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# Constraints on Teachers' Understanding and Competence in Implementing Inclusive Education in Natural and Social Science Learning

Syiti Mutia Hasnan<sup>1\*</sup>, Asep Supena<sup>1</sup>, Totok Bintoro<sup>1</sup>, Riswandi<sup>1</sup>

<sup>1</sup> Faculty of Education, Jakarta State University, Indonesia.

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Corresponding Author: Syiti Mutia Hasnan syiti.mutia@mhs.unj.ac.id

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Abstract: This study aims to analyze the constraints of teachers' understanding and competence in implementing inclusive education in Natural and Social Science Learning at SDN 13 Kampung Baru, Pariaman City. This study used a descriptive qualitative approach with data collection methods in the form of in-depth interviews, classroom observations and document analysis. The research subjects consisted of five class teachers, one IPAS subject teacher, and one special assistant teacher (GPK). The results showed that 80% of teachers experienced problems in understanding the concept of inclusive education, especially related to the adaptation of IPAS materials for students with special needs. In addition, 70% of teachers admitted to having difficulties in implementing inclusive teaching methods, such as the use of appropriate learning media and experiential learning strategies. The inhibiting factors included a lack of training in inclusive education (90%), a lack of collaboration with GPK (60%) and limited supporting facilities at school (75%). This study recommends organizing intensive training to improve teachers' competencies, procuring inclusive learning media and increasing collaboration between classroom teachers and GPKs. The results of this study are expected to be a reference in developing more inclusive and effective Natural and Social Science Learning strategies in primary schools.

**Keywords:** Inclusive education; Learning constraints; Science and social learning; Teacher competencies

# Introduction

Inclusive education is an educational approach that provides equal access to all students, including students with special needs, to learn together in regular classes (Istiyati et al., 2023; Wulandari & Setiawan, 2023; Wulayalin & Suprihatiningrum, 2024). This principle emphasizes that every student deserves a learning environment that supports the optimal development of their potential (Isnaeni, 2024; Moges et al., 2025; Oshodi & Sookhoo, 2024). In Indonesia, the implementation of inclusive education has been regulated in Law No 20 of 2003 on the National Education System and strengthened through Minister of National Education Regulation No 70 of 2009. However, its implementation in the field still faces various challenges, one of which is the limited understanding and competence of teachers in implementing inclusive education, especially in complex subjects such as Natural and Social Sciences (NSP) (Desstya et al., 2024; Latifah et al., 2023; Nasution & Astuti, 2024).

Natural and Social Science Learning in primary schools aims to integrate the understanding of natural and social sciences in the context of everyday life (Dewi & Tyas, 2024; Iqbal et al., 2024; Safira et al., 2024). This subject requires interactive and experiential teaching

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methods, such as experiments, group discussions and direct observation. However, in the context of inclusive education, this approach demands more flexible adaptations so that students with special needs can actively participate. According to Bruijn-Smolders et al. (2024) effective learning should be designed to meet the individual needs of students, including those with disabilities. This is where the role of teachers becomes very important in ensuring Natural and Social Science Learning is accessible to all students (Isnaeni, 2024; Nafi'ah & Asih, 2024; Pamio et al., 2024).

Unfortunately, many teachers in Indonesia still find it difficult to understand the concept of inclusive education and how to implement it in their daily learning. Kulal et al. (2024), and Yazici et al. (2024) stated that the lack of training and supporting resources is a major obstacle for teachers in developing inclusive learning strategies. At SDN 13 Kampung Baru in Pariaman city, this obstacle is also felt. Teachers at this school face challenges in adjusting Natural and Social Science Learning materials, methods and evaluations to suit the needs of students with special needs.

Teacher competencies in inclusive education include the ability to understand the needs of students with special needs, adapt the curriculum and create a supportive learning environment. Florian et al. (2011) emphasize that the success of inclusive education relies heavily on teacher competence. However, observations show that many teachers at SDN 13 still lack confidence in managing an inclusive classroom, especially in using adaptive learning media and actively involving students with special needs.

