

Integration of SIPA Cultural Values in the Development of Inclusive Learning Models Based on Local Wisdom in Inclusive Schools

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Research Article

Keywords: SIPA cultural values, Inclusive learning, Inclusive pedagogy, Local wisdom, Culturally responsive education, South Sulawesi

Posted Date: May 25th, 2026

DOI: <https://doi.org/10.21203/rs.3.rs-9297829/v1>

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Additional Declarations: No competing interests reported.

Abstract

This research aimed to develop an inclusive learning model based on SIPA cultural values (Sipakatau, Sipakalebbi, and Sipakainge) as a responsive pedagogical method in the context of inclusive schools in South Sulawesi. Research and Development (R&D) design with the ADDIE model was used, involving 23 teachers from six inclusive schools, supported by data from students with special needs, cultural figures, and parents. Quantitative and qualitative data were collected through questionnaires, observations, interviews, and documentation. Expert validation yielded a very high level of model validity with an average Aiken's V value of 0.97. Implementation of the model led to a significant increase in teachers' understanding and readiness for SIPA-based inclusive learning, with a normalized gain (g) value of 0.73 (high category). Classroom observations demonstrated that the application of SIPA was rated in the very good category across all aspects. These results indicate that integrating local wisdom into inclusive learning design strengthened learning accessibility, social-emotional support, and the dignified participation of students with special needs, while enriching contextual, humanistic, and sustainable inclusive pedagogical practices.

1 Introduction

Inclusive education requires every educational unit to provide equitable, meaningful, and dignified learning opportunities for all students, including those with special needs [1, 2]. Global commitments through the United Nations Convention on the Rights of Persons with Disabilities (UN-CRPD, 2006) and the Education for All agenda (UNESCO, 2010) emphasize that education systems should be responsive to student diversity through adaptive and humanistic pedagogical methods. However, in the context of developing countries such as Indonesia, the practice still faces significant challenges, particularly in adapting learning methods to local socio-cultural realities [3].

Even though the national policy framework for inclusive education has been established through various regulations, its implementation at the school level has not been fully optimized. Schools implementing inclusive education tend to adapt conventional models or adopt methods from other cultural contexts [4, 5]. Consequently, local cultural values, community wisdom, and traditional social practices that possess great potential for building acceptance and social solidarity have not been fully integrated into learning designs [6, 7].

In South Sulawesi, the cultural concepts of Sipakatau, Sipakalebbi, and Sipakainge (SIPA) provide a strong ethical foundation that emphasizes principles of mutual respect, honour, and social responsibility for harmonious interpersonal relationships. These values are highly relevant to the development of inclusive education practices. In the school context, the application of local cultural principles can strengthen acceptance of differences and promote equal social relations, aligning with inclusive pedagogy that emphasizes participation and equality in the learning process [8, 9]. Therefore, a pedagogical method that simultaneously emphasizes access to education and strengthens the community's cultural identity and social capital is urgently needed.

This research offers a novel contribution by developing a cultural values-based learning model (SIPA) to support the learning process of students with special needs in inclusive schools. This approach focuses not only on curriculum adjustments and instructional differentiation but also on making local cultural values the pedagogical foundation for student engagement, school-family-community collaboration, and learning strategies responsive to diverse needs. The integration of cultural values into pedagogical practice is expected to produce a contextual, sustainable, and culturally responsive learning model that emphasizes justice, diversity, and the humanization of education [10, 11].

2 Literature Review

2.1 Inclusive Pedagogy and Local Wisdom

The inclusive pedagogy framework emphasizes that every student has the right to meaningful learning experiences through responsiveness to individual needs, active participation, and collaboration in the learning process [4]. Within this framework, instructional differentiation is a key strategy in which teachers adapt content, processes, and assessments based on students' varying abilities and learning styles [12]. Recent research consistently shows that teacher collaboration and community participation are crucial factors in creating a truly inclusive and socially just learning environment [3, 13, 14].

Inclusive education extends beyond the placement of students with special needs in regular classrooms; it demands the development of flexible, adaptive, and collaborative learning systems [15, 16]. Research from various international contexts has demonstrated that the success of inclusive education is influenced by professional support and co-teaching practices, which enable teachers to implement differentiated instruction and participatory activities according to each student's abilities [17]. Inclusive pedagogy therefore views diversity as a pedagogical resource and calls for a fundamental paradigm shift in education toward a more participatory, equitable, and diversity-respecting system [10].

