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Mathematics Learning Barriers and Collaborative Support in an Inclusive Classroom: A Case Study at a Junior High School in Kudus

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Abstract. *Research on inclusive mathematics education has often examined instructional barriers and individual forms of support separately, while the coordination of support around a student with a physical disability remains less clearly described. This study aims to describe the mathematics learning barriers experienced by a student with a physical disability in an inclusive classroom and to analyze collaborative support from the teacher, parents, and peers in addressing these barriers. The study employed a descriptive qualitative approach with a case study design at an inclusive junior high school in Kudus. Data were obtained through observation, an interview with a teacher, and documentation. Data trustworthiness was examined through credibility, transferability, dependability, and confirmability, while data were analyzed using the Miles and Huberman model, which includes data reduction, data display, and conclusion drawing and verification. The findings show that the student experienced mathematics learning barriers related to mobility, motor activities, visual access, conceptual understanding, assessment, and social participation. Teacher support was reflected in learning assistance, seating arrangements, and emotional reinforcement. Parental support included transportation, support for daily needs, and informal communication with the teacher. Peer support included mobility assistance, motivation, and social acceptance. The findings indicate that purposeful collaborative support is needed to reduce mathematics learning barriers and strengthen the student's participation and independence in an inclusive classroom.*

Keywords: *mathematics learning barriers, inclusive classroom, collaborative support, mathematics learning, student with a physical disability.*

INTRODUCTION

Inclusive education is grounded in the view that every learner has the right to receive quality learning opportunities, including learners with disabilities. In practice, inclusion cannot be understood merely as placing students with disabilities in the same classroom as other students. Inclusion requires a learning process that enables every student to gain access, participate, and develop according to their potential and learning needs. Educational inclusion is concerned with finding ways for all children to enter and learn in school (Ainscow, 2020). In addition, inclusive education requires an education system that values diversity and reduces various barriers to student participation (UNESCO, 2020).

These needs become increasingly important in mathematics learning. Mathematics is symbolic, abstract, visual, and procedural in nature. Students need to read symbols, understand notation, follow solution steps, write answers, use tools, and explain solution strategies. In an inclusive classroom, these characteristics may present challenges for students with disabilities when materials, media, instructional pace, and assessment are not adapted to their access needs. Inclusion in mathematics education concerns not only the value of equity but also concrete ways of teaching in the classroom (Roos, 2019). Moreover, access to and participation in mathematical learning activities are central to inclusion in mathematics education (Roos, 2023).

For a student with a physical disability, mathematics learning barriers may arise from limitations in mobility, motor activities, and the use of writing instruments. When mathematics learning relies heavily on copying from the board, completing written tasks within the same amount of time, or moving to particular rooms, a student with a physical disability may experience barriers that are not necessarily related to conceptual understanding. Mathematics learning for children with special needs should consider students' abilities and characteristics so that the guidance provided is consistent with their rights and needs (Ulva & Amalia, 2020). Thus, learning barriers should be understood as the relationship between the student's condition and the design of the learning environment.

Mathematics teachers play an important role in reducing these barriers. Teachers need to understand students' learning needs, select ways of presenting material, manage time, adapt classroom activities, and conduct fair assessments. Teachers in inclusive schools require competence in inclusive learning strategies, including differentiation, classroom management, and collaborative learning (Kurniawati, 2021). Mathematics teachers also encounter difficulties in time management and adapting materials for students with special needs (Hamdany & Yuni, 2022). These findings indicate that support for a student with a physical disability cannot be placed solely on the individual teacher.

In addition to teachers, parents play an important role in inclusive learning. Parental involvement can help maintain learning continuity between school and

home. Parents can provide teachers with information about the child's needs, habits, and development outside the school environment. Parental support can also strengthen the student's emotional and academic development because assistance is not limited to school but continues at home (Musendo et al., 2023).

