Al-Ishlah: Jurnal Pendidikan
Vol.18, 4 (December, 2026), pp. 4189-4202
ISSN: 2087-9490 EISSN: 2597-940X, DOI: 10.35445/alishlah.v18i4.9665

Development of The MAKIKA Model to Enhance Teachers' Awareness of Students with Special Needs in Elementary Schools

Sri Suhartati[1], Bibin Rubini[2], Rais Hidayat[3]

[1] Universitas Pakuan Bogor, Jawa Barat, Indonesia; bundaadnan97@gmail.com
[2] Universitas Pakuan Bogor, Jawa Barat, Indonesia; bibinrubini@unpak.ac.id.
[3] Universitas Pakuan Bogor, Jawa Barat, Indonesia; rais.hidayat@unpak.ac.id.

ARTICLE INFO

Keywords:

inclusive classroom management;
MAKIKA model;
teacher awareness;
students with special needs;
educational design research

Article history:

Received 2026-02-22
Revised 2026-06-01
Accepted 2026-11-06

ABSTRACT

Inclusive elementary education requires teachers to respond effectively to students with special needs through adaptive, collaborative, and reflective classroom management. However, existing approaches often address instructional, behavioral, and collaborative dimensions separately, limiting their integration into everyday teaching practices. This study aimed to develop and evaluate the validity, practicality, and effectiveness of the MAKIKA Model (Clinical Academic Inclusive Classroom Management) in enhancing teachers' awareness toward students with special needs. This study employed a Research and Development (R&D) approach using the ADDIE framework. The research was conducted in three inclusive elementary schools in Bogor Regency, Indonesia. Development involved needs analysis, expert validation, individual evaluation, limited trials, and implementation involving 23 teachers. Data were collected through questionnaires, interviews, observations, and expert assessments, and analyzed using descriptive statistics, thematic analysis, and paired-samples t-tests. The MAKIKA Model integrated seven components: adaptive lesson planning, inclusive social interaction, classroom and behavior management, collaboration, authentic assessment, adaptive learning media, and teacher self-reflection. Expert validation indicated high feasibility, with mean scores ranging from 4.61 to 4.72. Teachers' awareness scores increased significantly from pretest (M = 98.48, SD = 10.008) to posttest (M = 142.52, SD = 8.949), $t(22) = -88.629$, $p < .001$. The findings suggest that the MAKIKA Model offers a feasible and promising integrated framework for strengthening teachers' awareness and inclusive classroom management practices. Further controlled studies are needed to establish its causal effectiveness and broader applicability

This is an open access article under the CC BY-NC-SA license.

Corresponding Author:
Sri Suhartati
Universitas Pakuan Bogor, Jawa Barat, Indonesia; bundaadnan97@gmail.com

1. INTRODUCTION

Inclusive education has become a global educational priority aimed at ensuring equal learning opportunities for all students, including students with special needs, within mainstream school environments. The implementation of inclusive education in elementary schools requires teachers to manage heterogeneous classrooms through adaptive, responsive, and collaborative learning practices. However, despite increasing policy support for inclusive education, many schools continue to experience difficulties in translating inclusive principles into effective classroom practices, particularly in managing diverse student needs within daily instructional settings (Guillemot et al., 2022).

Recent international studies have reported that teachers frequently encounter challenges related to adaptive lesson planning, differentiated instruction, classroom behavior management, collaborative practices, and authentic assessment for students with special needs. Teachers often experience uncertainty in responding to the academic, social, emotional, and behavioral diversity present in inclusive classrooms, particularly when institutional support and professional preparation remain limited. Inclusive classroom implementation therefore requires not only pedagogical adaptation, but also emotional responsiveness, collaborative engagement, reflective practice, and systematic classroom management approaches (Lindner & Schwab, 2025).

Previous studies have highlighted the importance of inclusive pedagogy, differentiated instruction, and collaborative practices in supporting students with special needs in inclusive classrooms (Florian & Black-Hawkins, 2011; Florian & Spratt, 2013; Woodcock et al., 2022). Inclusive pedagogy emphasizes extending meaningful learning opportunities to all learners rather than creating separate educational pathways for students perceived as different (Florian & Spratt, 2013).

However, many existing frameworks focus primarily on instructional adaptation and teacher preparedness while providing limited operational guidance for integrating academic, behavioral, clinical, collaborative, and reflective dimensions within daily classroom management practices (Amor et al., 2018; Dignath et al., 2022; J., 2013). Insequently, teachers often experience difficulties translating inclusive education principles into practical classroom implementation, particularly in developing countries where institutional support and professional development opportunities remain uneven (Ainscow et al., 2019; UNESCO, 2020).

In addition, existing inclusive education studies often separate pedagogical adaptation from clinical assessment and collaborative intervention processes. As a result, classroom management practices for students with special needs tend to become fragmented and insufficiently responsive to students' holistic developmental needs. This limitation indicates that many existing frameworks have not comprehensively integrated academic support, behavioral management, socio-emotional interaction, authentic assessment, adaptive learning media, collaborative engagement, and teacher reflective practice within a unified classroom management model (Moehlen et al., 2024).

The theoretical foundation of this study is based on three interconnected perspectives: inclusive pedagogy, teacher caring theory, and the clinical assessment approach. Inclusive pedagogy emphasizes that all students should actively participate in meaningful learning experiences through adaptive and flexible instructional strategies that accommodate diverse learner characteristics (Lindner & Schwab, 2025). This perspective positions teachers as facilitators who create equitable classroom participation and responsive learning environments for all students.

Furthermore, teacher caring theory highlights the importance of teachers' empathy, awareness, responsiveness, and emotional engagement in supporting students' academic and socio-emotional development. Teachers' caring attitudes significantly influence students' sense of belonging, participation, motivation, and classroom well-being, particularly among students with special needs who require additional emotional and social support within inclusive educational settings (Dignath et al., 2022).

