



Planning Of School Transport For Students With Disabilities Toward Improved Mobility Of Special Needs School (SLB) Students In Pasuruan City

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ABSTRACT

Persons with disabilities are entitled to equal access to education and transportation under Law Number 8 of 2016, yet students of Special Schools (SLB) in Pasuruan City still lack a dedicated school transport service and largely rely on private motorcycles that are unsafe and not disability-friendly. This study aims to plan a disability-accessible school transport service to improve the mobility of SLB students in Pasuruan City. A quantitative method was used, with data collected through questionnaires, observations, and interviews with school principals and parents/guardians of students from three SLBs. The results show that 106 parents (94%) are willing to switch to the planned service, which is organized into two routes operated with medium buses (22 seats plus two wheelchair spaces) using four vehicle units. The fare based on Vehicle Operating Cost ranges from IDR 8,527 to IDR 8,699 per passenger-trip; however, regulations require the service to be free, requiring an annual government subsidy of IDR 414,137,544 for a full-subsidy scheme or IDR 318,041,544 for a partial-subsidy scheme with a fare of IDR 2,000. The study concludes that an inclusive and affordable school transport plan is essential to improve the mobility and educational access of SLB students in Pasuruan City.



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INTRODUCTION

People with disabilities are a group of people who face physical, sensory, intellectual, and mental limitations that can affect their ability to carry out daily activities, including accessing transportation and educational services. Limited transportation accessibility impacts the mobility and participation of people with disabilities in educational activities, thus necessitating an inclusive and equitable transportation system (Angga Afrianti et al., 2022). Good transportation can be an indicator of successful development (Schouten, 2021).

The Indonesian government has guaranteed the fulfillment of the rights of persons with disabilities through Law Number 8 of 2016 concerning Persons with Disabilities, which affirms that persons with disabilities have equal rights to education and public transportation services. Based on the Regulation of the Minister of Transportation Number 98 of 2017 concerning the Provision of Accessibility in Public Transportation Services for Service Users with Special Needs, the provision of special transportation for persons with disabilities must be provided free of charge.

Based on data from the Pasuruan City Social Service, there are 622 people with disabilities in Pasuruan City, 59% of whom (386 people) are students at Special Schools (SLB). Pasuruan City has three SLBs, namely SLB Negeri 1 Pasuruan City (200 students), SLB Negeri 2 Pasuruan City (130 students), and SLB Arya Satya Hati (56 students). Until now, only regular schools are facilitated with official school transportation services from the local government, so SLB students have not received

similar services. This condition causes most parents to use motorbikes to transport students, which has a high level of safety risk because it is not designed for the special needs of people with disabilities.

Various studies have shown that accessibility barriers are a major factor contributing to low participation and academic achievement for students with special needs (Mawardi & Sumarsono, 2025). A study conducted by Meliana et al. (2025) in Jember Regency showed that planning for school transportation for people with disabilities with two service routes was able to accommodate the potential demand of 131 students. This study aims to plan effective, efficient, safe, and comfortable school transportation for people with disabilities to improve the mobility of students with special needs in Pasuruan City, as well as calculating Vehicle Operational Costs (VOC) as a basis for determining government subsidies.

RESEARCH METHODS

This study used a quantitative method. The quantitative approach emphasizes numerical measurements and statistical analysis to understand phenomena (Harnilawati et al., 2024). The research locations were three special schools (SLB) in Pasuruan City: SLB Negeri 1 Pasuruan City, SLB Negeri 2 Pasuruan City, and SLB Arya Satya Hati. Respondents focused on students at the junior high school (SMPLB) and senior high school (SMALB) levels residing in Pasuruan City.

Data collection was carried out through: (1) primary data in the form of questionnaires to parents/guardians of students regarding the origin and destination of travel, mode of transportation used, travel costs, and willingness to change modes; as well as interviews with school principals; and (2) secondary data in the form of SLB student administration data, road network maps, and zone maps of Pasuruan City from the 2025 Field Work Practice (PKL).

Data analysis includes: (a) passenger demand analysis using the OD Matrix to determine student movement patterns between zones; (b) route determination using the Analysis Hierarchy Process (AHP) method with criteria of accessibility, safety, road section performance, and comfort; (c) determination of the type and number of fleets based on road infrastructure capacity; (d) operational performance calculations including travel time, headway, frequency, and fleet requirements; and (e) calculation of Vehicle Operational Costs (VOC) based on the Decree of the Director General of Land Transportation Number KP.792/AJ.205/DRJD/2021.

RESULTS AND DISCUSSION

Characteristics of the Journey of Students with Disabilities

The survey was conducted on 113 students from three special needs schools (SLB) in Pasuruan City. In terms of gender, respondents were predominantly male (82 students, 73%) and female (31 students, 27%). Based on disability type, intellectual disabilities dominated at 57% (64 students), followed by physical disabilities, deafness, blindness, autism, and Down syndrome. This disability data serves as the basis for planning additional facilities within the school fleet tailored to the specific needs of each type of disability.