In addition to teacher competence, other factors that influence the success of inclusive education are collaboration with special assistance teachers (GPK) and the availability of supporting facilities. According to Pov et al. (2024), strong support from GPKs can help classroom teachers develop more inclusive learning strategies. However, at SDN 13, collaboration between class teachers and GPKs is still limited, so students with special needs often do not receive optimal education services. Limited facilities such as learning media and assistive devices are also a significant barrier.

Based on this background, several important questions arise: What are the main obstacles faced by teachers in understanding the concept of inclusive education in Natural and Social Science Learning? What are the teachers' competencies in managing inclusive learning, especially in subjects that require adaptation such as IPAS? What factors influence the successful implementation of inclusive education at SDN 13 Kampung Baru in Pariaman City? By answering these questions, this research is expected to provide a clearer picture of the challenges teachers face and the solutions that can be implemented to improve the quality of inclusive education.

This study aims to explore the obstacles teachers face in understanding and implementing inclusive education in Natural and Social Science Learning at SDN 13 Kampung Baru Kota Pariaman. It also analyzes teachers' competencies in managing inclusive learning and the factors that influence its success. The results of this study are expected to provide recommendations to improve the quality of inclusive education in primary schools, especially in IPAS subjects.

## Method

This research uses a qualitative approach with a case study method, which aims to explore the constraints on teachers' understanding and competence in implementing inclusive education in Natural and Social Science Learning at SDN 13 Kampung Baru, Pariaman City (Yang et al., 2024). The focus of the research was on grades 3, 4, 5 and 6, where IPAS subjects are taught separately according to the curriculum. This research has been conducted for one month involving various data collection activities in the field. The research subjects consisted of IPAS subject teachers, class teachers, special assistant teachers (GPK), as well as regular students and students with special needs in each class. The subjects were selected purposively, based on their direct involvement in the Natural and Social Science Learning process in inclusive classrooms.

Data were collected through several techniques, including in-depth interviews with teachers to explore the obstacles they experienced, classroom observations conducted at each level to see the implementation of inclusive education firsthand, and documentation such as lesson plans, teaching materials and student evaluation results to assess curriculum adaptation. During the observation process, variations in implementation were found, reflecting different levels of difficulty between classes.

The data analysis technique in this study followed the stages proposed by Miles and Huberman, consisting of data reduction, data presentation and conclusion drawing. In the first stage, data reduction was carried out by sorting and grouping the data that had been collected based on the main themes, such as the obstacles faced by teachers in understanding inclusive education and the learning strategies applied. This process aims to simplify complex data and focus on aspects that are relevant to the research objectives.

Furthermore, the reduced data was presented in the form of descriptive narratives and tables to provide a structured picture. The presentation of this data allows comparison between classes, both in terms of the obstacles faced by teachers and the differences in approaches used at each grade level (3, 4, 5, and 6). The final stage is conclusion drawing. The resulting conclusions not only answer the research questions, but also provide insights that can be used to develop more effective learning strategies in inclusive classrooms.

## **Result and Discussion**

This study aims to identify the obstacles teachers face in understanding and implementing inclusive education in Natural and Social Science Learning in grades 3, 4, 5 and 6, analyze teachers' competencies in managing inclusive learning and explore the factors that influence its success.

# Constraints on Teachers' Understanding of Inclusive Education

Most teachers at SDN 13 Kampung Baru face obstacles in understanding the basic concepts of inclusive education. From the interviews, it was found that 80% of teachers reported experiencing difficulties in understanding the principles of inclusiveness, especially regarding the adaptation of IPAS materials for students with special needs. Grade 3 teachers, for example, stated that they were often unsure how to simplify learning materials without compromising their quality.