Meanwhile, the clinical assessment approach emphasizes continuous identification, monitoring, and individualized educational support based on students' developmental characteristics and learning needs. This approach supports the implementation of authentic assessment, adaptive intervention, and

reflective educational decision-making processes in inclusive classroom practices (Moehlen, Parg, Proyer, & Kleinlein, 2025) The integration of these three theoretical perspectives provides a comprehensive foundation for developing a more holistic inclusive classroom management framework.

Despite the growing number of inclusive education studies, limited research has integrated adaptive pedagogy, behavioral management, collaborative practices, authentic assessment, adaptive learning media, and teacher reflective development into a single operational model specifically designed for inclusive elementary school settings. Existing models still tend to emphasize isolated aspects of inclusion and have not sufficiently addressed the multidimensional challenges faced by teachers in managing inclusive classrooms.

To address this gap, this study developed the MAKIKA Model (Clinical Academic Inclusive Classroom Management), an integrative inclusive classroom management framework designed to strengthen teachers' awareness and responsiveness toward students with special needs. Unlike previous inclusive classroom management frameworks, the MAKIKA Model integrates seven interconnected components, namely adaptive lesson planning, inclusive social interaction, classroom and behavior management, collaboration among teachers and parents, authentic assessment, adaptive and assistive learning media, and teacher self-reflection. The integration of clinical, academic, collaborative, behavioral, and reflective dimensions within a unified operational framework represents the primary novelty of the MAKIKA Model.

This study employed a Research and Development (R&D) approach using the ADDIE model to develop, validate, and evaluate the MAKIKA framework within inclusive elementary school settings. The study addressed the following research questions:

1. How was the MAKIKA Model developed for inclusive classroom management in elementary schools?
2. Is the MAKIKA Model valid and practical for implementation in inclusive elementary school settings?
3. Is the MAKIKA Model effective in improving teachers' awareness toward students with special needs?

2. METHODS

This study employed an Educational Design Research approach using the Research and Development (R&D) method with the ADDIE instructional design model, consisting of Analysis, Design, Development, Implementation, and Evaluation stages. The ADDIE model was selected because it provides a systematic and iterative framework for developing educational products through continuous evaluation and refinement processes (Branch, 2009). In inclusive education research, the ADDIE framework is considered suitable for designing adaptive instructional models that integrate pedagogical, behavioral, collaborative, and reflective dimensions within authentic educational settings (Molenda, 2015).

The study focused on developing, validating, implementing, and evaluating the MAKIKA Model (Clinical Academic Inclusive Classroom Management) to strengthen teachers' awareness and responsiveness toward students with special needs in inclusive elementary school settings.

The study was conducted in three inclusive elementary schools in Bogor Regency, Indonesia, namely SDS IT Amalia, SDS Nasional Plus Pelita Insani, and SDS Plus Daarul Fudlola. The research was implemented in four stages: preliminary study, one-to-one evaluation, limited trial, and large-scale implementation.

The preliminary study involved 30 teachers to identify challenges and needs related to inclusive classroom management practices. The one-to-one evaluation involved three teachers to examine the readability and comprehensibility of the MAKIKA framework. The limited trial involved eight teachers at SDS Nasional Plus Pelita Insani to evaluate the practicality and feasibility of the initial implementation. Subsequently, the large-scale implementation involved 23 teachers from SDS IT Amalia and SDS Plus Daarul Fudlola to evaluate the effectiveness of the MAKIKA Model.

Participants were selected using purposive sampling techniques because the study specifically targeted teachers actively involved in inclusive classroom practices (Creswell, 2014). The inclusion criteria included: (1) teachers actively teaching in inclusive classrooms, (2) teachers directly interacting with students with special needs, and (3) teachers willing to participate throughout the implementation stages.

This study adhered to ethical principles in educational research. Permission to conduct the study was obtained from the participating schools through an official research authorization issued by the university. All participants voluntarily agreed to participate after receiving a clear explanation of the research objectives, procedures, confidentiality measures, and intended use of the data. Informed consent was obtained from all participating teachers prior to data collection. Participants were assured that their involvement was voluntary and that they could withdraw from the study at any time without consequence. Participant anonymity and confidentiality were maintained throughout all stages of the research process (Israel & Hay, 2006).

Several instruments were employed in this study, including expert validation sheets, teacher awareness questionnaires, observation sheets, interview guidelines, and documentation records.

The expert validation process involved material experts, media/design experts, and language experts to assess the validity and feasibility of the MAKIKA Model. The material expert validation instrument consisted of 23 items covering conceptual suitability, systematic structure, relevance to students with special needs, and scientific novelty. The media/design validation instrument consisted of 21 items evaluating layout, visual clarity, readability, and media feasibility. The language validation instrument included 18 items assessing language accuracy, readability, terminology consistency, and academic language appropriateness.

The teacher awareness questionnaire was developed using a five-point Likert scale and initially consisted of 40 items. Following empirical validity testing using Pearson Product Moment correlation analysis, 32 valid items were retained for final implementation (Arikunto, 2024).

The questionnaire measured four dimensions of teachers' awareness toward students with special needs:

1. Empathy toward students with special needs
2. Inclusive attitudes
3. Responsiveness and academic support
4. Inclusive professional commitment

Sample questionnaire items included:

- *"I adapt instructional strategies according to students' individual needs."*
- *"I encourage positive interaction between students with and without special needs."*
- *"I provide additional academic assistance for students experiencing learning difficulties."*

Instrument validity was established through expert validation and empirical testing. Expert validation involved material, media/design, and language experts to evaluate content relevance, clarity, and feasibility of the MAKIKA framework and research instruments.

Empirical validity testing was conducted using Pearson Product Moment correlation analysis. Items were considered valid when the correlation coefficient exceeded the critical r-table value (Arikunto, 2024).

