



## Enhancing teacher competence in identifying student needs through NIMID at inclusive schools

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### ABSTRACT

Inclusive education prepares students to become global citizens who understand cultural, linguistic, and perspective diversity. This is in line with the principle of human rights, which affirms every individual's right to receive a decent education without discrimination. Inclusive education ensures that no student is neglected in the learning process. Competent teachers can create a compelling and quality learning environment. Need Identification Method Inclusive Design (NIMID) training is one way to improve understanding of inclusive education and teacher skills in designing inclusive learning programs. This study aims to measure the effectiveness of Needs Identification Method Inclusion Design (NIMID) training in improving teacher understanding. The experimental design method with a one-group pretest-posttest design was chosen to measure teacher understanding and skills. Non-parametric statistical tests with the Wilcoxon Signed-Rank Test were conducted to analyze the pretest-posttest results. The results showed that NIMID training improved teacher skills in the concept of inclusive education, identification, and assessment, and it was able to develop learning programs tailored to student's needs so that learning was optimal.

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### ABSTRAK

Pendidikan inklusif mempersiapkan peserta didik menjadi warga dunia yang memahami keberagaman budaya, bahasa, dan perspektif. Hal ini sejalan dengan prinsip hak asasi manusia yang menegaskan hak setiap individu untuk mendapatkan pendidikan yang layak tanpa diskriminasi. Pendidikan inklusif memastikan tidak ada siswa yang diabaikan dalam proses pembelajaran. Guru yang kompeten mampu menciptakan lingkungan belajar efektif dan berkualitas. Pelatihan Need Identification Method Inclusive Design (NIMID) salah satu cara untuk meningkatkan pemahaman pendidikan inklusif dan keterampilan guru dalam mendesain program pembelajaran inklusif. Penelitian ini bertujuan untuk mengukur tingkat keefektifan pelatihan Needs Identification Method Inclusion Design (NIMID) untuk meningkatkan pemahaman guru. Metode desain eksperimen dengan desain one-group pretest-posttest dipilih untuk mengukur pemahaman dan keterampilan guru. Uji non-parametric statistical dengan Wilcoxon Signed-Rank Test dilakukan untuk menganalisis hasil pretest-posttest. Hasil penelitian menunjukkan bahwa pelatihan NIMID berdampak pada peningkatan kemampuan guru dalam konsep pendidikan inklusif, identifikasi dan asesmen, serta mampu menyusun program pembelajaran yang disesuaikan dengan kebutuhan peserta didik sehingga pembelajaran menjadi optimal.

**Kata Kunci:** kompetensi guru; kebutuhan belajar peserta didik; pelatihan Need Identification Method Inclusive Design (NIMID)

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## INTRODUCTION

Inclusive education ensures every student has the same opportunity to learn and develop regardless of background, abilities, or needs. In the current era, where the values of inclusion, diversity, and equality are increasingly championed, inclusive education is becoming more important as a foundation for building an inclusive and empowered society. The importance of inclusive education is increasingly recognized, in line with the values of equality and diversity advocated in various aspects of society (Anderson & Thomas, 2022). Inclusive education emphasizes the importance of providing equal access and meaningful learning opportunities for all individuals, regardless of their background, abilities, or needs. Rapid social, technological, and economic changes have brought significant shifts in the demands on the education system. Along with that, inclusive education is becoming increasingly relevant in facing the challenges and opportunities of the current era. One important aspect is the recognition of individual diversity. Each individual has unique characteristics, needs, and potential. Inclusive education values and celebrates this diversity by providing a supportive environment for all students to develop optimally. Foundation for facing global challenges, especially in preparing students to become empathetic global citizens who understand diversity (Anderson, 2019).

Inclusion is born from the belief that all children, both children with special needs and normal children, have the right to receive education, so inclusive education is created that prioritizes student identification techniques as one way for teachers to approach their students. The concept of inclusive education with equitable education and improving school quality (Jannah et al., 2021). In facing global challenges, inclusive education must be able to adapt technology in its learning. Using technology in inclusive learning will help students prepare for future challenges like work. Inclusive learning by adapting technology can prove equality of access to information. This technology adaptation can be done with a learning approach that suits students' needs. In determining the learning method, teachers can identify students' needs (Chiu & Lim, 2020).