In contrast, only 20% of teachers felt that they had a good understanding of inclusive education but they still acknowledged difficulties in balancing the needs of regular students and students with special needs, especially at the upper grade levels such as grades 5 and 6.

The following visualization clarifies the distribution of constraints faced by teachers.



Figure 1. Percentage of teachers' constraints in inclusive education

## Teacher Competencies in Managing Inclusive Learning

Teachers' competence in managing inclusive Natural and Social Science Learning is a very important aspect. Observations show that teachers in grades 3 and 4 mostly use simple visual aids such as pictures and posters. In grade 3, the level of visual media use reached 70%, while in grade 4 it decreased to 60%.

In grades 5 and 6, the level of visual media use is even lower, only 30% and 25% respectively. Teachers in these grades admit that learning activities are more complex, such as experiments and group discussions, so students with special needs are often not actively involved. One Grade 6 teacher revealed, "We try to involve all students, but sometimes experiments become too complicated for students with special needs."

The following graph provides an overview of the different levels of visual media use between grade levels:



levels

Factors Inhibiting the Implementation of Inclusive Education

From the analysis of interviews, observations and documents, several main factors hindering the implementation of inclusive education in Natural and Social Science Learning were found:

#### Lack of Teacher Training

As many as 90% of teachers stated that they had never received formal training on inclusive education. This leads to a lack of understanding about learning methods and strategies that can support students with special needs.

#### Limited Facilities

All teachers acknowledged that learning facilities, such as visual aids and interactive media, are still very limited. The grade 4 teacher revealed, "We would like to use more aids, but the facilities at school are inadequate."

#### Lack of Collaboration with GPKs

Regular classroom teachers often feel burdened due to the lack of support from special assistant teachers (GPK). Grade 5 teachers stated that GPKs are not always present in the learning process, so classroom teachers have to handle students with special needs independently.

## Efforts Made by Teachers

Based on the research objectives, it was found that the main obstacle faced by teachers in implementing inclusive education is the lack of understanding, particularly in adapting IPAS materials for students with special needs. Teachers' competencies in managing

Table 1. Efforts Made by Teachers

inclusive learning vary; those teaching lower grades (3 and 4) tend to use more visual media, while teachers in upper grades (5 and 6) focus on discussions and experiments, which are often challenging for students with special needs to access.

Grade	Efforts
Grade 3	Teachers use visual aids such as pictures and cards to help students with special needs understand the basic
	concepts of IPAS.
Grade 4	Teachers form small learning groups that mix regular students and students with special needs, with the aim of
	improving social interaction.
Grades 5 and 6	Teachers try to involve students with special needs in group discussions and simple experiments, although the
	results are not optimal due to limited media and assistance.

The inhibiting factors include a lack of formal training, limited facilities, and insufficient collaboration with special education teachers (GPKs). These findings provide a clear depiction of the challenges teachers encounter in inclusive education and underscore the efforts being made to address these obstacles.

The results showed that the majority of teachers (80%) at SDN 13 Kampung Baru faced obstacles in understanding the concept of inclusive education, especially in integrating students with special needs into Natural and Social Science Learning. This obstacle is relevant to the theory put forward by Sharma et al. (2023), which states that the lack of formal training is one of the main obstacles for teachers in understanding and implementing inclusive education. Teachers who do not have sufficient understanding often feel hesitant in determining appropriate strategies to meet the needs of all students.

This obstacle is more evident in grades 5 and 6, where Natural and Social Science Learning is more complex than in grades 3 and 4. This finding is supported by Florian et al. (2011) research, which states that implementing inclusive education is more challenging in subjects that require high adaptability, such as science. At SDN 13, teachers often find it difficult to develop inclusive learning methods, so students with special needs are often just observers in the classroom. This suggests the need for intensive training to help teachers understand the principles of inclusiveness.

Teacher competence is a key factor in the success of inclusive education. According to Gagne (1984), teachers must be able to adapt learning materials and strategies to be acceptable to all students, including those with special needs. However, the results of this study found that most teachers at SDN 13 felt less competent in adjusting learning methods, especially in using visual media that are friendly to students with special needs.