Instrument reliability was measured using Cronbach's Alpha coefficient to determine internal consistency reliability (Sugiyono, 2013). The questionnaire was considered reliable when the Cronbach's Alpha coefficient exceeded 0.70. Based on the validity and reliability testing results, 32 out of 40 questionnaire items were declared valid and reliable for use in the study.

Data collection was conducted throughout the ADDIE stages. During the analysis stage, preliminary surveys, classroom observations, and interviews were conducted to identify challenges in inclusive classroom management practices. The design and development stages involved constructing the MAKIKA framework, expert validation, and product revision processes.

The implementation stage consisted of one-to-one evaluation, limited trials, and large-scale implementation. Observations were conducted during classroom implementation to examine teachers' interactions, adaptive practices, classroom management strategies, and student participation. Interviews were conducted to explore teachers' experiences and perceptions regarding the implementation of the MAKIKA Model.

Classroom observations were conducted by the researcher using structured observation guidelines. Because the observations were conducted by a single researcher, inter-rater reliability analysis was not performed. To enhance credibility, observation findings were triangulated with interview data, documentation records, and expert feedback (Lincoln & Guba, 1985).

Quantitative data analysis was conducted using descriptive and inferential statistics to evaluate the effectiveness of the MAKIKA Model.

Prior to hypothesis testing, normality tests were conducted using the Kolmogorov–Smirnov and Shapiro–Wilk tests. The results indicated that both pretest and posttest data were normally distributed ($p > .05$), thereby fulfilling the assumptions for parametric testing.

A paired sample t-test was subsequently conducted to compare teachers' awareness scores before and after implementation of the MAKIKA Model (Creswell, 2014). Statistical significance was determined at $p < .05$.

The findings demonstrated significant improvement in teachers' awareness scores, with mean pretest scores increasing from 98.48 to 142.52 in the posttest phase ($t = -88.629$, $p < .001$). Effect size analysis using Cohen's d indicated an exceptionally large practical effect (Cohen's d = 18.48) of the intervention.

Qualitative data obtained from interviews, observations, field notes, and expert feedback were analyzed using thematic analysis procedures following Braun and Clarke (2006). The analysis involved data reduction, initial coding, theme categorization, interpretation, and conclusion drawing.

Trustworthiness of qualitative findings was strengthened through triangulation among observation data, interview findings, documentation records, and expert validation results. Member checking was also conducted by confirming several interview interpretations with participating teachers to ensure credibility and accuracy of the findings (Lincoln & Guba, 1985).

3. FINDINGS AND DISCUSSION

3.1. Preliminary Findings

Preliminary findings revealed several challenges in the implementation of inclusive education at the participating elementary schools. Based on surveys, interviews, and classroom observations conducted during the analysis stage, teachers experienced difficulties in managing heterogeneous classrooms and responding adaptively to the needs of students with special needs.

The findings indicated that several teachers had limited understanding of adaptive lesson planning, individualized classroom strategies, and authentic assessment for students with special needs. Teachers also reported challenges in managing disruptive classroom behaviors, facilitating inclusive social interaction, and maintaining balanced participation between students with and without special needs.

In addition, collaboration among classroom teachers, special assistant teachers, and parents had not been systematically implemented. Communication regarding students' learning progress and behavioral development was often conducted incidentally rather than through structured collaborative practices.

Classroom observations further revealed that inclusive classroom management practices were still primarily focused on academic instruction, while emotional support, behavioral guidance, and reflective teaching practices had not been optimally integrated into daily learning activities.

These preliminary findings indicate that inclusive classroom management requires a more structured and integrative framework that not only addresses instructional adaptation but also

incorporates collaborative support, authentic assessment, behavioral management, adaptive learning media, and reflective professional practices. Therefore, the MAKIKA Model was developed to address these identified challenges within inclusive elementary school settings.

3.2. Development of the MAKIKA Model

The MAKIKA Model (Clinical Academic Inclusive Classroom Management) was developed using the ADDIE framework consisting of Analysis, Design, Development, Implementation, and Evaluation stages. The development process aimed to construct a systematic and applicable inclusive classroom management model that addresses the academic, social, emotional, and behavioral needs of students with special needs in inclusive elementary school settings.

During the analysis stage, preliminary surveys, interviews, and classroom observations were conducted to identify major challenges experienced by teachers in implementing inclusive classroom practices. The findings revealed limitations in adaptive lesson planning, classroom behavior management, collaborative practices, authentic assessment, and teacher reflective practices. These findings became the foundation for developing the MAKIKA framework.

The design stage focused on constructing the conceptual structure and operational framework of the MAKIKA Model. At this stage, the model components, implementation procedures, teacher guidelines, learning strategies, and classroom management approaches were systematically organized based on inclusive pedagogy principles and classroom realities identified during the preliminary study.

In the development stage, the MAKIKA framework and supporting instruments were developed and validated by material experts, media/design experts, and language experts. Revisions were conducted based on expert feedback to improve conceptual clarity, visual presentation, language appropriateness, and practical applicability of the model.

The implementation stage consisted of one-to-one evaluation, limited trials, and large-scale implementation involving inclusive elementary school teachers. During this phase, teachers applied the MAKIKA Model in classroom settings while researchers conducted observations, interviews, and evaluations regarding implementation practicality and effectiveness.