Peers also play an important role in supporting inclusive learning. Their presence can help students with disabilities gain social acceptance in the classroom. Peers can also help students access learning activities, particularly when mobility barriers or limitations in participating in particular activities are present. However, peer support needs to be directed so that it remains safe, does not take over the student's tasks, and continues to promote learning independence (Tuttle & Carter, 2022).

The roles of teachers, parents, and peers show that support for a student with a physical disability comes from several parties with different functions. Teachers contribute to classroom learning, parents support learning continuity and daily needs, while peers support mobility, social interaction, and acceptance in the school environment. To prevent these forms of support from operating separately, a collaboration framework is needed that connects an understanding of the student's needs, communication among parties, division of roles, implementation of support, and review of learning progress (Ní Bhroin & King, 2020). Accordingly, collaboration is understood not merely as spontaneous assistance, but as purposeful cooperation that strengthens access, participation, and progress in mathematics learning for the student with a physical disability.

Recent studies have expanded the evidence base on inclusive mathematics education. Ediyanto et al. (2023) reviewed learning strategies involving adapted media and explicit instruction for selected groups of students with special needs. Using narratives from mathematics teachers, Vodičková et al. (2023) identified responsive teaching, instructional accommodations, school–family cooperation, and institutional support as factors facilitating inclusion. Büscher and Prediger (2024) examined how mathematics teachers negotiate the dual demands of providing shared learning experiences and adaptive opportunities for individual learners. These studies clarify the importance of instructional design, but they do

not directly describe how support from teachers, families, and classmates converges around the mathematics-learning experience of one student with a physical disability.

Studies addressing disability-related access provide additional context. Esquivel et al. (2024) examined environmental factors affecting the use of assistive technology, including LEGO Mindstorms robots and computers, in mathematics lessons involving three students with physical disabilities in a controlled setting. Their findings identified both facilitators and barriers related to technology usability, student participation, time requirements, technical knowledge, and environmental conditions. Baykaldı et al. (2024) investigated mathematics teachers' experiences in teaching students with visual impairments, identifying challenges associated with inclusive instruction. A review by Shin et al. (2023) mapped research trends in technology-supported mathematics instruction for students with disabilities. Schnepel et al. (2024) examined mathematical progress among pupils with intellectual disabilities across inclusive and special-school settings; although their participants differed from the present case, the study further illustrates the importance of learning context. A systematic review of secondary-school students' perspectives likewise identified accessibility, supportive relationships, and supportive teaching practices as important conditions for inclusion (Subban et al., 2022).

Collaboration research offers a complementary perspective. Garcia-Melgar et al. (2022) highlighted the importance of effective communication, practical approaches to collaboration, and shared understanding among teachers, parents, and other professionals in supporting inclusive education. Vlcek and Somerton (2024) synthesized evidence on collaborative engagement between teachers and other members of students' support networks, while Mann et al. (2024) described communication practices that parents of students with disabilities perceived as helpful. Earlier studies also addressed teachers' instructional barriers and inclusive teaching strategies (Hamdany & Yuni, 2022; Kurniawati, 2021), parental involvement (Musendo et al., 2023), and peer support (Tuttle & Carter, 2022). Taken together, this literature examines several relevant dimensions, but the

connections among mathematics-specific access barriers and support from the teacher, parents, and peers remain insufficiently articulated within a single, contextualized case involving a student with a physical disability. To explore these connections without assuming that all actors were formally coordinated, this study uses five analytically adapted collaboration aspects—understanding the student's needs, communication among parties, division of roles, implementation of support, and review of learning progress—to examine the support reported and observed in the case.

Accordingly, this study has two objectives. First, it describes the mathematics learning barriers experienced by the student with a physical disability in an inclusive classroom. Second, it analyzes collaborative support among the teacher, parents, and peers in addressing these mathematics learning barriers. This focus is important because the success of inclusive mathematics learning is determined not only by the student's presence in the classroom, but also by the extent to which surrounding support reduces barriers and strengthens learning participation.

