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THE CURRICULUM MANAGEMENT MODEL FOR INCLUSIVE SCHOOLS IN PUBLIC PRIMARY EDUCATION: A DEVELOPMENT AND EVALUATION STUDY IN BANTEN PROVINCE, INDONESIA

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ABSTRACT

Inclusive education requires a curriculum management model that is adaptive, effective, efficient, and practical to support the successful implementation of the Merdeka Curriculum in public primary schools. This study aims to develop and evaluate an inclusive school curriculum management model that is valid, practical, effective, efficient, and broadly applicable in public primary schools. Employing a research and development (R&D) approach based on Gall's model (2003), the study involved ten expert validators (educational scholars, government officials, supervisors, and principals) and fifty practitioners from six inclusive public primary schools in Serang City and Regency. Data were collected using Likert-scale questionnaires and analyzed quantitatively through descriptive statistics and paired-sample t-tests. Expert validation indicated that the model achieved an "excellent" category in readability (90.12%), practicality (88.16%), effectiveness (91.20%), and efficiency (89.50%). Implementation testing with a one-group pretest–posttest design revealed significant improvements from pretest scores ($M = 94.50$; $SD = 4.648$) to posttest scores ($M = 126.00$; $SD = 3.162$), with $p < 0.001$ and a large effect size (Cohen's $d > 0.80$). The POLCR-based curriculum management model for inclusive schools proved to be both valid and applicable in the context of public primary education, offering theoretical contributions to inclusive education management development and practical contributions to enhancing the capacity of teachers and principals.

KEYWORDS: Inclusive Curriculum Management, Merdeka Curriculum, Public Primary Schools, Educational Innovation, POLCR.

1. INTRODUCTION

Education serves as a strategic instrument for enhancing human capital, strengthening social cohesion, and building national competitiveness in the knowledge-based global era. In the 21st century, education extends beyond foundational literacy and numeracy, encompassing critical, creative, and collaborative thinking skills, as well as digital literacy competencies that are essential in addressing technological disruptions. Cross-national studies consistently demonstrate strong correlations between educational quality, economic growth, social stability, and societal well-being (Jamel et al., 2020; Heller-Sahlgren & Jordahl, 2023; Goczek et al., 2021; Kokkinopoulou et al., 2025). In alignment with global development, Sustainable Development Goals (SDGs) 4 underscores the commitment to inclusive, equitable, and quality education for all children.

Inclusive education is not merely about placing children with special needs (CWSN) in mainstream schools; it entails creating learning environments that value diversity, foster full participation, and ensure equitable access to learning opportunities (Byrne, 2019; Cologon, 2020; Kapcia, 2024; Uthus & Qvortrup, 2024). In Indonesia, the regulatory framework affirms the rights of CWSN, ranging from the 1945 Constitution (Article 31) and Law No. 20/2003 on the National Education System, to Ministerial Regulation No. 70/2009 on inclusive education. More recently, Law No. 8/2016 on Persons with Disabilities and Government Regulation No. 13/2020 reinforced the state's obligation to provide reasonable accommodations. However, significant disparities remain in practice. Data from the National Socioeconomic Survey (Susenas, 2018–2020) in figure 1 indicate that 29.61% of persons with disabilities only completed primary education, 27.74% did not finish elementary school, and only 5.12% reached higher education.

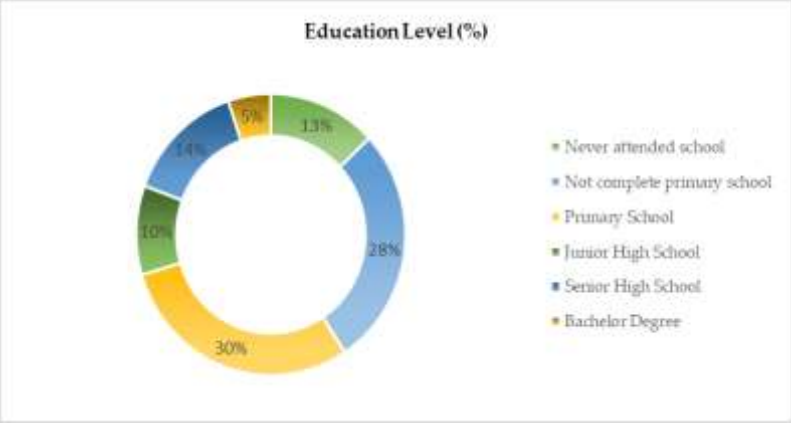

Figure 1: Education Levels of Persons with Disabilities. Source: Processed Data from Susenas, 2018–2020.

Comparative data, as illustrated in Figure 3, further emphasise the disparity: while the non-disabled population typically progresses to upper secondary and tertiary education, individuals with disabilities remain disproportionately concentrated at the primary level (Yulaswati, 2021).

Figure 2: Comparison of Final Education Levels between Persons with and without Disabilities. Source: Processed Data from Susenas, 2018–2020.

Despite strong legal commitments, the implementation of inclusive education in Indonesia continues to face challenges. First, teacher preparedness is limited. A survey of inclusive public elementary schools in Banten, such as SDN Lontar Baru, SDN Batok Bali, SDN Panancangan 1, SDN Krapyak 1, SDN Pegadingan 2, and SDN 12 Cilegon, revealed that 62.10% of teachers felt unprepared to teach CWSN, 55.63% perceived the curriculum as insufficiently adaptive, 48.43% reported inadequate facilities, and 60.94% indicated that evaluation practices were suboptimal. Second, curriculum debates persist. Scholars and practitioners question whether simple modifications to the mainstream curriculum are sufficient, or whether a distinct Individualized Education Program (IEP) is required. While some consider curriculum modification realistic, others argue that it inadequately addresses the unique needs of CWSN (Morrissey et al., 2024; Barron, 2024). Third, curriculum management is weak. In the absence of a structured approach to planning, organizing, leading, controlling, and representing (POLCR), practices tend to be sporadic, teacher-dependent, and inconsistent across schools. The issue, therefore, lies not only in the curriculum's content but also in the system of curriculum management that bridges macro-level policy with micro-level classroom practice.