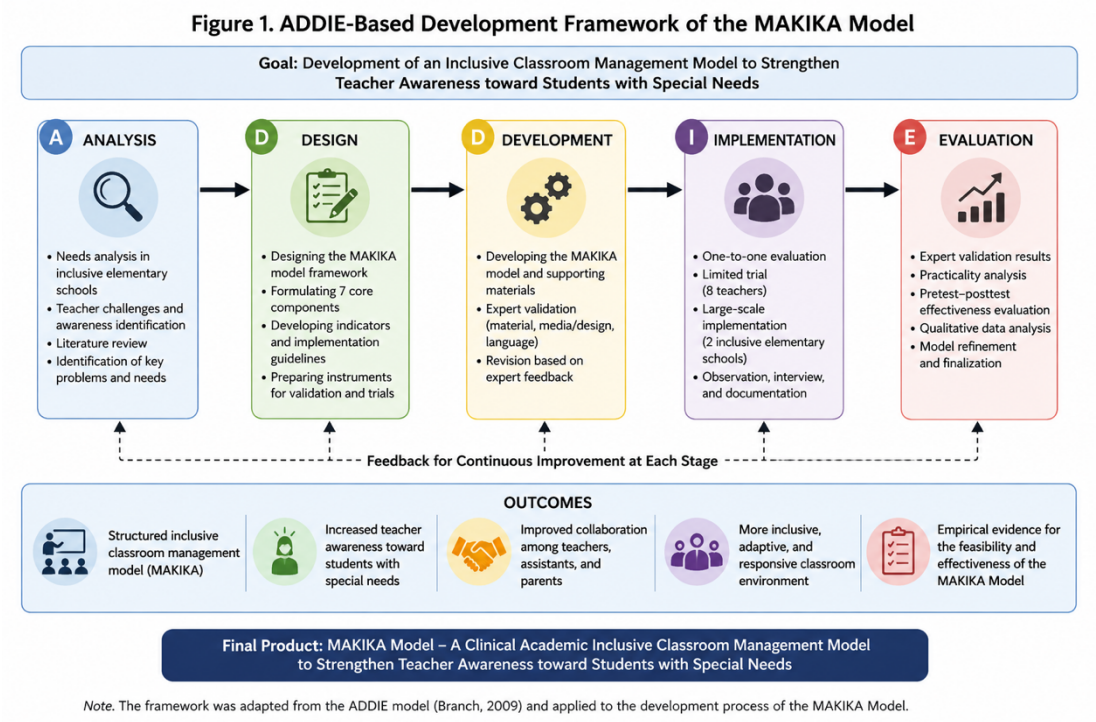
Finally, the evaluation stage involved reflective analysis and refinement of the MAKIKA Model based on quantitative and qualitative findings obtained throughout the implementation process. The evaluation results were used to improve the operational structure and applicability of the model in inclusive classroom contexts.

The development process resulted in seven core components that form the operational structure of the MAKIKA Model, namely:

1. Adaptive Lesson Planning;
2. Inclusive Social Interaction;
3. Classroom and Behavior Management;
4. Collaboration with Parents and Special Assistant Teachers;
5. Authentic Assessment for Students with Special Needs;
6. Adaptive and Assistive Learning Media; and
7. Teacher Self-Reflection.

These seven components were designed as an integrated framework to strengthen teachers' awareness, responsiveness, and professional practices in managing inclusive classrooms.

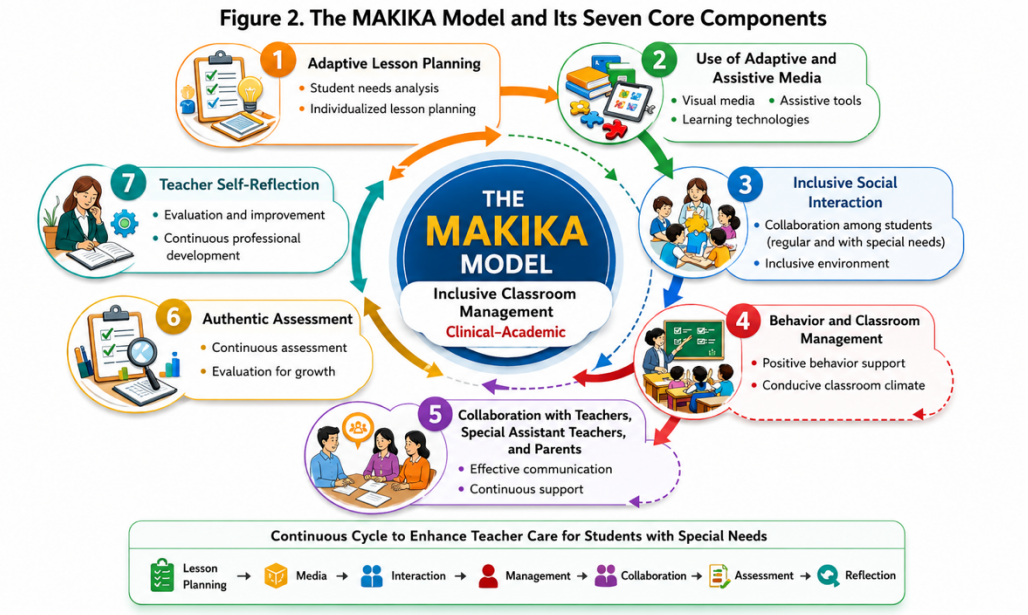
Figure 1. ADDIE-Based Development Framework of the MAKIKA Model



Note. The framework was adapted from the ADDIE model (Branch, 2009) and applied to the development process of the MAKIKA Model.

As shown in Figure 1, the MAKIKA Model was developed systematically through the ADDIE stages consisting of analysis, design, development, implementation, and evaluation. Each stage contributed to refining the operational framework of inclusive classroom management based on classroom needs, expert validation, and implementation findings.

Figure 2. The MAKIKA Model and Its Seven Core Components



Note. The MAKIKA Model integrates seven core components in a continuous and cyclical process to support inclusive classroom management and strengthen teacher awareness toward students with special needs.

Figure 2 demonstrates the seven core components integrated within the MAKIKA Model. The cyclical structure illustrates that adaptive planning, inclusive interaction, classroom management, collaboration, authentic assessment, adaptive media, and teacher self-reflection operate continuously to strengthen teachers' awareness and inclusive classroom practices.