The most common mode of transportation used to travel to school is motorcycle (75%). The main reasons for choosing this mode are speed, convenience, and the lack of disability-friendly public transportation. However, using motorcycles for students with disabilities carries a high level of safety risk because they are not designed to accommodate the specific needs of those with disabilities. The average daily travel cost is IDR 5,000–IDR 10,000 with a travel time of 10–15 minutes. Ninety-four percent of parents/guardians (106 students) stated their willingness to switch to using disability-friendly school transportation, primarily due to the policy allowing companions to accompany them on trips.

Potential Demand Analysis

Potential demand was obtained from students currently using private vehicles and willing to switch to the disability school transportation service. Based on the OD Matrix, there were 106 potential demand points, consisting of 44 students going to SLB Negeri 1, 50 students going to SLB Negeri 2, and 12 students going to SLB Arya Satya Hati. The highest potential demand was in zone 7 (10 students), zone 8 (10 students), and zone 14 (13 students). This movement pattern served as the basis for determining the disability school transportation route.

Table 1 OD Matrix of Potential Demand for School Transportation for the Disabled (Summary by Zone)

Zone of Origin	State Special School 1	State Special School 2	Arya Satya Hati Special Needs School	Total
1	2	1	1	4
2	4	3	1	8
3	4	0	0	4
4	2	2	0	4
5	5	1	1	7
6	0	4	2	6
7	5	5	0	10
8	6	3	1	10
9	1	2	0	3
10	4	1	0	5
11	1	0	0	1
12	2	3	1	6
13	1	3	1	5
14	1	9	3	13
15	0	3	0	3
16	0	1	0	1
17	1	0	0	1
18	3	4	1	8
19	2	5	0	7
TOTAL	44	50	12	106

Route Planning with AHP Method

The best route was selected using the Analysis of Hierarchy Process (AHP) method with four main criteria: safety (weighted 46%), accessibility (29%), comfort (14%), and road performance (11%). The consistency test showed a CR value of $0.02 < 0.1$, thus the assessment was declared consistent. Of the four proposed routes evaluated, two routes were selected based on the highest weighted scores.

Table 2 School Transportation Plan Routes for Students with Disabilities in Pasuruan City

Route	Main Road Section	Underserved Schools	Length (km)	Demand
1	Jl. Ahmad Yani – Jl. Gatot Subroto – Jl. KH. Ahmad Dahlan – Jl. Gajah Mada – Jl. Margotaruno	State Special School 1 & State Special School 2	13.58	49 students
2	Jl. Soekarno Hatta – Jl. Hasanuddin – Jl. Hangtuah – Jl. Gajah Mada – Jl. Erlangga – Jl. Ahmad Dahlan	State Special School 1, State Special School 2 & Arya Satya Hati Special School	12.00	42 students

Determining Fleet Type and Additional Facilities

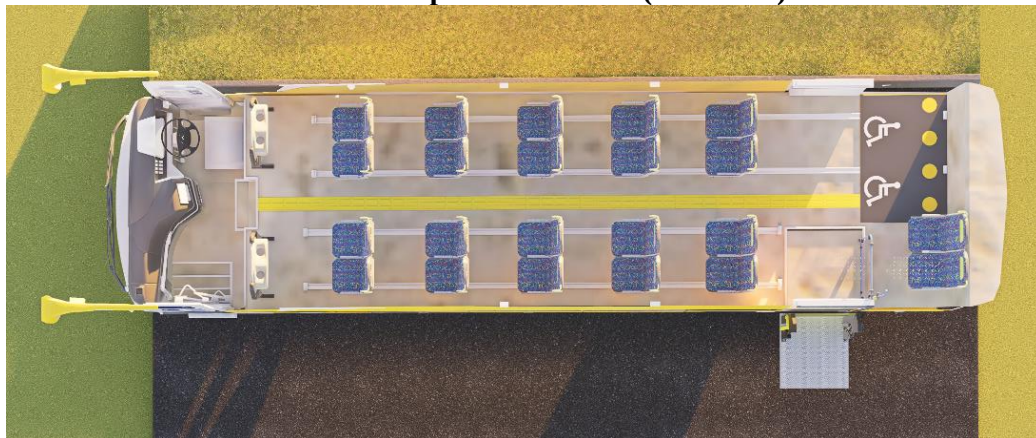
Based on an analysis of the road classes used—including arterial, collector, and local roads—the type of vehicle chosen is a medium bus in accordance with the Decree of the Director General of Land Transportation No. SK.687/AJ.206/DRJD/2002. Medium buses were chosen because they have adequate carrying capacity, are more efficient than large buses, and have a smaller impact on traffic

congestion. The planned capacity is 22 seats and 2 wheelchair spaces, assuming each student is accompanied by one parent/guardian.

Additional planned facilities include: (1) a wheelchair lift ramp for disabled students who use wheelchairs; (2) a guiding block (tactile floor) for blind students; (3) a wheelchair locking system on the vehicle floor; (4) audio visual (LCD TV + loudspeaker) as an information system for blind and deaf students; and (5) trained escort officers from the Transportation Agency. These facilities are designed in accordance with the Minister of Transportation Regulation Number 98 of 2017 concerning Accessibility in Public Transportation Services for Service Users with Special Needs.