Indonesian literature remains dominated by descriptive studies that map inclusive education practices, structural barriers, and societal or teacher attitudes (Sowiyah & Perdana, 2022; Muafiah et al., 2025; Kurniawati, 2021; Sunardi et al., 2024). Systematic and empirically tested models of inclusive curriculum management remain scarce. Studies consistently highlight the inadequacy of curriculum inclusivity and weak curriculum adaptation (Muafiah et al., 2025; Tamela et al., 2020; Elvira et al., 2024; Muchsin et al., 2022). By contrast, the international literature often provides strong conceptual frameworks, yet these are rarely integrated into the local context of Indonesian public primary schools (Muchsin et al., 2022). In Banten Province specifically, data from the Social Affairs Office in table 1 show a marked increase in the number of CWSN between 2021 and 2022 across most districts, rising from 4,721 to 5,558, while the number of inclusive public elementary schools remained limited (only 89 schools).

Table 1: Number of Children with Special Needs (CWSN) in Banten Province.

Regency/city	CWSN 2021	CWSN 2022	Change
Pandeglang	577	1151	+574
Lebak	153	1439	+1286
Tangerang	702	1425	+723
Kota Tangerang	1233	192	-1041
Kota Cilegon	520	241	-279
Kota Serang	56	115	+59
Kota Tangsel	163	154	-9
Total	4.721	5.558	+837
Source: Social Affairs Office of Banten Province (2021–2022)			

This mismatch between service needs and institutional capacity underscores the urgency of developing an operational, valid, and practical model of inclusive curriculum management.

Against this backdrop, the study addresses two research questions

1. How can a POLCR-based inclusive curriculum management model be developed for public primary schools in Banten?
2. To what extent is the model feasible, effective, efficient, and practical?

Accordingly, the objectives of this study are: (1) to develop a POLCR-based inclusive curriculum management model; (2) to evaluate its feasibility through expert validation; and (3) to test its effectiveness, efficiency, and practicality through field implementation. A systematic curriculum management framework is expected to enhance the consistency of inclusive education implementation, optimize resource utilization, and ensure adaptive, learner-friendly services for CWSN.

2. LITERATURE REVIEW

2.1. Inclusive Education from a Global and National Perspective

Inclusive education is defined as an effort to ensure that all children, including those with special needs, have equitable access to quality education. International frameworks such as the Convention on the Rights of Persons with Disabilities (CRPD, 2006) emphasise the obligation of states to provide inclusive education at all levels. Within Stubbs' (2012) framework, inclusion is conceptualised as an ecosystem that progresses from inclusive classrooms

to inclusive schools and, ultimately, to inclusive communities. Yet, in practice, many schools remain de facto exclusive (Wibowo & Anisa, 2017). In Indonesia, despite the presence of a comprehensive legal framework, the implementation of inclusive education still encounters substantial barriers, including a shortage of trained special needs teachers, insufficient curriculum adaptation, inadequate infrastructure, and community resistance (Sunardi et al., 2024; Kurniawati, 2021; Elvira et al., 2024). National socio-economic survey (Susenas) data from 2018–2020 demonstrate that the majority of persons with disabilities discontinue their education at the primary level, with a marked gap compared to their non-disabled peers (Yulaswati et al., 2021).

Primary education plays a strategic role in shaping children's literacy, numeracy, social skills, and emotional development (Cristóvão et al., 2020; Llorent et al., 2020; López-Cassà et al., 2021; Frogner et al., 2021). For children with disabilities, inclusive primary education not only provides academic knowledge but also facilitates socialisation, builds self-confidence, and strengthens independence (Gunarhadi et al., 2024; Benstead, 2019; Paul et al., 2022; Garg, 2024). Thus, the success of inclusive primary schools is closely tied to curriculum management that accommodates students' diverse needs.

2.2. Curriculum Management in Inclusive Primary Schools

The curriculum functions as a guiding framework for educational implementation. An inclusive curriculum requires flexible planning, adaptive implementation, and needs-based evaluation. According to Robbins and Coulter (2018), organisational effectiveness depends on "doing the right things," while efficiency depends on "doing things right." Recent studies indicate that the success of inclusive education is strongly influenced by curriculum flexibility, teachers' capacity for differentiated instruction, and school management support (Lübke et al., 2021; Wang & Zhang, 2021; Mihajlovic, 2019; Chow et al., 2023). Collaboration among classroom teachers, specialised support teachers, parents, and the community is also a decisive factor (Ubaidillah et al., 2024; Lakkala et al., 2021; Fontil et al., 2019). However, most studies remain at the conceptual level or focus on identifying challenges, without providing empirically validated curriculum management models adapted to local contexts. In inclusive schools, effectiveness is reflected in the curriculum's ability to accommodate children with special needs, while efficiency is manifested in the optimisation of school resources.

2.3. Barriers to Implementation in Indonesia and Banten

The main barriers to inclusive education in Indonesia include the shortage of specialised support teachers, inadequate infrastructure, and social resistance. In Banten Province, although Provincial Regulation No. 74 of 2014 mandates inclusive education, its implementation has not been optimal (Stiawati et al., 2017). While the number of children with special needs continues to increase annually, the number of inclusive public primary schools remains insufficient. Research indicates there are other obstacles to being accounted for, such as the limitation of pedagogical methods, the weakness of collaborative practices, and the resistance of society (Mendoza & Heymann, 2022; Abed & Shackelford, 2021; Uka, 2024; Kaur & Salian, 2024). The scarcity of infrastructures is shown in particular in the case of schools that are located in the countryside or the suburbs, where the schools are not physically accessible (Sunardi et al., 2024; Tamela et al., 2020). The curriculum also contributes to the ongoing difficulties in the instructional approaches of teachers. They are having trouble differentiating the instruction, using the cooperative learning method, and adapting the teaching methods of their learners (Kurniawati, 2021; Muafiah et al., 2025). Insufficient resources, such as a lack of competent teaching staff and adequate funding, continue to be the root of these problems (Tamela et al., 2020; Muafiah et al., 2025). In Indonesia, researchers point out that a student-centred curriculum is the main factor a successful inclusive education should come from (Rasmitadila et al., 2021; Mukminin et al., 2019). However, a lot of put-forwarded ideas are still at the level of concepts. Considering this, the present study offers the creation of an inclusive curriculum management model based on the POLCR framework which has been verified through empirical research. This underscores the need for evidence-based, context-specific models that can be directly adopted in schools.