3.3. Expert Validation Results

The MAKIKA Model underwent expert validation involving material experts, media/design experts, and language experts prior to implementation. The validation process aimed to evaluate the feasibility, clarity, relevance, and applicability of the developed model within inclusive elementary school settings.

Material expert validation demonstrated that the MAKIKA Model possessed strong conceptual relevance to inclusive classroom management practices. The model was considered capable of integrating adaptive pedagogy, classroom behavior management, collaborative support, authentic assessment, and reflective teaching practices within a structured operational framework.

Media and design experts positively evaluated the visual organization, readability, systematic layout, and presentation consistency of the MAKIKA framework. The integration of the seven MAKIKA components was considered effective in helping teachers understand the implementation procedures of inclusive classroom management practices.

Language experts also confirmed that the terminology, sentence structure, and academic language used within the MAKIKA framework were appropriate and understandable for educational practitioners. The detailed validation results are presented in Table 1.

Table 1. Expert Validation Results of the MAKIKA Model

Validation Aspect	Mean Score	Category
Material Validation	4.72	Very Feasible
Media/Design Validation	4.61	Very Feasible
Language Validation	4.68	Very Feasible

Overall, the expert validation findings indicate that the MAKIKA Model was considered highly feasible for implementation in inclusive elementary school settings.

3.4. Practicality Testing of the MAKIKA Model

The practicality of the MAKIKA Model was evaluated through one-to-one evaluation, limited trials, and large-scale implementation involving teachers from inclusive elementary schools. The practicality testing aimed to examine the clarity, usability, applicability, and responsiveness of the model within authentic classroom contexts.

During the one-to-one evaluation stage, participating teachers reported that the MAKIKA framework was understandable and applicable in inclusive classroom settings. Teachers indicated that the model provided clearer guidance for adaptive lesson planning, classroom behavior management, and interaction strategies for students with special needs. In addition, teachers considered the model components systematic and easy to follow during classroom implementation.

The limited trial conducted at SDS Nasional Plus Pelita Insani involved eight teachers actively teaching in inclusive classrooms. The findings demonstrated that the MAKIKA Model supported teachers in managing heterogeneous classrooms more systematically. Teachers reported increased confidence in responding to students' academic, social, emotional, and behavioral needs.

Furthermore, the large-scale implementation conducted at SDS IT Amalia and SDS Plus Daarul Fudlola demonstrated that the MAKIKA Model could be applied consistently across different inclusive classroom situations. Teachers reported that the model facilitated more adaptive classroom management practices and strengthened collaboration among classroom teachers, special assistant teachers, and parents.

Qualitative findings obtained through interviews, observations, and reflective documentation revealed several important implementation themes:

1. Increased teacher responsiveness toward students with special needs
2. Improved inclusive social interaction among students
3. Better classroom behavior management
4. Stronger collaboration between teachers and parents

5. Increased use of adaptive learning strategies and assistive media
6. Greater teacher self-reflection in inclusive teaching practices

The practicality findings indicate that the MAKIKA Model demonstrated promising applicability within inclusive elementary school contexts and provided structured operational guidance for teachers in implementing inclusive classroom management practices. The practicality findings across the implementation stages are summarized in Figure 3.

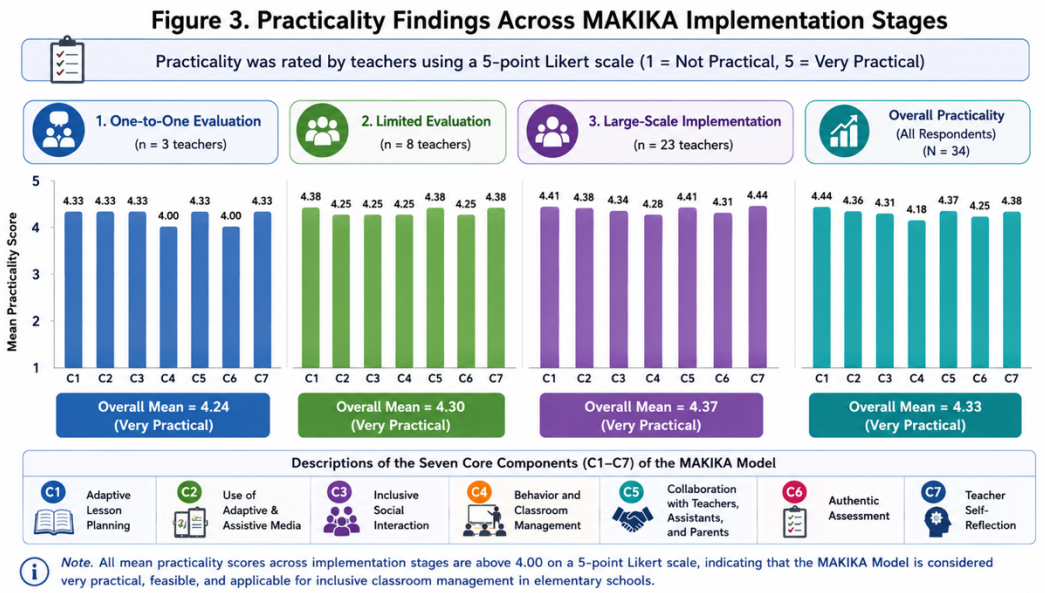


Figure 3. Practicality Findings Across MAKIKA Implementation Stages

(a) One-to-one evaluation demonstrating the clarity, readability, and comprehensibility of the MAKIKA Model for teachers

(b) Limited trial demonstrating the usability and applicability of the MAKIKA framework within inclusive classroom practices

(c) Large-scale implementation demonstrating improved teacher responsiveness, collaborative practices, and inclusive classroom management implementation.

Figure 3 illustrates the practicality findings obtained across the implementation stages of the MAKIKA Model. The results indicate that teachers perceived the model as clear, applicable, and supportive in managing inclusive classroom practices. Increased practicality was observed during broader implementation stages, suggesting improved teacher familiarity and responsiveness toward the MAKIKA framework.