This learning recommendation is specifically designed to meet the unique needs of each student, including adjustments in teaching methods, assessments, and additional support as needed. Thus, identification helps ensure that the learning approach provided is relevant and effective for each child with special needs. Teachers who have mastered identification can map their students' needs. Through regular identification, schools can monitor the academic progress and achievements and the social-emotional development of children with special needs. This allows for determining the effectiveness of the provided learning program and adjusting the learning strategy if necessary. By continuously monitoring progress, schools can provide timely interventions to help children with special needs reach their full potential (Putra, 2023).

Identification also facilitates collaboration between schools, parents, and other experts supporting children with special needs development. Identification also encourages collaboration between teachers, parents, and experts, which is essential in formulating inclusive learning strategies. This collaboration creates an inclusive school atmosphere where children with special needs are valued and considered an integral part of the school community (Ní-Bhroin & King, 2020). The identification results can be the basis for constructive discussions among all parties to formulate the best strategy for supporting children's development. Thus, by integrating identification into the inclusive education approach, schools can promote an inclusive approach that views children with special needs as an integral part of the educational environment without differentiating them from other normal children. This creates an inclusive atmosphere in schools, where every child is valued and supported in achieving their potential. Identification is an evaluation process and an essential instrument in ensuring quality, inclusive education for children with special needs in the school environment (Derzhavina et al., 2021).

The reality in the field is that many teachers already have and master competencies conceptually, but the application is still lacking. Observations of primary school teachers in Sukabumi district show that the most pressing problems for primary school teachers are difficulties in mapping learning for students with special needs in the classroom because classroom learning is still classical, lack of understanding of how to handle children with special needs, difficulties in providing learning that suits students' needs, and difficulties in determining the learning needs of both normal and special needs students. Primary school teachers' understanding of inclusive education and special needs education is limited. Most teachers provide teaching by trial and error to students with special needs. If it works, they will continue. If not, they will stop (Wardah, 2019). One of the reasons for this is the lack of training on inclusive education, making it difficult for teachers to design lesson plans that suit students' needs (Mujiati & Yoenanto, 2023). Teachers need to attend more Needs Identification Method Inclusion Design (NIMID) training that explains understanding and inclusion lesson plans. Measuring teachers' abilities needs to be done before and after attending the training. This study aims to measure the effectiveness of Needs Identification Method Inclusion Design training.

## LITERATURE REVIEW

### Inclusive Education

Inclusive education is an educational approach to ensure that all students, including those with special needs, have equal opportunities to learn and participate in the same educational environment. (Bombardelli, 2020). Inclusive education requires a deep understanding of student diversity and different teaching strategies to meet those needs. However, many teachers still have a limited understanding of inclusive and special needs education (Ainscow & Miles, 2020). Teachers are often unprepared for the challenges of inclusive education due to lack of knowledge and training. Many teachers rely on trial-and-error methods, which are ineffective in identifying and meeting the needs of students with special needs. This can lead to suboptimal learning outcomes and a lack of student development. Teacher training is essential to improve understanding and competence in inclusive education (Wulandari & Hendriani, 2021).

Inclusive education emphasizes the importance of providing equal access and meaningful learning opportunities for all individuals, regardless of their background, abilities, or needs. The rapid social, technological, and economic changes have significantly impacted the demands placed on the education system (Spangenberg, 2023). Along with these changes, inclusive education is becoming increasingly relevant in responding to the challenges and opportunities in today's era. Inclusive education ensures every student has an equal opportunity to learn and develop regardless of background, abilities, or needs. In today's world, where the values of inclusion, diversity, and equality are increasingly upheld, inclusive education is increasingly important as a foundation for building a more inclusive and empowered society (Ardhika & Syaifudin, 2023).

One key aspect of this approach is recognizing individual diversity. Every individual has unique needs, abilities, and potential. Inclusive education values and celebrates this diversity by creating a supportive environment for all students to develop optimally (Krischle et al., 2019). Furthermore, inclusive education also responds to technological advances and globalization, which have expanded access to information and learning opportunities (Chiu & Lim, 2020). Artificial intelligence technology in inclusive education can support students' multisensory engagement, provide a low-risk environment, support students' learning goals, create an authentic environment that includes students with disabilities, support collaborative learning, and reinforce positive social behavior. However, the use of this technology will undoubtedly be rejected due to the high cost and the difficulty of teachers in using it (Salas-Pilco et al., 2022). In an era of increasing global connectivity, inclusive education prepares students to become global citizens, equipped to participate in a diverse world with an understanding of cultural, linguistic, and perspective diversity. The

importance of inclusive education is also reflected in human rights principles, which affirm the right of every individual to receive an adequate education without discrimination. Technology in inclusive education supports realizing this right and ensures that no student is excluded or neglected in the learning process (Asongu et al., 2019).