2.4. Analysis of Management Models and POLCR Functions

Robbins and Coulter (2018) conceptualise effectiveness as "doing the right things" and efficiency as "doing things right." In the context of inclusive curriculum management, the POLCR functions, planning, organising, leading, controlling, and representing, provide an operational framework.

This framework bridges das sollen (policy ideals)

and das sein (school realities), ensuring that inclusion practices are consistent, effective, and efficient. Although the literature acknowledges the significance of curriculum flexibility and multi-stakeholder collaboration, it rarely offers operational models grounded in management functions. This study contributes by developing and empirically testing a POLCR-based model of inclusive curriculum management in public primary schools in Banten. The novelty lies in providing a systematic, context-sensitive, and measurable inclusion model with theoretical, practical, and policy contributions.

3. METHODS

3.1. Research Design

This study employed a Research and Development (R&D) approach by adapting Gall's (2003) model (Purbaningrum et al., 2024; Risnawati et al., 2024). The design was selected to meet the main objective of the research, namely to develop a POLCR-based curriculum management model for inclusive primary schools that is feasible, effective, efficient, and practical. Gall's (2003) model is considered relevant because it emphasises the integration of empirical findings into the development of educational products that can be systematically tested (Pratiwi et al., 2024; Wawan et al., 2023; Chong et al., 2025).

The research procedure consisted of the following stages: (1) Research and Analysis (Initial Stage), (2) Design and Expert Validation (Drafting), (3) Testing and Revision (Preliminary, Main Field, and Operational Trials), and (4) Final Product and Dissemination. The detailed research flow is presented in Figure 3.

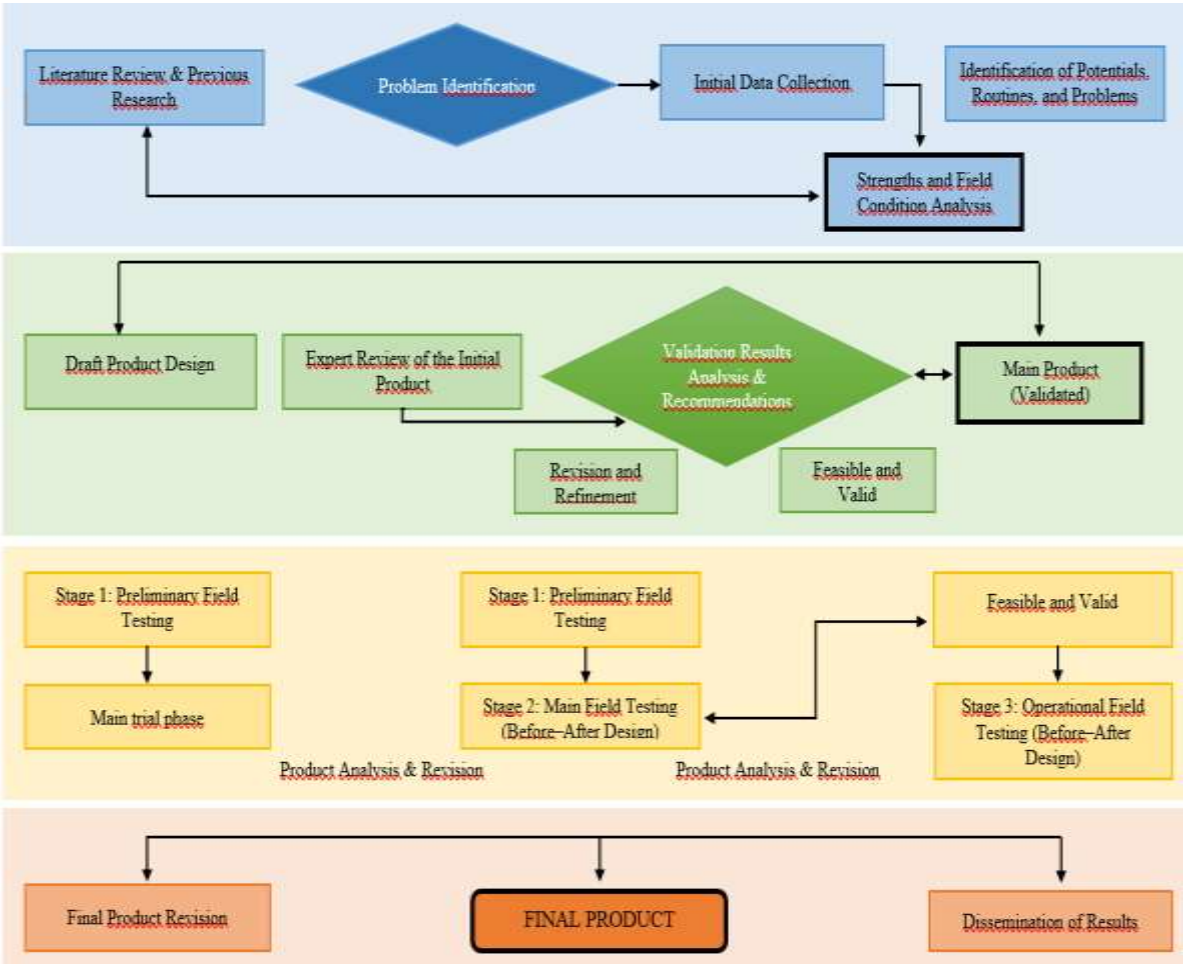

Figure 3: Research and Development Flow.

3.2. Research Subjects and Location

The research involved two main groups: an expert validation group and a field trial group. Subjects were purposively selected based on their direct involvement in inclusive curriculum implementation and their practical experience in school management. The details are presented in Table 2.