3.5. Effectiveness of the MAKIKA Model

The effectiveness of the MAKIKA Model was evaluated using pretest and posttest measurements of teachers' awareness toward students with special needs. The evaluation aimed to examine whether implementation of the MAKIKA Model contributed to significant improvement in teachers' awareness, responsiveness, and inclusive classroom management practices.

Prior to hypothesis testing, normality analysis was conducted using Kolmogorov–Smirnov and Shapiro–Wilk tests. The results indicated that both pretest and posttest data were normally distributed ($p > .05$), thereby fulfilling the assumptions for parametric statistical analysis.

The quantitative findings demonstrated substantial improvement in teachers' awareness following implementation of the MAKIKA Model. As presented in Table 2, the mean pretest score was 98.48 (SD = 10.008), whereas the mean posttest score increased to 142.52 (SD = 8.949). This finding

indicates positive changes in teachers' awareness and responsiveness toward students with special needs after implementation of the MAKIKA framework.

Table 2. Pretest and Posttest Results of Teacher Awareness Scores

Measurement	Mean	SD
Pretest	98.48	10.008
Posttest	142.52	8.949

The paired sample t-test revealed a statistically significant difference between pretest and posttest scores ($t = -88.629$, $p < .001$). The confidence interval of the mean difference ranged from -45.074 to -43.013, indicating relatively stable improvement across participants.

In addition, effect size analysis using Cohen's d demonstrated a very large intervention effect (Cohen's d = 18.48), indicating substantial improvement in teachers' awareness following implementation of the MAKIKA Model. The detailed paired sample t-test results are presented in Table 3.

Table 3. Paired Sample t-Test Results

Variable	Mean Difference	T	df	Sig. (2-tailed)	95% CI
Pretest–Posttest	-44.043	-88.629	22	< .001	-45.074 to -43.013

The comparison between pretest and posttest teacher awareness scores is illustrated in Figure 4.
(a) Pretest mean score = 98.48;
(b) Posttest mean score = 142.52.

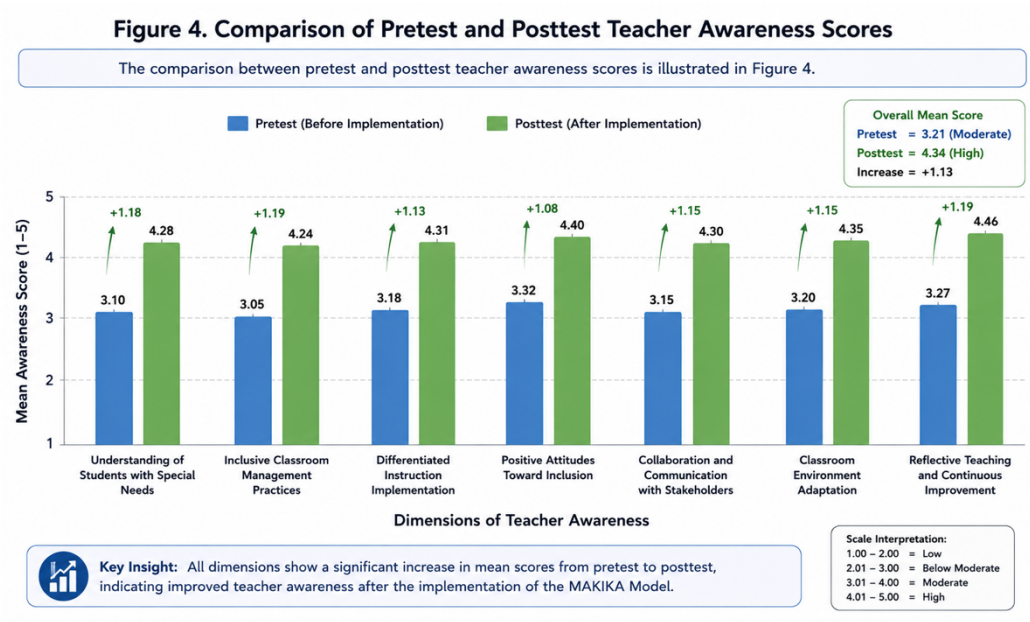


Figure 4 illustrates the comparison between teachers' pretest and posttest awareness scores following the implementation of the MAKIKA Model. The findings demonstrate consistent improvement across all dimensions of teacher awareness, including understanding of students with special needs, inclusive classroom management practices, differentiated instruction, collaborative communication, classroom adaptation, and reflective teaching practices. The increase in posttest scores indicates that the MAKIKA Model contributed positively to strengthening teachers'

responsiveness and inclusive classroom management competencies within inclusive elementary school settings. Furthermore, the results support the quantitative findings of the paired sample t-test, which showed statistically significant improvement after implementation of the MAKIKA framework.

Although the findings demonstrated statistically significant improvement, the interpretation of effectiveness should be limited to the participating inclusive elementary school contexts because the implementation involved a relatively limited number of participants. Therefore, broader implementation involving larger and more diverse educational settings is recommended for future studies.

Discussion

The findings of this study demonstrate that the MAKIKA Model contributed positively to strengthening teachers' awareness toward students with special needs within inclusive elementary school settings. The statistically significant improvement in teachers' awareness scores indicates that the integration of adaptive pedagogy, collaborative support, classroom behavior management, authentic assessment, adaptive learning media, and reflective teaching practices created a more structured and responsive inclusive learning environment. These findings support previous international studies emphasizing that successful inclusive education requires not only instructional adaptation but also teacher responsiveness, emotional engagement, and collaborative competence (Florian, 2014; Florian & Black-Hawkins, 2011; Sharma et al., 2021).