RESEARCH METHOD

This study employed a descriptive qualitative approach with a single-case study design. This design was selected because the study aimed to gain an in-depth understanding of the mathematics learning barriers experienced by a student with a physical disability and the support surrounding the student within a natural inclusive classroom context. The case was bounded by the student's mathematics learning experiences in one school setting, rather than by a sample intended to represent all students with physical disabilities. This focus allowed the study to examine how access-related barriers interacted with classroom practices and the support provided by the teacher, parents, and peers. Therefore, the findings were intended as a contextual interpretation of this particular case, rather than as a basis for statistical generalization.

The study was conducted at an inclusive junior high school in Kudus. At the time of the study, the focal student was the only student with a physical disability at the school. Therefore, the focus on one student reflected the actual conditions of the research setting. The student had a physical disability affecting the legs and

hands and also had limited vision. These characteristics were relevant to the study because they affected mobility, writing activities, the use of learning tools, access to visual information, and participation in mathematics learning activities.

Data were collected through observation, an interview with the student's mathematics teacher, and documentation. Observation covered the learning environment, seating arrangements, student mobility, interactions with the teacher and peers, and forms of assistance provided during school activities. The teacher interview explored mathematics teaching strategies, assessment, parental support, peer support, barriers experienced by the student, and responses that had been implemented. Documentation supplemented information about the school context and observation activities.

Data trustworthiness was examined using the qualitative trustworthiness criteria described by Sugiyono (2019). Credibility was supported through methodological triangulation of interview, observation, and documentation data related to the same research focus. Information obtained from the teacher interview was compared with observations of the school environment and available documentation. Transferability was supported by providing a detailed description of the research context, including the characteristics of the student with a physical disability, mathematics learning conditions, learning barriers, and support from the teacher, parents, and peers. Dependability was examined by reviewing the consistency among the research focus, data collection techniques, data analysis procedures, and findings. Confirmability was addressed by ensuring that the findings and conclusions were grounded in field data rather than solely in the researcher's subjective interpretations. Information that could not be confirmed through another technique was treated cautiously and was not used as the sole basis for the main conclusions.

Data were analyzed using the interactive model of Miles and Huberman (1994), which connects data collection with three analytical activities: data reduction, data display, and conclusion drawing and verification. Data were obtained through observation, an interview with the mathematics teacher, and documentation. During data reduction, the researcher selected and simplified

information related to barriers involving mobility, motor activities, visual access, mathematical conceptual understanding, assessment, and social participation, as well as support from the teacher, parents, and peers. Data unrelated to the research focus were excluded from the main analysis. During data display, the selected information was organized into narrative descriptions and tables to illustrate the relationships among learning barriers, forms of support, and required service improvements. During conclusion drawing and verification, the researcher identified patterns in the findings and re-examined their consistency with observation, interview, and documentation data. The interactive relationships among these components are illustrated in Figure 1.

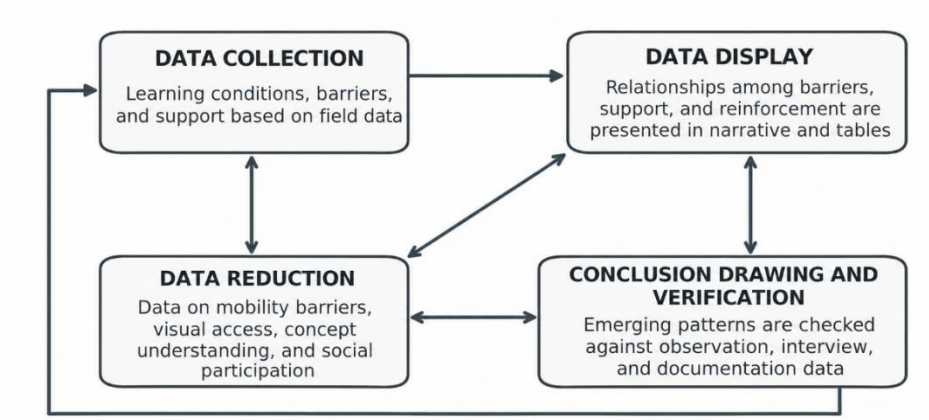


Figure 1. Interactive data analysis model applied in this study
Note. Adapted from Miles and Huberman (1992).