Table 2: Research Subjects at Each Stage of Product Testing.

Testing Stage	Number of Respondent	Subject Identity	Research Location
Expert Validation	10	Academics (UNY & UNS), Head of Special Education (Banten Province), Head of Curriculum (Serang City & Regency), supervisors, principals	-
Preliminary Trial	10	Principals, teachers, supervisors	SDN Pegadingan 2 (Serang City)
Main Field Trial	20	Principals, teachers, supervisors	SDN Krapyak 1 & SDN Lontar Baru (Serang City)
Operational Trial	30	Principals, teachers, supervisors	SDN Panancangan 1, SDN Batok Bali, SDN Limpar (Serang Regency)

This distribution ensured that each testing stage provided relevant and sequential input for refining the model.

3.3. Data Collection Techniques and Instruments

Data were collected using a multi-method approach. First, expert validation was conducted using a Likert scale–based instrument assessing five key dimensions: practicality, effectiveness, efficiency, systematicity, and clarity of language. Second, classroom observations were undertaken to capture the actual conditions of inclusive primary schools in relation to curriculum planning, implementation, and evaluation. Third, a document review was carried out by analysing curriculum documents, school programmes, and academic archives. Fourth, in-depth interviews with teachers, principals, supervisors, and education officials were used to obtain detailed insights into practices and barriers in inclusive curriculum implementation. Finally, a structured questionnaire was administered to measure the readability, practicality, effectiveness, and efficiency of the developed model.

All instruments were validated by subject-matter experts and tested for reliability using Cronbach's alpha to ensure internal consistency. The overall reliability coefficient was $\alpha = 0.912$, indicating excellent reliability. Subscale reliability values were as follows: practicality ($\alpha = 0.893$), effectiveness ($\alpha = 0.879$), efficiency ($\alpha = 0.884$), systematicity ($\alpha = 0.867$), and clarity of language ($\alpha = 0.895$). All values exceeded the 0.70 threshold recommended by Nunnally (1978), confirming that the instruments demonstrated strong internal consistency and were suitable for further inferential analysis.

3.4. Product Testing Procedure

The product testing was conducted in four stages. First, expert validation to evaluate the conceptual feasibility of the model. Second, a preliminary trial in one school with 10 respondents to collect initial feedback. Third, a main field trial in two schools with 20 respondents to examine the model's practicality and effectiveness. Fourth, an operational trial in three schools with 30 respondents to assess readability, efficiency, and readiness for implementation. Revisions were made after each stage to ensure that the final model was increasingly refined, valid, and applicable.

3.5. Data Analysis Product

Quantitative data from questionnaires were analysed using descriptive statistics to calculate percentages and categorise results (excellent to very bad). The criteria for interpretation are shown in Table 3.

Table 3: Assessment Percentage Categories.

Percentage	Category
81-100%	Excellent
61-80%	Good
41-60%	Moderate
21-40%	Bad
<20%	Very Bad

To test the effectiveness of the inclusive curriculum management model, this study used a paired-sample t-test with a one-group pretest–posttest design. This design was chosen because it provides an empirical picture of the changes in scores before and after the model was implemented, thereby showing the extent to which the intervention had a significant effect on improving the quality of curriculum implementation. According to Sugiyono (2019), this design is one of the quasi-experimental methods relevant to educational development research, especially when the focus of the research is to compare the initial and final conditions within the same group.

The research hypothesis was formulated in two forms. The null hypothesis (H_0) stated that there was no significant difference between the pretest and posttest scores, meaning that the application of the model did not have a significant effect. On the contrary, the alternative hypothesis (H_a) mentioned

that there was a significant distinction between the pretest and posttest scores, thus, the inclusive curriculum implementation that went on to the model application had reverted upward. The research method was identified as One-Group Pretest-Posttest, visible in Figure 4 (Sugiyono, 2019: 785).

Figure 4: One-Group Pretest–Posttest Experimental Design.

Decision-making relied on significance values (p). If $p < 0.05$, H□ was rejected and H_a was accepted, thus a significant improvement was confirmed. The findings of the paired-sample t-test gave, therefore, not only the actual statistical feasibility but also empirical validation of the model's effectiveness in improving the curriculum planning, implementation, and evaluation in inclusive primary schools.

4. RESULTS

4.1. Developed Model

The study created a public primary school curriculum management model that encompasses all students and is specifically aimed at meeting the requirements of the implementation of inclusive education. This model was formed by the integration of five main management functions: planning, organising, leading, controlling, and representing (POLCR).

As for the planning function, the model outlines an extensive evaluation and the creation of flexible educational materials that are suitable for the requirements of the special needs children. The organising function manages the distribution of roles among supervisors, principals, and teachers to ensure that the coordination is done systematically. The characteristics of the leading function describe the influence of the head of the institution on the activation of all the school elements, whereas the controlling function consists of supervision and multiple-level assessment. The representing function is achieved by a systematic documentation and reporting system covering monthly supervision, semester reports, and individual progress reports for students with special needs. The final product of this study is a model guidebook containing the theoretical rationale, legal foundations, implementation guidelines, evaluation mechanisms, and practical applications, enabling primary schools to directly utilise it in managing inclusive curricula.

4.2. Model Visualisation

To clarify the model's implementation flow, a visual representation was developed in the form of a chart illustrating the interrelationships among the management functions: planning → organising → leading → controlling → representing (POLCR). This visualisation assists users in understanding both the sequence of implementation steps and the interactions among components in inclusive curriculum management. The relationship between these functions is illustrated in Figure 5, which depicts the final POLCR-based inclusive school curriculum management model.