One important aspect explaining why the MAKIKA Model worked lies in its integrative operational structure. Previous inclusive classroom frameworks generally focused on isolated dimensions of inclusive practice, such as curriculum adaptation, differentiated instruction, or collaborative support separately. In contrast, the MAKIKA Model combines pedagogical, behavioral, social, emotional, collaborative, and reflective dimensions within one unified classroom management framework. This integrative approach enabled teachers to respond more comprehensively to the diverse academic and behavioral needs of students with special needs during classroom instruction. Similar findings were reported by Ainscow (2020), who emphasized that inclusive education becomes more effective when schools adopt systemic and multidimensional support structures rather than fragmented instructional interventions.

Among the seven MAKIKA components, adaptive lesson planning, collaborative practices, and teacher self-reflection appeared to contribute most significantly to implementation effectiveness. Teachers reported that adaptive lesson planning helped them modify learning activities according to students' individual learning characteristics and participation needs. This finding aligns with inclusive pedagogy theory, which emphasizes extending learning opportunities for all learners without separating students based on perceived ability differences (Florian, 2014). In addition, collaborative communication among classroom teachers, special assistant teachers, and parents strengthened consistency of support provided both inside and outside classroom settings. Previous international studies similarly found that collaborative partnerships are critical factors influencing inclusive education success and teacher preparedness (Loreman & Forlin, 2013; Sharma et al., 2021).

Teacher self-reflection also emerged as an important contributing factor within the MAKIKA framework. Reflective practices encouraged teachers to evaluate classroom interactions, identify barriers experienced by students with special needs, and continuously improve instructional responsiveness. This finding supports teacher caring theory proposed by Noddings (2013), which highlights empathy, relational awareness, and ethical responsiveness as essential foundations for inclusive educational practice. Reflective teaching practices also strengthened teachers' professional awareness regarding emotional support, classroom participation, and individualized instructional strategies. Similar findings were reported by Walton and Rusznyak (2019), who argued that reflective professional practice plays a central role in developing sustainable inclusive teaching competence.

From a theoretical perspective, the MAKIKA Model extends inclusive pedagogy theory by integrating clinical and reflective dimensions into inclusive classroom management practices.

Inclusive pedagogy traditionally emphasizes participation, accessibility, and instructional flexibility for all students within heterogeneous classrooms (Florian & Black-Hawkins, 2011). However, the MAKIKA Model expands this perspective by incorporating classroom behavior intervention, authentic assessment, adaptive and assistive learning media, collaborative partnerships, and reflective professional awareness within daily classroom management processes. Therefore, the MAKIKA Model does not merely focus on instructional inclusion but also addresses emotional responsiveness, behavioral guidance, and individualized classroom support more systematically.

The findings also demonstrate strong cultural relevance within Indonesian inclusive elementary school contexts. Inclusive education implementation in Indonesia frequently encounters challenges related to limited teacher preparation, insufficient collaborative systems, lack of operational classroom guidance, and uneven understanding of inclusive practices among educators. UNESCO (2020) highlighted that many developing countries continue to experience difficulties in translating inclusive education policy into practical classroom implementation. Within this context, the MAKIKA Model provided teachers with clearer operational guidance that aligned with classroom realities and existing school capacities. Consequently, the model demonstrated practical applicability within schools that may still face limitations in inclusive education resources and professional support systems.

Nevertheless, several implementation challenges were identified during the study. Some teachers initially experienced difficulties in adjusting instructional planning and classroom behavior management strategies to accommodate students with diverse learning characteristics. Variations in teacher experience, time limitations, classroom size, and differing levels of inclusive teaching competence also influenced implementation consistency across classrooms. These findings indicate that implementation of inclusive classroom models requires continuous professional development, institutional commitment, and collaborative school culture. Similar implementation barriers have also been identified in previous international inclusive education studies (Loreman & Forlin, 2013; Sharma et al., 2021).

Compared with previous international inclusive classroom frameworks, the MAKIKA Model demonstrates similarities in emphasizing adaptive pedagogy and collaborative support. However, its primary novelty lies in integrating academic, clinical, behavioral, collaborative, and reflective dimensions simultaneously within one operational framework specifically designed for inclusive elementary school settings. This integrative structure distinguishes the MAKIKA Model from previous frameworks that often focused primarily on curriculum adaptation or general inclusive teaching principles without providing structured operational classroom management guidance.

Although the findings demonstrated statistically significant improvement in teachers' awareness, the interpretation of effectiveness should remain limited to the participating schools because the implementation involved a relatively limited number of participants within specific educational contexts. Therefore, transferability of the findings to broader educational settings requires further investigation. Future studies are recommended to involve larger participant groups, cross-cultural educational settings, and longitudinal implementation designs to further examine the sustainability, adaptability, and effectiveness of the MAKIKA Model across diverse inclusive learning environments.

The practical implications of this study suggest that the MAKIKA Model may serve as a structured operational framework for teachers, schools, and inclusive education practitioners in strengthening adaptive, collaborative, and reflective classroom management practices for students with special needs in inclusive elementary school environments.

4. CONCLUSION

This study developed the MAKIKA Model (Clinical Academic Inclusive Classroom Management) as an inclusive classroom management framework designed to strengthen teachers' awareness toward students with special needs in inclusive elementary school settings. The findings demonstrated that

the MAKIKA Model showed promising validity, practicality, and effectiveness within the participating schools. The integration of adaptive lesson planning, inclusive social interaction, classroom behavior management, collaborative support, authentic assessment, adaptive learning media, and reflective teaching practices contributed positively to teachers' awareness and responsiveness in managing inclusive classrooms.

From a theoretical perspective, the MAKIKA Model extends inclusive pedagogy theory by integrating pedagogical, behavioral, collaborative, clinical, and reflective dimensions within one operational classroom management framework. The study also contributes to the growing body of inclusive education research by emphasizing that effective inclusive classroom practices require not only instructional adaptation but also emotional responsiveness, collaborative engagement, and reflective professional awareness. Practically, the MAKIKA Model may provide structured guidance for teachers and schools in implementing more adaptive and collaborative inclusive classroom management practices.