Research ethics were maintained by omitting the names of the student and the school. The term *student with a physical disability* was used to describe support needs relevant to learning, rather than to reduce the student's identity to a physical condition. The study was limited because the interview data primarily reflected the teacher's perspective, while the parents, student, peers, and school leaders were not interviewed directly. Therefore, the findings should be understood as a contextual description rather than a comprehensive account of all stakeholders' perspectives.

RESULT AND DISCUSSION

Result

The findings show that the student with a physical disability at an inclusive junior high school in Kudus experienced mathematics learning barriers in several

areas, namely mobility, motor activities, visual access, conceptual understanding, assessment, and social participation. These barriers were related not only to the student's physical condition, but also to the design of learning, forms of assessment, and support provided by the school environment. In mathematics learning, the student required assistance to follow learning activities, understand material, complete assignments, and continue participating in activities both inside and outside the classroom.

Motor and visual-access barriers were apparent in writing activities and in following classroom explanations. The researcher's account of classroom support included assistance with writing and front-row seating. These practices appeared to address immediate learning needs, while the study materials did not establish that a formal accommodation plan was in place.

The teacher further described the student's difficulties with writing activities during mathematics lessons:

> *"The student with a physical disability experiences difficulties in writing due to limitations affecting the hands. During mathematics lessons, the student requires assistance with writing activities and written assignments. Therefore, teachers need to provide support according to the student's abilities and learning needs."*

The teacher also identified visual limitations that could affect the student's access to mathematics learning materials:

> *"In addition to physical limitations affecting the hands and legs, the student also has visual limitations. These limitations need to be considered when the student follows classroom explanations and reads visually presented mathematics materials. Teachers need to adjust their explanations to help the student follow the lessons."*

In addition to motor and visual-access barriers, the teacher perceived the student as needing additional support in understanding mathematics material. During the interview, the teacher associated difficulty in intellectual learning with high motivation:

"The student's intellectual ability is low, but the student has high motivation. Classmates also always motivate the student, so there is no bullying."

This characterization reflects the teacher's perception and is not supported by a reported psychological or intellectual assessment. The teacher also highlighted the student's persistence in completing schoolwork:

"The student with a physical disability at this school demonstrates high motivation. The student consistently submits assignments, even though the solutions are not always correct. This shows that the student is highly motivated compared with some students without disabilities who rarely submit their assignments."

The teacher's comparison with classmates should not be treated as a measured difference in motivation. The account nonetheless suggests that learning progress should be considered alongside access conditions, effort, persistence, and the accuracy of written solutions.

Regarding assessment, the teacher reported that the same minimum mastery criterion was applied to the focal student and to other students:

"At this school, the minimum mastery criterion (KKM) is the same as for the other students."

The teacher simultaneously argued that progress should be considered in evaluating students with special needs:

"Students with special needs should be assessed based on their development, not on the grades they receive in class."

The teacher further emphasized that students with special needs should not be expected to achieve in exactly the same way as their peers (W08). The contrast between a uniform minimum mastery criterion and the teacher's stated preference for development-sensitive assessment indicates a need to consider reasonable assessment accommodations. This is an interpretation of the interview account, not an independently verified evaluation of school policy.

Teacher support included emotional encouragement and the recognition that students with disabilities may need support to feel accepted. The teacher discussed confidence and motivation in the following terms:

"Students with special needs may lack self-confidence and feel inferior to their peers, so we need to strengthen their confidence and encourage them."