2.2 Integration of SIPA Cultural Values in Inclusive Education

The integration of SIPA cultural values into the inclusive pedagogy framework strengthens the moral and social dimensions of the learning process. Sipakatau – the recognition of human dignity – aligns with the principle of equity and respect for every student's individuality. Sipakalebbi – the honouring of others' virtues – supports a culture of appreciation and constructive collaboration. Sipakainge – the practice of mutual reminder and positive reinforcement – reinforces social responsibility and encourages prosocial behaviour among peers.

These values are not only culturally embedded within the Bugis-Makassar community but are also pedagogically applicable as operational principles for shaping inclusive learning interactions. Previous research has shown that the incorporation of local wisdom values into pedagogical practices strengthens students' sense of belonging, reduces social barriers, and improves the quality of teacher-student relationships [6, 18]. The SIPA framework thus complements and extends global approaches to

culturally responsive pedagogy by providing a contextually grounded ethical foundation for inclusive practice in the Indonesian setting [8].

Several studies have demonstrated that culturally grounded pedagogical frameworks effectively improve learning outcomes and social-emotional well-being among students with special needs [19, 20]. Building on these foundations, the present study develops the SIPA-based inclusive learning model as both a practical instructional guide and a contribution to the theoretical discourse on culturally responsive inclusive education in the Global South context.

3 Methodology

This research employed a Research and Development (R&D) approach, with the ADDIE (Analyze, Design, Develop, Implement, and Evaluate) model as the systematic framework for developing an inclusive learning model grounded in SIPA cultural values. The ADDIE model provides a structured development pathway that supports the iterative integration of local cultural values into inclusive classrooms based on empirically identified needs.

The research participants comprised inclusive classroom teachers, students with special needs, cultural figures, and parents from across South Sulawesi. Data were collected through questionnaires, classroom observations, semi-structured interviews, and documentation review. Data analysis integrated qualitative procedures — including reduction, categorization, and thematic interpretation — with quantitative expert validity analysis using Aiken's V index, and model effectiveness assessed through normalized gain (g) values.

Expert validation was conducted by five specialists in inclusive education, curriculum development, and cultural pedagogy. Quantitative effectiveness was measured by comparing pre- and post-implementation scores using normalized gain ($g = (\text{post-score} - \text{pre-score}) / (\text{maximum score} - \text{pre-score})$), with values ≥ 0.70 classified as high effectiveness. Classroom observation data were coded on a five-point scale and interpreted using descriptive categories.

Table 1
Summary of respondent distribution across trial locations

No.	Trial Location	Trial Schools	Trial Classes	Implementing Teachers
1	Makassar City	4	12	20
2	Gowa Regency	2	6	8
3	Tana Toraja City	3	9	16
4	Luwu Regency	2	5	9
5	Bone Regency	2	6	11
6	Wajo Regency	3	8	12
7	Bantaeng Regency	1	3	4
8	Bulukumba Regency	1	3	4
9	Barru Regency	2	5	8
10	Pangkep Regency	2	5	7
11	Soppeng Regency	3	9	14
12	Takalar Regency	2	6	9
Total		27	77	122

4 Results and Discussion

4.1 Needs Analysis: Identifying Learning Requirements and Relevant Local Wisdom Values

The needs analysis was conducted through focus group discussions with teachers, parents, and school community representatives, supplemented by classroom observations and teacher interviews. The process involved systematic mapping of students' learning needs, teacher preparedness, and the contextual relevance of local wisdom values to support inclusive education.

The discussions revealed that students with special needs primarily require enhanced access to concrete, visual, and experiential learning materials to support academic comprehension [21]. Teachers, meanwhile, expressed the need for sustained professional development in adaptive instructional strategies and differentiated practices to effectively address diverse learner profiles. Beyond academic dimensions, social-emotional support emerged as a critical area of need, given persistent barriers to social interaction and challenges in the development of student self-confidence.

The needs analysis further indicated that the Bugis-Makassar SIPA cultural values — Sipakatau, Sipakainge, and Sipakalebbi — are highly relevant to strengthening mutual respect, social responsibility,

and harmonious interpersonal relationships, in alignment with the principles of global inclusive education. These findings established that inclusive learning development should prioritize four interconnected areas: increasing learning accessibility, strengthening socio-emotional support, developing students' adaptive skills, and internalizing local cultural values across all learning interactions.