Nevertheless, this study has several limitations. The implementation involved a relatively limited number of participants within selected inclusive elementary schools, thereby limiting broader generalization of the findings. In addition, the effectiveness evaluation primarily focused on teachers' awareness outcomes rather than long-term student academic or behavioral outcomes. Therefore, future studies are recommended to involve larger participant groups, broader educational contexts, and longitudinal research designs to further examine the sustainability, transferability, and effectiveness of the MAKIKA Model across diverse inclusive education settings.

REFERENCES

Ainscow, M. (2020). Promoting inclusion and equity in education : lessons from international experiences experiences. *Nordic Journal of Studies in Educational Policy*, *6*(1), 7–16. https://doi.org/10.1080/20020317.2020.1729587

Ainscow, M., Slee, R., & Best, M. (2019). Editorial: The Salamanca Statement: 25 Years on. *International Journal of Inclusive Education*, 671–676. https://doi.org/10.1080/13603116.2019.1622800

Amor, A. M., Shogren, K. A., Thompson, J. R., & Burke, K. M. (2018). International Perspectives and Trends in Research on Inclusive Education: a Systematic Review. *International Journal of Inclusive Education*, 1277–1295. https://doi.org/10.1080/13603116.2018.1445304

Arikunto, S. (2024). Prosedur penelitian: Suatu pendekatan praktik. *Rineka Cipta*.

Branch, R. M. (2009). Instructional Design: The ADDIE Approach. *Springer*. https://doi.org/10.1007/978-0-387-09506-6

Braun, V. and Clarke, V. (2006). Using thematic analysis in psychol_ogy. Qualitative Research in Psychology. *UWE BRISTOL*, *3*, 77–101. http://dx.doi.org/10.1191/1478088706qp063oa Refereed:

Creswell, J. W. (2014). Research design: Qualitative, quantitative, and mixed methods approaches. *SAGE Publications, Inc.*

Dignath, C., Rimm-kaufman, S., Ewijk, R. Van, & Kunter, M. (2022). Teachers ' Beliefs About Inclusive Education and Insights on What Contributes to Those Beliefs : a Meta - analytical. In Educational Psychology Review. *Springer US.* https://doi.org/10.1007/s10648-022-09695-0

Florian, L. (2014a). *The SAGE Handbook of Special Education. Volumen 1 and 2*.

Florian, L. (2014b). *What counts as evidence of inclusive education?* (May), 286–294. https://doi.org/10.1080/08856257.2014.933551

Florian, L., & Black-Hawkins, K. (2011). Exploring inclusive pedagogy. *British Educational Research Journal*, *37*(5). https://doi.org/10.1080/01411926.2010.501096

Florian, L., & Spratt, J. (2013). Enacting inclusion: a framework for interrogating inclusive practice. *European Journal of Special Needs Education*, (May), 119–135. https://doi.org/10.1080/08856257.2013.778111

Guillemot, F., Lacroix, F., & Nocus, I. (2022). International Journal of Educational Research Open Teachers ' attitude towards inclusive education from 2000 to 2020 : An extended meta-analysis.

International Journal of Educational Research Open, *3*(May), 100175. https://doi.org/10.1016/j.ijedro.2022.100175

Israel, M., & Hay, I. (2006). Research Ethics for Social Scientists. *SAGE Publications*.

J., F. R. W. and A. (2013). A Decade of Professional Development Research for Inclusive Education: A Critical Review and Notes for a Research Program Federico. *Review of Educational Research*, *83*(3), 319–356. https://doi.org/10.3102/0034654313483905

Lincoln, Y. S., & Guba, E. G. (1985). Naturalistic Inquiry. *SAGE*, 416.

Lindner, K., & Schwab, S. (2025). *Differentiation and individualisation in inclusive education : a systematic review and narrative synthesis*. *3116*, 132238. https://doi.org/10.1080/13603116.2020.1813450

Loreman, T., & Forlin, C. (2013). Do Pre-service Teachers Feel Ready to Teach in Inclusive Classrooms ? A Four Country Study of Teaching Self-efficacy. *Australian Journal of Teacher Education*, *38*(1).

Moehlen, L., Parg, Y., Proyer, M., & Kleinlein, E. V. (2025). The role of teachers dealing with dilemma caused by the international right to inclusive education and the SEN assessment practices in Austria. *European Journal of Special Needs Education*, *40*(2), 360–377. https://doi.org/10.1080/08856257.2024.2370147

Molenda, M. (2015). In Search Of The Elusive Addie Model. *Researchgate.Net*, (Id), 40–43. https://doi.org/10.1002/pfi

Noddings, N. (2013). Caring: A Relational Approach to Ethics and Moral Education. *Univ of California Press*, 226.

Sharma, U., Sokal, L., Wang, M., & Loreman, T. (2021). Measuring the use of inclusive practices among pre-service educators : A multi-national study. *Teaching and Teacher Education*, *107*, 103506. https://doi.org/10.1016/j.tate.2021.103506

Sugiyono. (2013). Metode Penelitian Kuantitatif, Kualitatif dan R&D. *Bandung: Alfabeta.*

UNESCO. (2020). Inklusi dan Pendidikan: Semua Berarti Semua. 1–34. *Retrieved from* https://unesdoc.unesco.org/Ark:/48223/Pf0000380076_Ind

Walton, E., & Rusznyak, L. (2019). Cumulative knowledge-building for inclusive education in initial teacher education. *European Journal of Teacher Education*, 18–37.

Woodcock, S., Sharma, U., Subban, P., & Hitches, E. (2022). Teacher self-ef fi cacy and inclusive education practices : Rethinking teachers ' engagement with inclusive practices. *Teaching and Teacher Education*, *117*, 103802. https://doi.org/10.1016/j.tate.2022.103802