The implementation of inclusive education requires special attention so that children with special needs are entirely accepted in the surrounding environment (Jannah et al., 2021). Inclusive education ensures that every student, regardless of their background and special needs, has an equal opportunity for education. Inclusive education is not only about integrating students with special needs into regular classes but also about ensuring that the curriculum and teaching methods are adjusted to meet the needs of all students (Ainscow & Sandil, 2020). Effective training can help teachers understand how to identify the needs of students with special needs and design appropriate learning programs. Many teachers are interested in participating in training accompanied by work experience. The Needs Identification Method for Inclusive Design (NIMID) is an approach that can be used to improve teacher competence in identifying and meeting student needs (Musyafira & Hendriani, 2021).

### **The Need Identification Method for Inclusive Design (NIMID)**

Training is a form of increasing teacher understanding to design inclusive learning programs. Training that identifies needs and develops programs can significantly improve teacher skills and student learning outcomes. NIMID can be an effective tool to ensure that teachers understand inclusive education better. In training, teachers can discuss with other teachers to exchange information about learning methods (Onu et al., 2024; Rusmono, 2020; Santagata et al., 2021). Teacher skills in inclusive education affect the learning experiences of students with special needs and the overall learning environment. Trained teachers can create a more inclusive classroom atmosphere, facilitate better interactions among students, and encourage collaboration (Sharma et al., 2023).

Teachers' deep understanding of the learning process is crucial to achieving the desired outcomes. Although teachers possess conceptual knowledge, its practical application in the field is often less effective. Research related to training in assessment identification and inclusive education for teachers in inclusive schools has been extensively conducted. However, there are still several gaps that need to be addressed, such as: 1) Many studies emphasize the importance of identification, but few have thoroughly examined how this identification is applied in everyday classroom practice, 2) There is limited research exploring the effectiveness of training programs like the Need Identification Method Inclusive Design (NIMID) in enhancing teachers' competencies in inclusive education, 3) Training is primarily limited to local areas, resulting in uneven impacts from the training, 4) Research investigating collaboration among teachers, parents, and experts in supporting children with special needs is still very limited. There is a need to understand further how communication and collaboration can be improved (Putra, 2023).

In addition to understanding the importance of identification for students, teachers also have skills that must be mastered to integrate these abilities conceptually and comprehensively. There are eight competency standards that teachers must have. The eight competency standards include: 1) pedagogical competence, 2) professional competence, 3) personality competence, 4) social competence, 5) innovative competence, 6) managerial competence, 7) evaluative competence, and 8) cultural competence. These eight standard criteria allow teachers to become more professional in improving their abilities and developing their students' potential at school (Anggraini, 2023). The competence of skilled teachers is expected to be able to provide learning services to students appropriately and holistically. A professional teacher must monitor and carry out all stages of the learning process adequately to achieve the desired learning objectives with satisfactory results. A professional teacher must be able to carry out each stage of the learning process adequately in order to obtain satisfactory results. In addition, teachers also need

to continue to develop these competencies through training and professional reflection. This is supported by recent research showing that ongoing training significantly improves the quality of teaching in inclusive classrooms (Alan & Güven, 2022).