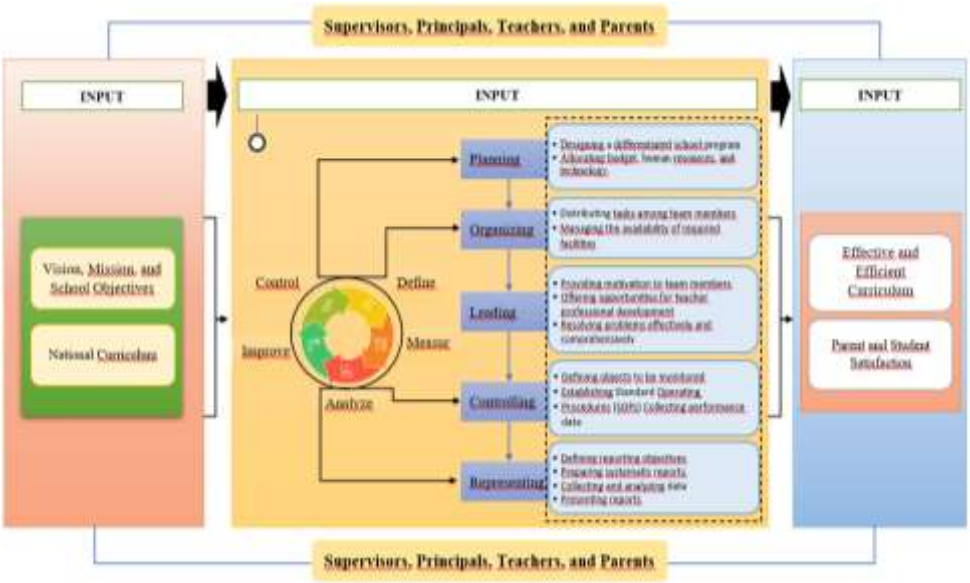

Figure 5: Final POLCR-based Inclusive School Curriculum Management Model.

The POLCR framework Planning, Organizing, Leading, Controlling, and Representing was systematically adapted to reflect the values and operational needs of inclusive education.

- In the Planning phase, curriculum design incorporated differentiated instruction and Individualized Education Plans (IEPs) to accommodate diverse learning needs.
- Organizing emphasized collaborative roles among teachers, special education coordinators, and external stakeholders to ensure equitable learning support.
- Leading highlighted transformational leadership practices that promote inclusivity and empathy among school staff.
- Controlling involved not only performance monitoring but also continuous feedback mechanisms for inclusive pedagogical practices.
- Finally, Representing extended beyond administrative reporting to include advocacy roles where school leaders act as mediators between policy mandates and the unique realities of inclusive classrooms.

This adaptation transforms POLCR from a traditional management cycle into a participatory and value-driven governance model aligned with inclusive education principles.

4.3. Product testing and Expert Validation Results

The final product is a guidebook on the POLCR-based inclusive school curriculum management model underwent internal validation involving ten education experts and practitioners, including academics, government officials, supervisors, and school principals. The validation covered seven major aspects: practicality, effectiveness, efficiency, model content description, physical appearance, writing structure, and language.

The assessment results indicate that all aspects achieved scores in the Excellent category, confirming that the model meets both conceptual and technical feasibility standards. Details are presented in Table 4.

Table 4: Expert Validation Percentage Results.

No	Component	Percentage	Category
1	Practicality	91.6	Highly Acceptable
2	Effectiveness	81.2	Highly Acceptable
3	Efficiency	86.4%	Highly Acceptable
4	Model content description	89.11	Highly Acceptable
5	Physical appearance	91.33	Highly Acceptable
6	Writing structure	93.42	Highly Acceptable
7	Language	94	Highly Acceptable
Average		89.58%	Highly Acceptable

The validation results show that all aspects fall within the highly acceptable category, with the highest scores recorded in the language (94%) and writing structure (93.42%) aspects, while effectiveness received a relatively lower score (81.2%) yet remained within the highly acceptable range. The overall mean score of 89.58% confirms that the product design satisfies both academic and practical feasibility criteria. Accordingly, the POLCR-based inclusive curriculum management model can be considered both conceptually valid and ready for implementation testing in public primary schools.

4.4. Preliminary Trial Results

The preliminary external trial was conducted at SDN Pegadingan 2, involving 10 respondents (1 principal, 8 teachers, and 1 supervisor). The trial asessed four main aspects, readability, practicality, effectiveness, and efficiency, and included model implementation testing using a pretest–posttest design. The detailed assesment results are shown in Table 5.

Table 5: Preliminary Trial Results of the POLCR Curriculum Management Model for Inclusive Schools at SDN Pegadingan 2.

Aspect/Component	Percentage	Category	Main Description
Readability	88.89	Excellent	Content description (87.4%), physical appearance (87.3%), writing structure (89.66%), language (91.2%).
Practicality	88.0	Very Practical	Provides practical information, offers technical assistance, and facilitates the work of headteachers and teachers.
Effectiveness	88.6	Highly Effective	Appropriate legal and conceptual foundation, clear roles for headteachers and teachers, adequate support system.
Efficiency	87.2	Highly Efficient	Economical in terms of time, effort, and cost, as well as effective in achieving objectives.

The results of the preliminary trial of the POLCR inclusive school curriculum management model implemented at SDN Pegadingan 2 showed consistent performance in all aspects of assessment. Readability achieved an average score of 88.89% (excellent), supported by clear content descriptions (87.4%), consistency of physical appearance (87.3%), coherent writing (89.66%), and appropriate academic language (91.2%). This confirms that the model product is easy to understand and has a coherent presentation structure. Practicality scored 88%, indicating that the model is both relevant and applicable in assisting schools to manage inclusive curricula effectively. Effectiveness achieved 88.6%, signifying a robust legal and conceptual foundation and clearly defined stakeholder roles. Finally, efficiency scored 87.2%, confirming the model's capability to optimise time, effort, and resources without compromising quality.

4.5. Model Implementation Test Results

The implementation of the POLCR-based curriculum management model, using a One-Group Pretest–Posttest design, revealed significant improvement between pretest and posttest results. The mean pretest score of M = 94.50 (SD = 4.648) increased to M = 126.00 (SD = 3.162) on the posttest. Details of the descriptive statistics are presented in Table 6. The Shapiro–Wilk normality test indicated that the data were normally distributed ($p > 0.05$). The paired-sample t-test showed a significant difference between pretest and posttest scores ($t(9) = -22.243$; $p < 0.001$). Cohen's $d = 7.933$ represents a very large effect size, confirming that the model implementation significantly improved the quality of inclusive school curriculum management.