The teacher also emphasized patience and acceptance in relationships with students:

"The main point is that teachers must be patient and become a second parent so the student feels that the teacher accepts the student's limitations."

In discussing inclusive education and bullying prevention, the teacher added:

"Teachers should accept students with special needs and not treat them differently from students without disabilities."

These statements describe the teacher's expectations for inclusive practice and emotional support. They do not independently establish the student's mental state or whether bullying occurred at school.

Family support was described in relation to transportation, daily needs, and informal communication with the mathematics teacher. The teacher described communication during student drop-off and pick-up as follows:

"We communicate frequently. The student with a physical disability is taken to and picked up from school by the parents. When I have free time, I discuss the student with the parents."

The teacher also reported a routine in which the parents and classmates jointly supported the student's daily needs:

"Every morning, the parents order snacks for the student. Classmates are also willing to collect the order from the canteen and deliver it to the classroom during the break."

These accounts suggest practical support for attendance and daily participation. However, they do not directly document parental assistance with mathematics homework or systematic monitoring of learning progress at home, since the parents were not interviewed.

The teacher reported that classmates helped the focal student participate in school activities, particularly those held outside the classroom. One example

concerned wheelchair assistance and transportation to a learning activity beyond school:

> *"For example, when learning takes place outside the classroom, classmates take the student using a wheelchair. The student was also once taken to the village library for an out-of-class learning activity; classmates gave the student a ride on a motorcycle and brought the wheelchair."*

Peer encouragement was also described in the teacher's account, alongside help with collecting snacks from the canteen. Although the teacher said that no bullying occurred, this remains an account from one adult informant, not a direct report from the student or peers. Additionally, transporting the student on a motorcycle raises a safety consideration; peer support should be organized to protect mobility, dignity, and independence rather than presuming that every reported practice is advisable.

The teacher recognized a need for more individualized guidance and reported that the school had not yet implemented additional classes for students with special needs. The teacher expressed an opinion about separate support:

> *"Students with special needs should receive more attention and be taught separately from other students, but this school has not implemented that."*

This is the teacher's view, not a recommendation that students should be segregated from inclusive classrooms. The teacher also suggested additional instructional time outside regular lessons:

> *"In my view, there should be special guidance, and time should be allocated for it, for example by providing additional hours outside regular class hours. Teachers also need to be persistent, patient, and careful."*

Regarding the provision of additional classes, the teacher stated:

> *"This school has not yet implemented additional classes for students with special needs."*

These statements indicate that the teacher considered supplementary individualized guidance necessary, while describing its implementation as not yet

established. Additional support can be planned within an inclusive approach without treating separation as the default response.

Overall, the findings identified barriers related to mobility, writing, visual access, conceptual learning needs, and uniform assessment. The teacher interview directly documented informal communication with parents, transportation and daily-needs support, peer assistance during activities outside the classroom, emotional encouragement, and concerns about additional guidance. The field account also described classroom assistance with writing and seating. Together, the materials point to a need for more purposeful collaboration, particularly in assessment accommodations, regular teacher-parent communication, and peer assistance that is safe and promotes independence.

Discussion

Mathematics Learning Barriers for a Student with a Physical Disability

The findings show that mathematics learning barriers for the student with a physical disability occurred in mobility, motor activities, visual access, conceptual understanding, assessment, and social participation. Mobility barriers meant that the student required assistance to reach certain learning spaces or participate in activities outside the classroom. Motor barriers meant that the student needed more time to write and complete written tasks, while limited vision made it difficult to read symbols and solution steps. In addition, barriers to conceptual understanding, standardized assessment, and the need for assistance in social activities indicate that learning barriers were not limited to cognitive ability but also involved access to the learning process.

To present the discussion systematically, the identified learning barriers and the service strengthening required in mathematics learning are summarized in Table 1.