## METHODS

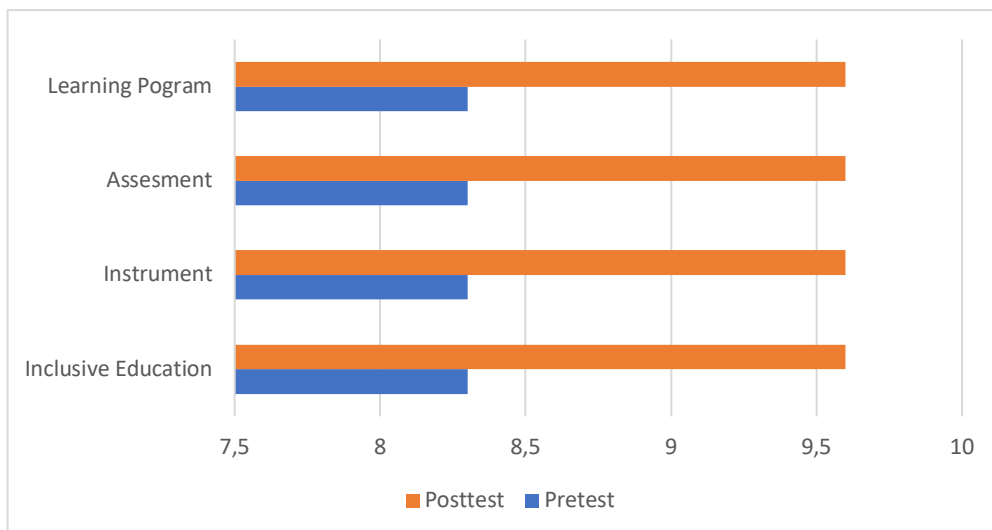
This research uses an experimental method with a one-group pretest-posttest design to understand teachers' experiences during and after participating in the NIMID training. The survey method was chosen to provide deep insights into the effectiveness of the training and how teachers can better support students with special needs. More comprehensive insights related to the training context and its impact on changes in teacher behavior and practices were provided. This study involved 30 respondents selected by purposive sampling, with the criteria of teachers who understood NIMID in Simpenan village, Pelabuhan Ratu sub-district, Sukabumi district.

The NIMID training included the provision of inclusive education materials, assessment, identification, and the practice of developing student needs-based learning plans. Teachers followed the training, which was given online, followed by hands-on practice. Before the training began, respondents were required to fill out a pretest with questions about the material being taught. After the training, a posttest was conducted by giving the same questions back to the respondents. Then, the data were analyzed using a non-parametric statistical test with the Wilcoxon Signed-Rank Test. This test is conducted to determine whether a significant difference exists between the pretest and posttest results. This difference will show the level of improvement in teacher understanding after attending the training.

## RESULTS AND DISCUSSION

### The Understanding of Inclusive Education

The understanding of inclusive education of teachers before participating in the training showed that some teachers still did not understand the concept of inclusive education. After participating in the training, NIMID showed an increase, as shown in the following graph.



**Figure 1.** The Result of Pretest and Posttest  
Source: Research 2024

From **Figure 1**, it can be seen that there is a difference in the pretest and posttest results that show an increase in the number. Therefore, further analysis was carried out to determine the significance of the increase. The results of the analysis show the following data.

**Table 1.** The Result of the Wilcoxon Sign Rank Test

		N	Mean Rank	Sum of Ranks
Posttest - Pretest	Negative Ranks	0 <sup>a</sup>	.00	.00
	Positive Ranks	4 <sup>b</sup>	2.50	10.00
	Ties	26 <sup>c</sup>		
	Total	30		

Source: Research, 2024

Based on the data analysis results, **Table 1** shows the number 0 in Negative Rank, both in N, Mean Rank, and Sum Ranks, meaning that there was no decrease from the pretest to posttest results. The positive rank number shows 4 in N, meaning four teachers experienced an increase in understanding with an average of 2.50. Furthermore, a statistical test was conducted to determine the significance of the difference in the pretest and posttest results, as follows.

**Table 2.** The Result of Statistic Test

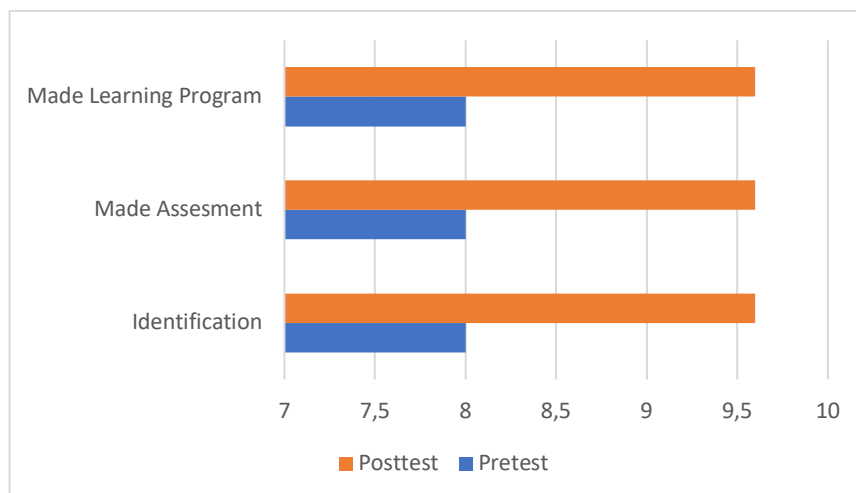
Posttest - Pretest	
Z	-2.000 <sup>b</sup>
Asymp. Sig. (2-tailed)	.046