Table 6: Descriptive Statistics of Pretest and Posttest Results.

Statistik	Pretest	Posttest
Mean	94,50	126,00
Median	94,00	126,50
Std. Deviation	4,64	3,16
Minimum	89,00	119,00
Maximum	103,00	130,00

4.6. Main Field Trial Results

The main field trial was conducted at SDN Krapyak 1 and SDN Lontar Baru, involving 20 respondents (principals, teachers, and supervisors). This stage focused on assessing readability, practicality, effectiveness, efficiency, and implementation outcomes through a pretest–posttest design. A summary of the assessment results is presented in Table 7.

Table 7: Main Field Trial Results of the POLCR Curriculum Management Model for Inclusive Schools.

Assessment Aspect	Percentage	Category	Brief Explanation
Readability	87.55% (average)	Excellent	The content description of the model (88.2%), physical appearance (86%), writing structure (87.83%), and language (88.2%) were rated as excellent, indicating that the model is easy to understand and communicative.
Practicality	87.16	Very Practical	The model provides practical information, offers technical assistance, and facilitates the implementation of the inclusive curriculum for headteachers and teachers.
Effectiveness	98.7	Highly Effective	The model has an appropriate legal and conceptual basis, clear roles for headteachers and teachers, and a strong support system.
Efficiency	95.3	Highly Efficient	The model is considered economical in terms of time, energy, and cost, and is effective in achieving its objectives.

The results of the main field trials conducted at SDN Krapyak 1 and SDN Lontar Baru, involving 20 respondents, showed that the POLCR inclusive school curriculum management model has an excellent level of readability. All the indicators of readability, that is, the main content, the physical appearance of the publication, the writing system, and the language usage, recorded an average score of 87.55% for the "excellent" category. This is a strong point to show that the model guidelines are presented as a low-complexity text, with a high degree of interaction, and are very easy to be understood by school principals, teachers, and supervisors.

The aspect of practice or application raked an 87.16% score, which is within the limits of the "very practical" category, besides readability. This indicates that the model is considered capable of

giving useful examples, providing the technical part of the curriculum that deals with the issue of diversity, and making the facilitators familiar with the way the class should be conducted. The component of an effective model even got a "highly effective" point of 98,7%, thus not only being conceptually and legally relevant but also being capable of forging close relationships between school principals, teachers, and support systems.

Concerning the efficiency aspect, the score was 95.3%. This is a "highly efficient" category rating. Such a judgment denotes that the model is seen as a resource that is economic in terms of time, energy, and cost, and, furthermore, it is a wise choice for attaining the set goals. The main results of the field trial are the indicators to the fact that the management model for a POLCR inclusive school curriculum, which has been developed, is not only feasible but also effective, practical, and efficient for the longer-term use in the wider area.

4.6.1. POLCR Implementation of the POLCR-Based Curriculum Management Model.

The results of the model implementation were analysed using a One Group Pretest-Posttest Design. The pretest–posttest analysis further validated the results, showing a mean increase from M = 91.85 (SD = 3.54) to M = 120.15 (SD = 5.38). The summary of the descriptive analysis results is presented in Table 8.

Table 8: Descriptive Statistics of Pretest and Posttest Results of the Main Field Trial.

Statistik	Pretest	Posttest
Mean	91,85	120,15
Median	92,00	119,00
Std. Deviation	3,54	5,38
Minimum	83,00	111,00
Maximum	97,00	132,00

The Shapiro-Wilk normality test indicates that the data is normally distributed ($p > 0.05$). The results of the paired sample t-test indicate a significant difference between the pretest and posttest ($t(19) = -19.239$; $p < 0.001$). Cohen's d value = 6.211 falls into the large effect category, indicating that the inclusive curriculum management model is highly effective in improving the quality of curriculum implementation in public primary schools

4.7. Operational Trial Results

The operational trial was conducted at SDN Penancangan 1, SDN Batok Bali, and SDN Limpar, involving 30 respondents. The focus was on assessing readability, practicality, effectiveness, and efficiency, alongside model implementation through a pretest–posttest design. A summary of the results is presented in Table 9.

Table 9: Operational Trial Results of the POLCR Curriculum Management Model for Inclusive Schools.

Aspect	Percentage	Category	Brief Explanation
Readability	93.91	Excellent	Content description (93.1%), physical appearance (97.25%), writing structure (94.11%), and language (91.2%) indicate that the guide is easy to understand, clear, and engaging.
Practicality	89.33	Very Practical	The model assists schools technically, provides practical information, and facilitates implementation by headteachers and teachers.
Effectiveness	87.9	Highly Effective	The model has an appropriate legal and conceptual basis, is relevant to the roles of headteachers and teachers, and is supported by an adequate system.
Efficiency	87.2	Highly Efficient	The use of time, energy, and costs is considered optimal with the achievement of appropriate and consistent goals.

The results of the operational trials conducted in three public primary schools, SDN Panancangan 1, SDN Batok Bali, and SDN Limpar, involving 30 respondents, showed that the POLCR-based inclusive school curriculum management model achieved excellent ratings in almost all assessed aspects. The readability aspect obtained an average score of 93.91%, with detailed sub-scores for content description (93.1%), physical appearance (97.25%), writing structure (94.11%), and language (91.2%). These findings confirm that the model guidelines are presented clearly, systematically, and are easy to understand for school principals and teachers as the primary users.

In terms of practicality, the model scored 89.33% (very practical), indicating that the product effectively provides technical and practical information while facilitating principals and teachers in implementing the inclusive curriculum. Meanwhile, the effectiveness aspect received a score

of 87.9% (highly effective), confirming that the model has a strong legal and conceptual foundation, aligns with practical needs in the field, and is supported by effective collaboration mechanisms among principals, teachers, and other supporting systems.