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Table 1. Mapping of Barriers and Required Service Strengthening in Mathematics Learning

Domain	Identified Barrier	Required Service Strengthening
Mobility	Requires assistance to move between locations and participate in activities outside the classroom.	Safe mobility guidance, including wheelchair use and procedures for activities outside the classroom.
Motor activities	Difficulty writing, copying, and completing written tasks.	Reduced copying load, additional time, or alternative response formats.
Visual access	Difficulty seeing written text, symbols, and mathematical solution steps.	Enlarged learning materials, clear contrast, and easy-to-read notes.
Conceptual understanding	Requires additional support; assignments are submitted although answers are not always correct.	Special guidance, repeated explanations, formative assessment, and progress monitoring.
Assessment	The minimum mastery criterion and assessment are the same as those used for other students.	Assessment based on development, effort, and learning access.
Social participation	Requires assistance in school activities and daily needs.	Safe peer support that does not overburden peers and promotes independence.

Table 1 shows that the student's mathematics learning barriers were related not only to physical conditions but also to access to the learning environment, learning media, writing activities, forms of assessment, and opportunities to participate. In mathematics learning, access to symbols, notation, figures, tables, and solution steps is important for meaningful understanding. This interpretation is consistent with (Roos, 2019), who positions inclusion in mathematics education as both an ideology and a way of teaching. (Roos, 2023) further emphasizes that students' experiences, access, and participation are central to understanding inclusion in mathematics education.

Mobility, motor, and visual access barriers may allow a student to be physically present in the classroom without being able to participate optimally in

mathematics learning. Learning barriers should therefore be understood as the relationship between the student's needs and the learning design available in an inclusive classroom.

The findings also indicate that mathematics learning accommodations need to be planned more systematically. Such accommodations may include accessible learning materials, reduced copying demands, additional time, repeated explanations, and assessment formats that allow the student to demonstrate understanding fairly. This need is consistent with evidence that mathematics teachers in inclusive classrooms face difficulties in time management, material adaptation, and the selection of teaching strategies for students with special needs . Inclusive learning also requires teachers to use strategies that respond to differences in students' learning needs, including differentiation, classroom management, and appropriate learning support . Büscher and Prediger (2024) likewise emphasize the challenge of combining shared classroom participation with adaptive mathematics learning opportunities for individual students.

Barriers to conceptual understanding should therefore be distinguished from barriers to accessing and demonstrating understanding. A student who writes slowly, has difficulty seeing text, or requires more time to solve problems may not necessarily lack mathematical understanding. If assessment emphasizes written products completed within the same time limit, the student's score may reflect motor and visual barriers more than mathematical ability. Mathematics learning for students with special needs should therefore consider students' abilities, characteristics, and needs so that guidance is more appropriate and equitable (Ulva & Amalia, 2020). This distinction is consistent with Healy et al. (2024), who challenge deficit-based interpretations of disabled learners and emphasize relationships among learners, teaching practices, and resources in mathematical activity.

Collaborative Support from the Teacher, Parents, and Peers

Teacher support was evident in direct attention in the classroom, front-row seating, and assistance during writing. This support is important because the teacher

plays a central role in designing instruction, presenting material, organizing learning activities, and conducting assessment (CAST, 2024). Universal Design for Learning provides a useful basis for offering varied forms of representation, engagement, and expression in response to learner diversity, and research indicates that its implementation can support inclusive educational outcomes. Inclusive design should be considered from the outset rather than only after a barrier has occurred (International Disability Alliance, 2021). Teachers can therefore provide accommodations such as summaries of solution steps, enlarged text, reduced copying demands, additional time, or choices in how answers are presented. Assessment is also a matter of access and participation; inaccessible assessment can become a barrier for students with disabilities (Bank Group & Education Initiative, 2025). Inclusive learning should remain embedded in teachers' pedagogical practices when teaching diverse students (Florian & Black-Hawkins, 2011). These accommodations do not lower mathematical objectives; rather, they provide fairer opportunities for the student to demonstrate understanding.