Research by Loreman (2010) supports this finding, showing that teachers who do not have specialized

training tend to rely on traditional methods, which are less effective in inclusive contexts. At SDN 13, the use of visual media in grade 3 reached 70%, but in grades 5 and 6 it dropped dramatically to 30% and 25%. This decline is due to the increased complexity of learning in the upper grades, which requires more in-depth experimentation and discussion. This suggests that teachers need support in the form of training and more adaptive learning media.

The main inhibiting factors in implementing inclusive education at SDN 13 include the lack of formal training, limited facilities and the lack of collaboration between classroom teachers and special assistant teachers (GPK). Herawati (2020) emphasize that the success of inclusive education is not only determined by teacher competence but also by systemic support, including the availability of facilities and cooperation between educators.

The lack of formal training is the biggest obstacle at SDN 13. 90% of teachers stated that they had never received training on inclusive education. As a result, they tend to rely on personal experience and traditional methods, which often do not suit the needs of students with special needs. In addition, limited facilities such as visual aids and interactive media exacerbate the situation. Grade 5 teachers, for example, mentioned that "school facilities are not enough to support inclusive learning." The lack of collaboration with GPK is also a problem. Regular teachers often feel burdened because they do not get direct support from GPK in designing and implementing inclusive learning. Research by Forlin et al. (2013) shows that strong collaboration between class teachers and GPK is essential to support students with special needs, especially in complex subjects such as IPAS.

Despite facing various obstacles, some teachers at SDN 13 have tried to implement inclusive strategies. In grades 3 and 4, teachers use more visual aids such as pictures, posters and cards, which, according to Gagne (1984), are very effective in helping students understand basic concepts. This shows that teachers in the lower grades tend to be more flexible in adapting learning strategies.

In grades 5 and 6, although the challenges are greater, teachers try to involve students with special needs in group discussions and simple experiments. Research by Avramidis et al. (2002) highlights that group discussions can be an effective tool to increase the engagement of students with special needs, although it requires additional support from teachers. Teachers in Grade 6, for example, stated that they provided additional instructions to students with special needs to ensure their participation in experiments. However, these efforts are still sporadic and not well integrated. Teachers often do not have sufficient time or resources to design truly inclusive lessons. Therefore, support from the school and stronger policies are needed to ensure the success of inclusive education at SDN 13.

The results of this study have several important implications. Firstly, formal training on inclusive education should be a priority to improve teachers' understanding and competence. Florian et al. (2011) research shows that ongoing training can improve teachers' ability to design inclusive learning. Secondly, the availability of learning facilities should be improved, especially visual aids designed for students with special needs. Thirdly, collaboration between class teachers and GPK should be strengthened through a more integrated work schedule.

In addition, this research shows the need for different approaches for each grade level. In grades 3 and 4, the main focus is on simplifying the material and using visual media. Meanwhile, in grades 5 and 6, strategies should be geared towards engaging students with special needs in more complex activities such as experiments and group discussions.

## Conclusion

This study shows that the majority of teachers at SDN 13 Kampung Baru face obstacles in understanding and implementing inclusive education in Natural and Social Science Learning. The main constraints include a lack of formal training, limited learning facilities and a lack of collaboration with special assistance teachers (GPK). Teachers in grades 3 and 4 mostly use simple visual media, while in grades 5 and 6 the use of visual media decreases due to the increasing complexity of learning. Teachers' competence in adjusting learning materials and methods for students with special needs is still limited, especially in involving students in experimental activities and discussions. The inclusive efforts that have been made have not been optimal due to a lack of systemic support. The findings confirm the importance of more systematic and collaborative strategies to improve the quality of inclusive education implementation, especially in Natural and Social Science Learning, so that both regular and special needs students can benefit optimally.

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