Furthermore, the efficiency aspect scored 87.2% (highly efficient), demonstrating that the model optimises the use of time, energy, and financial resources in achieving the objectives of the inclusive curriculum. Overall, these results indicate that the POLCR-based inclusive school curriculum management model is not only conceptually feasible but also practical, effective, and efficient in its implementation within primary schools.

4.7.1. Implementation of the POLCR-Based Curriculum Management Model

Analysis of the model implementation using a One-Group Pretest–Posttest design showed a significant improvement. The average pretest score (M = 95.43, SD = 3.43) increased to M = 120.73 (SD = 5.46) in the posttest. A descriptive summary of the score comparison is presented in Table 10.

Tabel 10: Descriptive Statistics of the Operational Trial Pretest and Posttest.

Statistics	Pretest	Posttest
Mean	95,43	120,73
Median	95,50	121,00
Std. Deviation	3,43	5,46
Minimum	88,00	113,00
Maximum	104,00	132,00

The Shapiro–Wilk normality test indicated that the data were normally distributed ($p > 0.05$). The paired-sample t-test confirmed a significant difference between the pretest and posttest scores ($t(29) = -19.787$; $p < 0.001$). Cohen's $d = 5.546$ represents a giant effect size, demonstrating that the implementation of the inclusive curriculum management model significantly improved the quality of curriculum planning, implementation, and evaluation.

5. DISCUSSION

This study developed an inclusive primary school curriculum management model based on the POLCR framework planning, organising, leading, controlling, and representing, and tested it through multiple validation and field trial stages. The overall results demonstrate that the model possesses excellent readability, practicality, effectiveness, and efficiency. Quantitatively, expert validation achieved an average score of 89.58% (very feasible); the preliminary trial averaged 88.89%, the main field trial averaged 87.55%, and the operational trial reached 93.91%. These findings confirm that the model is not only conceptually sound according to expert judgment but also practical and effective when implemented in inclusive public primary schools.

In terms of practicality, the model achieved average scores ranging from 88% to 89.33%, indicating that users, principals, teachers, and supervisors, found it easy to understand and apply. The effectiveness of the model was particularly strong, with scores of 88.6% in the preliminary trial, 98.7% in the main field trial, and 87.9% in the operational trial. In the range of efficiency, represented by 87.2% to 95.3%, the dimension of efficiency also confirmed that the use of this model had no "time" or "resource" or "cost" schools' burden. The outcomes of the paired-sample t-test further supported these results, signifying that there was a statistically significant difference between the scores of the pretest and posttest. These findings attest that the POLCR-based inclusive curriculum management model had a tangible and favorable impact on the improvement of the quality of the implementation of the inclusive curriculum. Following Gall (2003), these results imply that the developed model satisfies the four basic criteria for educational development models: truth, feasibility, efficiency, and effectiveness.

The findings are explained more with the help of the conceptual framework of inclusive education and curriculum management theory. The aspect of readability first reflects that the model has been outlined with a logical structure, simple language, and a visual layout that makes understanding easier. The readability score over 87% is in line with the idea of clarity emphasized by Gay et al. (2012) in the design of educational tools (Ishartono et al., 2023; Aw, 2019). Consequently, the model can be a software and a user-friendly guide for school principals and teachers that lowers the possibility of conceptual or technical misunderstanding. Secondly, the desirability of the model, confirmed by ratings above 87%, reveals its feasibility in everyday situations. The idea is consistent with the views of

Mohajerzad et al. (2024) and Hernando-Garijo et al. (2021), who maintain that the practicality of an educational model is conditioned upon the extent of its use by the practitioners and the field implementation. The constructive assessment from teachers and principals is a clear indication that the design of the model is well aligned with the actual situation of curriculum management in public primary schools in the context of inclusion. Thirdly, the confirmation of the model's capability in boosting the processes of planning, implementation, supervision, and evaluation in inclusive schools, is indicated not only by the high descriptive scores (up to 98.7%) but also by the significant t-test results. The improvement can also be understood through Instructional Leadership theory (Hallinger, 2019), where the school principals are pointed out as the key factors in bettering teaching quality by well-organized planning and supervision. In this case, the POLCR framework was instrumental in the school leaders' instructional leadership by providing the necessary guidance for the organisation (Arokiasamy et al., 2025; Chabalala & Naidoo, 2021; Elfira et al., 2024). Moreover, the high efficiency, as measured by the results of up to 95.3%, indicates that the model could be a driver of the optimising of school resources whilst preserving quality. This is in line with Drucker's Efficient Management Theory (1954), which maintains that organisational success is not solely dependent on the achievement of objectives but also on resource optimisation. Here, the model based on POLCR is a major contributor to both the qualitative aspects and operational efficiency, especially in those inclusive schools that are struggling with budget and personnel issues.

The primary findings are that classical managerial functions form the basis for the successful adaptation to the peculiarities of inclusive education. In the planning phase, the model gives first priority to the detailed assessment of the needs of children with special needs (CWSN), which is the starting point of the curriculum. This goes in line with the opinion of Kriswanto et al. (2024), who stressed the importance of the early assessment of the inclusive curriculum adaptation. The organising function specifies in detail the responsibilities of the principals, teachers, and supervisors, thus resolving the coordination issue that was earlier mentioned by Yusuf et al. (2017). The leading function provides the main idea of the necessity of a leader's role in the promotion of inclusivity. The research indicates that the more principals know about and live by the principles of an inclusive education, the more they succeed in creating an inclusive school culture, which goes in line with Kristina et al's assertion (2025) that the capacity of the leader directs the success of the inclusive education. Moreover, the controlling and the representing functions equally guarantee that there is continuity and accountability through systematic supervision, multi-level evaluation, and organised reporting mechanisms. The monthly and individual evaluations make it possible to detect very early on some of the difficulties in the implementation. This management style, which is based on data, agrees with the results of Sektiani and Sowiyah (2020) who underline the role of monitoring systems in rectifying the curriculum and ensuring institutional accountability.