Parental support is important for maintaining the student's attendance, security, and connection between school and home. In this case, the parents provided transportation, supported daily needs, and communicated informally with the teacher. Parental involvement in the education of children with disabilities can benefit children, families, schools, and communities (Musendo et al., 2023). However, the present data do not directly document how learning was supported at home because the parents were not interviewed. More systematic communication would allow the teacher and parents to discuss learning difficulties, appropriate assistance, and the student's independence without assuming that parental involvement is limited to task completion. The importance of accessible, constructive teacher–parent communication is also supported by Mann et al. (2024), whose evidence was obtained directly from parents; in the present case, by contrast, parental involvement was reported by the teacher.

Peer support also played a substantial role in increasing student participation. Peers assisted with mobility, wheelchair use, needs at the canteen, and participation in school activities. Peer support can increase social interaction among students

with visual impairments while maintaining their academic engagement (Tuttle & Carter, 2022). Nevertheless, peer support should be guided so that it does not create safety risks, labeling, or dependency. Before providing assistance, peers should be encouraged to ask what kind of help is needed and not take over tasks that the student can still perform.

Collaboration among the teacher, parents, and peers is important because each actor provides a different form of support. The teacher understands learning objectives and assessment, the parents understand the child's needs and daily routines at home, and peers support social access and everyday participation. When these forms of support operate independently, they may remain useful but lack direction. When they are communicated and aligned with the same goals, however, they can more effectively reduce mathematics learning barriers.

Collaboration Patterns in Learning

In this study, collaboration patterns refer to cooperation among the teacher, parents, and peers in reducing the mathematics learning barriers experienced by the student with a physical disability. The collaboration aspects were analytically adapted from an inclusive education collaboration framework that discusses communication, roles, planning, implementation, review, and parental involvement (Ní Bhroin & King, 2020). The five aspects used in this study—understanding the student's needs, communication among parties, division of roles, implementation of support, and review of learning progress—are therefore an analytical adaptation rather than a verbatim sequence proposed by the source. Effective collaboration should be directed toward the student's learning goals rather than limited to assistance provided only when difficulties arise.

These five collaboration aspects were used to examine the support patterns identified in the study. The teacher's role included understanding classroom learning barriers, adapting instruction, and monitoring learning progress. Parents provided information about the student's condition at home and supported learning continuity outside school. Peers supported the student's social activities, mobility,

and daily participation. The collaboration aspects involving the teacher, parents, and peers are presented in Table 2.

Table 2. Collaboration Aspects among the Teacher, Parents, and Peers in Inclusive Mathematics Learning

Collaboration Aspect	Meaning	Teacher Support	Parental Support	Peer Support
Understanding the student's needs	Understanding barriers as the basis for appropriate assistance.	Identifies classroom barriers and adapts learning.	Provides information about the student's condition, habits, and needs at home.	Understands the assistance needed without demeaning the student or taking over tasks.
Communication among parties	Exchange of information about progress, difficulties, and needs.	Communicates material, difficulties, and support strategies to parents.	Communicates learning progress and difficulties experienced at home.	Informs the teacher when the student needs help during classroom activities.
Division of roles	Each party's responsibility is clarified to prevent overlapping support.	Designs learning, accommodations, and assessment.	Supports learning at home and fulfills the student's daily needs.	Supports mobility, social interaction, and group work appropriately.
Implementation of support	Assistance is provided according to academic, social, and mobility needs.	Provides front-row seating, writing assistance, repeated explanations, and emotional reinforcement.	Provides transportation, prepares daily needs, and communicates informally with the teacher.	Assists with wheelchair use, provides motivation, and encourages participation.
Review of learning progress	Support is reviewed to determine its benefits for understanding, participation, and independence.	Monitors understanding, assignments, participation, and further accommodation needs.	Provides information about learning progress and independence at home.	Reports changing assistance needs while promoting independence.