Source: Research, 2024

From **Table 2**, it is known that the Asymp. Sig. value shows a figure of  $0.046 < 0.05$ , meaning that there is a significant difference in the pretest and posttest results. So, it can be concluded that the NIMID training attended by teachers can improve the understanding of inclusive education.

### Learning Program Design Ability

Before participating in the training, teachers had difficulty designing inclusive education learning programs. After participating in the NIMID training, it showed an increase in teacher abilities. The following is a graph of the results of the pretest and posttest:



**Figure 2.** The Result of Pretest and Posttest

Source: Research 2024

From **Figure 2**, it can be seen that there is a difference in the pretest and posttest results that show an increase in the number. Therefore, further analysis is carried out to determine the significance of the increase. The results of the analysis show the following data.

**Table 3.** The Result of the Wilcoxon Sign Rank Test

		N	Mean Rank	Sum of Ranks
Posttest - Pretest	Negative Ranks	1 <sup>a</sup>	4.50	4.50
	Positive Ranks	7 <sup>b</sup>	4.50	31.50
	Ties	22 <sup>c</sup>		
	Total	30		

Source: Research 2024

Based on the results of data analysis in **Table 3**, the negative rank shows the number 1 in N with the number 4.50 in mean rank and sum rank. The positive rank number is 7 in N, meaning that seven teachers experienced an increase in understanding, with an average of 4.50. Furthermore, a statistical test was conducted to determine the significant difference in the results of the pretest and posttest, as follows:

**Tabel 4.** The Result of Statistic Test

Posttest - Pretest	
Z	-2.121 <sup>b</sup>
Asymp. Sig. (2-tailed)	.034

Source: Research, 2024

From **Table 4**, it is known that the Asymp. Sig. value shows a figure of 0.034 < 0.05, meaning that there is a significant difference in the pretest and posttest results. Teachers can analyze the results of identifying NIMID students with special needs in their schools and provide recommendations. This allows teachers to develop learning programs that comprehensively meet the needs of their students. It can be concluded that the NIMID training attended by teachers can improve teachers' abilities in identifying student needs and designing inclusive education learning programs and appropriate assessments.

## Discussion

The results of the post-study study showed an increase in teachers' understanding of key concepts of inclusive education and identification of students with special needs. Furthermore, teachers wanted to develop learning modules according to students' needs. Before the training, most teachers admitted to having a limited understanding of special needs identification or feeling less confident implementing it. Teachers who attended the training showed a change in understanding and skills in conducting identification assessments and developing programs for children with special needs in inclusive schools. Before attending the training, teachers were asked questions about their understanding and skills in NIMID. Most teachers only knew a little, were essential, or did not fully understand identification. After being given identification training using NIMID, the responses were very diverse, ranging from understanding their students, understanding the concept, wanting to know how to create teaching modules that are appropriate to student's needs, and so on. Thus, it can be concluded that with the NIMID training there was an increase in teachers' understanding and skills.

The results of the study showed that NIMID instrument-based training had a significant impact on improving teacher competence in inclusive education. In addition to improving cognitive aspects such as understanding concepts, there is a more crucial improvement in the practical aspect, namely the ability of teachers to identify student needs periodically and develop appropriate learning programs. The importance of training is focused on identifying student needs to increase the effectiveness of inclusive education (Salmitri et al., 2021). The understanding and skills of inclusive school teachers for identification and assessment using the NIMID method have reached the planned target. Targeted and continuous teacher training is essential to realize higher quality inclusive education in the future (Loreman, 2023), where inclusive education ensures that all students, including students with special needs, have equal opportunities to pursue education and get equal access to learning (Ainscow, 2020; Göransson & Nilholm, 2022; Kefallinou et al., 2020).