Picture 1 Proposed Fleet Plan (Side View)



Picture 2 Proposed Fleet Plan (Top View)

Transportation Operational Performance

The operating hours for the school transportation for disabled people are set for the morning shift (5:20–7:20 WIB) and the afternoon shift (12:00–14:00 WIB), adjusted to the arrival and departure times of the special needs school (8:00 and 12:00 WIB). The planned speed is set at 40 km/h based on the road function. The load factor is planned at 100% for fleet efficiency and to ensure all student requests are met.

Table 3 Summary of Operational Performance of School Transportation for the Disabled

Parameter	Route 1	Route 2
Length of Route AB (km)	13.58	12.00
AB Travel Time (minutes)	20.38	18.00
Circulation Time (minutes)	53.19	45.23
Planned Headway (minutes)	30	35
Frequency (vehicles/hour)	2	2
Number of Trips/Day	4	4

Parameter	Route 1	Route 2
Number of Fleet (units)	2	2
Km Traveled/Day (km)	108.7	96.0

The calculations show that each route requires two buses, resulting in a total fleet requirement of four. The operational schedule is designed with two trips per shift per route. The 30–35 minute headway takes into account longer boarding and alighting times for students with disabilities and accessibility needs, in accordance with international recommendations for inclusive transportation practices.

Vehicle Operating Costs and Financing

The BOK calculation is based on the Decree of the Director General of Land Transportation Number KP.792/AJ.205/DRJD/2021, which includes direct costs (fleet investment, operations and maintenance, vehicle crew, facility improvements, passenger insurance, monitoring systems) and indirect costs (management). The price of a new vehicle (medium bus) is set at IDR 768,820,000 per unit based on the Pasuruan City unit price standard for the 2026 Fiscal Year.

Table 4 Summary of Vehicle Operational Costs (BOK) for School Transportation for the Disabled

Cost Components	Route 1 (Rp/km)	Route 2 (Rp/km)
Fleet Investment Costs	5,582	6,317
Operational & Maintenance Costs	2,979	3,059
Monitoring System Costs	193	219
Vehicle Crew Costs	4,518	5.113
Facility Improvement Costs	246	278
Passenger Insurance Costs	452	554
Indirect Costs (Management)	2	2
Total BOK per Km	13,971	15,543
Total Vehicle Cost per Trip (Rp)	208,764	205.205

Based on the BOK calculation and 100% load factor with a capacity of 24 passengers, the resulting fare is Rp8,699/passenger for Route 1 and Rp8,527/passenger for Route 2. The Ability to Pay (ATP) value of the Pasuruan City community is calculated based on per capita income of Rp56,151,292/year with a 10% transportation cost allocation, resulting in an ATP of Rp10,634/trip—above the BOK fare value. Economically, this service does not require a subsidy because the ATP exceeds the fare.

However, referring to the Minister of Transportation Regulation Number 98 of 2017 which requires transportation services for people with disabilities to be provided free of charge, local governments must still allocate subsidies. Two financing scenarios are proposed: (1) Full subsidy, where the government covers all operational costs with a total subsidy of IDR 414,137,544 per year; and (2) Partial subsidy, where users are charged a fare of IDR 2,000 per person per trip so that the total subsidy is reduced to IDR 318,041,544 per year.

Table 5 Comparison of School Transportation Financing Scenarios for the Disabled

Scenario	User Rates	Subsidy/Year (Rp)	Information
Full Subsidy	Free (Rp0)	414,137,544	According to PM 98/2017; all costs are borne by the government
Partial Subsidy	Rp. 2,000/person/trip	318,041,544	Lower than public transportation fares; according to SK 967/2007

Previous research in Jember Regency (Meliana et al., 2025) showed similar results, where planning for school transportation for people with disabilities with two routes effectively served potential demand with the involvement of local government subsidies. This condition is consistent with findings in Pasuruan City, which reinforces the urgency of regional-level subsidy regulation as an instrument of inclusive transportation policy. Azzahra et al.'s (2025) research in Yogyakarta also showed that meeting the mobility needs of people with disabilities requires a different approach for each type of disability, which aligns with the design of additional facilities planned in this study.

CONCLUSION

This study concludes three main points. First, there is no special school transportation service for people with disabilities in Pasuruan City; 75% of students rely on motorbikes with high safety risks, and 94% of parents (106 people) are willing to switch to school transportation for people with disabilities. Second, two service routes are planned using medium buses with a capacity of 22 passengers and 2 wheelchair spaces, a total of 4 units of the fleet with operating hours of 05:20–07:20 (morning) and 12:00–14:00 (afternoon), headways of 30 minutes (Route 1) and 35 minutes (Route 2). Third, fares based on the BOK range from Rp8,527–Rp8,699 per passenger; however, according to regulations, the service must be provided free of charge with a total government subsidy of Rp414,137,544 per year (full subsidy) or Rp318,041,544 per year (partial subsidy, fare of Rp2,000). The Pasuruan City Regional Government needs to immediately draft subsidy regulations and realize the procurement of special vehicles for people with disabilities to fulfill the mobility and education rights of SLB students as mandated by Law Number 8 of 2016.

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