Table 2 shows that collaboration begins with an understanding of the student's needs. The teacher identifies barriers in the classroom, such as difficulties writing, seeing the material, understanding solution steps, or participating in activities outside the classroom. Parents provide information about the student's condition, habits, and needs at home, while peers understand the form of assistance required without demeaning the student or taking over tasks. This understanding is important because collaboration in inclusive education should be grounded in student needs and developed through the planning, implementation, and review of support (Ní Bhroin & King, 2020).

Communication among parties is needed so that support from the teacher, parents, and peers does not operate separately. The teacher can communicate the material being studied, the difficulties that arise in class, and the assistance that should be provided at home. Parents can communicate learning progress, difficulties in supporting homework, and the student's daily needs. Parental involvement in the education of children with disabilities can be beneficial when communication and assistance are directed toward the child's needs and connect support at school and home (Musendo et al., 2023).

A division of roles is required so that assistance does not overlap or make the student dependent on one party. The teacher is responsible for designing learning, preparing accommodations, and conducting appropriate assessment. Parents maintain learning continuity at home and assist with daily needs, while peers support mobility, social interaction, and group activities in an appropriate manner. Clear roles make support more purposeful and help each party understand the boundaries of the assistance provided.

The implementation of support was reflected in front-row seating, writing assistance, repeated explanations, transportation, fulfillment of daily needs, wheelchair assistance, motivation, and social acceptance. In practice, peer support should remain safe, avoid labeling, and not take over tasks that the student can still perform. Peer support can improve social interaction and academic engagement for students with disabilities when it is designed to preserve student participation

(Tuttle & Carter, 2022). The implementation of support should therefore continue to protect the student's dignity, safety, and independence.

Reviewing learning progress is necessary to determine whether the support provided actually helps the student understand material, complete assignments, participate, and become more independent. The teacher can review progress through assignments, classroom participation, further accommodation needs, and information from the parents. Parents can provide information about changes in learning and independence at home, while peers can communicate changes in assistance needs during everyday classroom activities. Unlike approaches that discuss teacher, parental, or peer support separately, the present case shows that the principal issue was not the complete absence of support but the lack of systematic alignment among existing forms of assistance. The five-aspect framework therefore contributes an analytical structure for transforming largely reactive support into more purposeful and sustainable collaboration, while the single-case design means that this interpretation should not be generalized beyond comparable contexts without further research.

CONCLUSION

The findings show that mathematics learning barriers for the student with a physical disability in an inclusive classroom occurred in mobility, motor activities, visual access, conceptual understanding, assessment, and social participation. These barriers did not arise entirely from the student's ability to understand mathematics; they were also influenced by instructional design, media, time, assessment, and access to the learning environment. Inclusive mathematics learning should therefore distinguish conceptual barriers from access barriers so that the student's ability can be assessed more fairly.

Collaborative support from the teacher, parents, and peers helped the student with a physical disability participate in mathematics learning. The teacher provided direct instructional and emotional support, the parents supported attendance and daily needs, and peers assisted mobility and social participation. However, these forms of support need to be strengthened through purposeful communication, a

clear division of roles, instructional and assessment accommodations, and periodic review of the student's progress. Collaboration can therefore serve as an important strategy for reducing mathematics learning barriers and increasing participation when it is planned around the student's access needs and independence.

The implication of these findings is that inclusive mathematics learning should be designed by systematically considering access barriers and the student's support needs. Teachers can begin with appropriate seating, accessible learning materials, reduced copying demands, additional time, and assessment that considers the student's development. Parents should be involved in planned communication about learning and independence, while peers should be guided to provide safe support without taking over the student's tasks. These findings should be interpreted within the limitations of a single-case study and reliance on one teacher's perspective. Future research should directly involve students, parents, peers, and school leaders and examine the implementation of planned collaborative support over a longer period.

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