The study results showed increased practical skills in teachers' use of the NIMID instrument to identify, formulate recommendations, and design appropriate learning programs. Usually, inclusive education learning programs are designed only by teachers who are not experts. After attending the training, teachers can develop effective programs for students (Rafikayati et al., 2019). The programs developed complied with the principles of inclusion and improved responses to student needs. Overall, this study shows that NIMID training has improved teachers' ability to identify and develop more effective inclusive learning programs, supporting the education of students with special needs following existing inclusive education standards. Teachers can compile instruments, determine priorities in designing learning programs based on the results of identification and assessment using the NIMID instrument, and create learning programs according to the needs of students.

Teachers' understanding of the identification and assessment process is essential in inclusive education. Assessments not only help in monitoring student progress but also allow teachers to make adjustments in their teaching strategies based on the data obtained. These assessments are carried out continuously and help make decisions to meet the dynamic learning needs of students with special needs (Florian, 2021). Teachers who have participated in NIMID training can identify student needs. This ability allows them to understand the strengths and weaknesses of each student and design effective learning strategies (Florian & Spratt, 2021). Teachers can provide the necessary support for their academic and social-emotional development. Teacher competence in inclusive education ensures that students receive quality learning (Anderson & Thomas, 2022).



Figure 3. Process Development of Learning Inclusive Education Programs

Source: Research 2024

Figure 3 explains that designing an inclusive education program includes three stages: primary study, identifying student challenges and needs, and needs analysis. A primary study is conducted to collect knowledge of inclusive education that can be obtained through training, books, and policies. The identification stage is conducted to determine global educational challenges and student learning needs according to their character. A needs analysis is conducted to examine student needs and educational challenges in order to produce an effective education program. One of the learning programs that can be adapted to inclusive learning is by providing individual learning methods that focus on student



abilities. Teachers can choose a learning program that follows the results of the analysis, as understood in the training (Khaira et al., 2023; Prastiwi & Abduh, 2023).

Collaboration between teachers and ongoing training is essential to improve competence in identifying and assessing the needs of students with special needs. This improvement reflects the effectiveness of the training provided and the commitment of teachers to continue improving their skills. Improving teacher professionalism in inclusive education positively impacts students and the teachers themselves because they feel more confident and able to face various challenges in the classroom (Rosyiddin et al., 2023; Sharma et al., 2023). Improving teacher competence will impact performance in the teaching and learning process in the classroom. Teacher competence increases student motivation, positively influencing learning outcomes. The ability of teachers to design effective strategies and understand individual needs drives student engagement and success. Improving teacher competence improves scientific structures, concepts, and mindsets, leading to high-quality learning (Bali & Iriani, 2024; Cahyanti et al., 2023). Solutions include tailored training, career development, technology mastery, and tool assessments for optimal results. Teachers' involvement in improving competence will improve professional education quality (Hafizi et al., 2022; Hilmiatussadiyah et al., 2024).

## CONCLUSION

Teacher's competence in implementing inclusive education in inclusive elementary schools has increased significantly after participating in NIMID training. This increase includes understanding inclusive education theory, instruments, and assessments to identify student needs and design appropriate learning programs. Teachers' ability to identify student needs has been proven in the success of teachers in designing effective learning strategies. Quality inclusive education will undoubtedly give students the same access to learning as other students. Inclusive education is essential to ensure that every student has the same opportunity to learn and develop, regardless of their background, abilities, or needs. In the current era, inclusive education is the foundation for building an inclusive and empowered society, respecting individual diversity, and responding to technological developments and globalization. Inclusive education prepares students to participate in the global society with an understanding of cultural diversity and human rights. Identification of individual needs, especially for children with special needs, allows teachers to design appropriate learning programs and support their holistic development. Regular identification helps monitor academic and social-emotional progress and facilitates collaboration between schools, parents, and other experts. Teachers must also master eight competency standards to develop students' potential more professionally and effectively. However, many teachers still have difficulty implementing these competencies in the field and need further identification, programming, and inclusive education training. Similar research on the effectiveness of inclusive education training for teachers is expected to be conducted in each region to support achieving quality inclusive education throughout Indonesia.

## AUTHOR'S NOTE

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