In this area, the prices of essential commodities are high, and the availability of food, sandals, and boards is meagre. In general, the problems of providing education in the 3T area include the high dropout rate, the low school participation rate, inadequate facilities, and infrastructure and the lack of infrastructure for easy access to education. Educational facilities and infrastructure are the main factors influencing the success of education. If there are deficiencies in school facilities and infrastructure, the educational process cannot run effectively. One of the facilities and infrastructure is access to education in roads (Carvalho, da Cruz, Câmara & de Aragão, 2010). This is important because if it is not taken care of, it will hinder the distribution of regional government assistance, which is difficult to reach.

Transportation facilities and infrastructure have several direct and indirect impacts on the dropout rate. Availability and smooth transportation facilities and infrastructure can eliminate an isolated area and increase accessibility. This increase opened a new civilization for the rural areas so that progress and modernization originating from the central government area could quickly enter rural areas (Del Rio, Hargrove, Tomaka & Korc, 2017). One of the transportation infrastructures that is very important to be developed is road infrastructure. The existence and quality of good roads will significantly support efforts to accelerate regional development. This can be seen in the economic aspect, especially in the education sector, where access to education becomes more accessible with smooth transportation facilities. Children can quickly go to the place of study without any road problems.

The provision of good transportation can provide and provide excellent and quality educators. The existing transportation facilities and infrastructure system help improve population mobilization services and other resources to support education development in isolated areas. This condition causes the dropout rate among children to decrease. Besides that, transportation facilities and infrastructure also open up opportunities for improving other educational facilities and infrastructure, such as the ease of procurement of goods and services related to education to reduce costs compared to the absence of education. Road facilities cause goods to be more expensive and unaffordable for the public. The existence of good transportation facilities and infrastructure can eliminate isolation and provide stimulation towards developments in all areas of life, both trade and other sectors.

CONCLUSION

Equitable access to education, especially in remote and isolated areas, is an absolute thing that must be fulfilled. The process of equalizing education is undoubtedly not only carried out by the government or the state. This process of equalizing access to education must be carried out comprehensively by all parties within the Indonesian nation. Land transportation infrastructure such as roads is the principal capital in developing an area, where the community needs this to carry out daily activities. The existence of road infrastructure development is also a significant part of the process of levelling education development which is the mandate of our constitution, contributing significantly to the growth of literacy rates, reducing the dropout rate, which is expected to maintain the continuity of the next generation. The forms of benefits obtained by building road infrastructure are easy to access for students to places of learning, easy access for teachers and educators to reach isolated areas, ease of procurement of school facilities and infrastructure, which has an impact on increasing the quality of education and finally can help the community's economy so that children can be financed so as not to drop out of school. This study has several weaknesses that are potential

to be explored by future researchers. For instance, providing data that serve as photographs as an attempt to show authentic evidence to readers about the roads infrastructure facilities that are insufficient will be an innovative breakthrough to inform the real-life contexts.

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