The results support the previous research pointing out the crucial role of curriculum management models in the inclusive education field. McKenzie (2020) and Sandoval et al. (2021) discovered that smooth-running inclusive schools are recognizable with consistent rules covering the stages of planning, implementation, and evaluation. Also, this research offers a comprehensively implemented and empirically confirmed framework for the elementary schools of Indonesia with a local contextualization.

The findings further support the notion that school principals and teachers are the main drivers of change in inclusive curriculum management (Govindasamy & Mestry, 2022; Khaleel et al., 2021; Van Wyk, 2020; Volosnikova et al., 2024; DeMatthews et al., 2020). As mentioned by Sunardi et al. (2024), this study reveals that a large number of inclusive schools continue to face difficulties in incorporating special needs students into standard curricula. The new model differs from Yusuf's (2015) model, which is only limited to four management functions (planning, organising, implementing, controlling), by adding a fifth function such as representing and highlighting the role of systematic reporting as a core element. This feature of the new model also sets it apart from Fajarwati's (2017) regulation-oriented approach, which is mainly concerned with administrative compliance.

This study, viewed through a methodological lens, confirms Gall's (2003) assertion that research and development (R&D) based methods are the best way to achieve educational innovations that are both valid and practical. The different stages of validation, expert evaluation, initial, main field, and operational trials, allowed the creation of a detailed and field-tested model to cross the threshold of practical application of R&D methodologies in the setting of inclusive education.

This research is notably significant in the context

of the Merdeka Curriculum in Indonesia, which places emphasis on flexibility, the need for the differentiated instruction and teacher empowerment (Samsudi et al., 2024; Supianto et al., 2024). The POLCR-based model is consistent with the main idea of the principles by presenting a concept that is not only well-organized but also easy to be adapted to the special needs of students. In the light of the teacher policy, this model acts as a practical guide in the process of creating inclusive learning materials, the adaptive instruction, and the equitable assessment implementation. This addresses the issue that is the concern of the Merdeka Curriculum, namely the limited readiness of teachers in accommodating students with special needs. Thus, this model can be an aid in the form of policy support in teacher training and school leadership development. Moreover, the model facilitates the execution of Permendiknas No. 70 of 2009 on Inclusive Education, by presenting a management framework that is down-to-earth and based on evidence, which can be taken up by local governments. Consequently, it caters for designing of strategies for inclusive education, which is in line with local as well as national policies and curriculum reform, providing a substantial empirical basis for this.

This study contributes to strengthening the theoretical foundation of educational management in inclusive contexts. It demonstrates that classical management principles planning, organizing, leading, controlling, and representing can be successfully adapted to inclusive school systems, resulting in a contextualized and replicable model. The guidebook produced from this study provides direct practical utility for schools. Beyond Serang City and Regency, the model can be adopted by other regions as a reference for inclusive curriculum implementation. The guidebook offers clear direction for school principals and teachers in designing, executing, and evaluating inclusive curricula effectively. This responds to Mudjito et al. (2017), who noted that most inclusive schools in Indonesia still lack adequate technical guidance in curriculum management. In addition, this framework can be used by education authorities to design inclusive school development programmes. In the long term, this model may support national inclusion policies by providing a management structure that can be widely replicated, consistent with Sartinah and Murtadlo (2022), who advocate replication of proven inclusive models to accelerate national education inclusion goals. Consequently, this study delivers both theoretical reinforcement and practical innovation for inclusive curriculum management.

The main strength of this research lies in its comprehensive R&D methodology, which included multi-stage validation (expert, preliminary, main, and operational) and combined quantitative and participatory approaches. The use of a pretest–posttest design with paired t-test and effect size analysis (Cohen's d) provided high internal validity, while the involvement of diverse stakeholders enhanced external validity and applicability. Nevertheless, despite these contributions, this study has several limitations. First, the research was confined to six public primary schools in one province, which may limit the generalizability of the findings to broader regional or international contexts. Second, the evaluation relied largely on self-reported data and perceptions from school stakeholders, which may have introduced response bias. Third, the study did not include a longitudinal assessment of model sustainability over time.

Future research should address these limitations by expanding the sample to multiple provinces or countries, adopting longitudinal mixed-method designs, and exploring how digital tools or AI-based analytics could enhance inclusive curriculum management. Comparative cross-cultural investigations could also offer valuable insights into how local cultural values mediate the operationalization of inclusive management models. Such research directions would not only deepen theoretical understanding but also contribute to the continuous refinement of evidence-based inclusive education policy and practice.

6. CONCLUSION

This study developed a valid, practical, effective, and efficient POLCR-based curriculum management model for inclusive primary schools through a Research and Development (R&D) approach. Validation by experts and multi-stage field trials in six schools confirmed the model's high readability, practicality, effectiveness, and efficiency, indicating that it effectively meets the real needs of inclusive curriculum management aligned with national education policies. The model conceptually aligns with the Merdeka Curriculum principles of flexibility, differentiated learning, and teacher–principal empowerment. It extends the theoretical foundation of curriculum management by integrating inclusivity into the POLCR framework Planning, Organising, Leading, Controlling, and Representing while offering practical guidance for schools and local authorities to improve inclusive curriculum implementation. The findings provide

clear practical implications for policymakers, educational administrators, and school principals. Policymakers may employ the proposed model as a strategic framework for developing inclusive education policy guidelines that integrate managerial accountability with pedagogical flexibility. For school administrators, the model serves as an operational tool for strategic curriculum planning, teacher collaboration, and inclusive leadership development. Moreover, the integration of the POLCR framework within inclusive education settings demonstrates that effective curriculum management requires not only procedural efficiency but also an ethical commitment to equity, empathy, and participatory decision-making. Despite its significant contributions, this study is limited to the context of inclusive primary schools in Serang City and Serang Regency, and therefore, the generalisation of its findings should be approached with caution. Future research is recommended to expand the testing scope to regions with different demographic and institutional characteristics and to develop technology-assisted digital tools that can support the application of the POLCR model. These innovations are expected to make the model more adaptive, sustainable, and responsive to the demands of twenty-first-century education.

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