4.2 Model Design: SIPA-Based Inclusive Learning Framework

The design phase focused on developing a comprehensive learning framework that accommodates students' diverse characteristics while ensuring systematic internalization of SIPA cultural values across all instructional activities. The model integrates these values into four key dimensions: learning objectives, instructional strategies, adaptive learning media, and authentic assessment procedures.

The SIPA-based inclusive learning model positions the teacher as an inclusive facilitator who ensures active participation and the ongoing internalization of cultural values through daily learning interactions. Teachers are guided to operationalize Sipakatau through consistent recognition of each student's dignity and unique contributions, Sipakalebbi through practices of verbal and non-verbal appreciation and peer recognition, and Sipakainge through structured routines of positive reinforcement and social responsibility reminders.

4.3 Model Development and Expert Validation

The development phase produced a structured, applicable, and contextually relevant teacher guide for SIPA-based inclusive learning. The guide encompasses a conceptual framework for inclusive education, operational integration guidelines for SIPA principles into learning interactions, adaptive learning strategies aligned with diverse learner profiles, and teacher reflection protocols. The resulting product is consistent with the principles of Universal Design for Learning (UDL) [22], maximizing learning accessibility, flexibility, and meaningfulness for students with diverse needs.

Model validation was conducted by five experts using Aiken's V index ($V = \sum s / n(c - 1)$), covering content suitability, SIPA cultural values integration, design coherence, and school applicability. Table 2 presents the validation results.

Table 2
Expert validation results for the SIPA-based inclusive learning model

Validation Aspect	Average Score	Descriptive Category	Average V	Validity
Content Suitability	4.80	Very appropriate	0.97	Very Valid
SIPA Cultural Values Integration	4.84	Very appropriate	0.98	Very Valid
Design Integration	4.80	Very appropriate	0.97	Very Valid
School Applicability	4.72	Very appropriate	0.95	Very Valid
Overall Average	4.79	Very appropriate	0.97	Very Valid

The analysis showed an average Aiken's V score of 0.97, classified as very valid. Although minor improvements were recommended for the school applicability dimension, the overall validation results confirm that the SIPA-based learning model demonstrates very high content validity across all dimensions, confirming its relevance, internal consistency, and conceptual feasibility based on expert assessment.

4.4 Model Implementation: Trial in Inclusive Schools in South Sulawesi

The model was implemented across 12 cities and districts in South Sulawesi, involving 27 inclusive and special needs schools with 77 classes and 122 implementing teachers. Table 3 reports the effectiveness analysis based on normalized gain (g) values across all evaluated aspects.

Table 3
Effectiveness analysis results per aspect using normalized gain (g)

Aspect	Items	Mean Pre	Mean Post	Gain (g)	Effectiveness
Understanding inclusive material	1–5	3.557	4.670	0.781	High
Understanding integration of SIPA values	6–9	3.956	4.707	0.722	High
Readiness to implement	10–15	3.464	4.551	0.705	High
Perception of model usability	16–20	3.565	4.600	0.716	High
Overall model	1–20	3.611	4.624	0.730	High

The overall normalized gain of 0.73 (high category) confirms that the SIPA-based learning model produced meaningful improvements in teacher understanding and readiness across all measured

aspects. The highest gain was recorded for understanding of inclusive material ($g = 0.781$), while readiness to implement showed the largest absolute growth, reflecting substantial improvement from initial lower baseline scores.

4.5 Classroom Observations During Implementation

Observations conducted at six representative schools across the four-week implementation period confirmed that teachers consistently and effectively applied SIPA cultural values in their instructional practices. Table 4 summarizes the observation results per aspect.

Table 4
Observation results per aspect during SIPA model implementation

Observation Aspect	Average Score	Achievement (%)	Description
A. Sipakatau (Recognizing Human Dignity)	4.36	87.2%	Very Good
B. Sipakalebbi (Honouring Others' Virtues)	4.29	85.8%	Very Good
C. Sipakainge (Mutual Positive Reminder)	4.29	85.8%	Very Good
D. Inclusive Learning Design	4.36	87.2%	Very Good
E. SIPA-Based Learning Strategy	4.36	87.2%	Very Good

Observational data confirm that teachers consistently operationalized SIPA principles in daily instructional practices. Teachers demonstrated respect for student dignity through Sipakatau, engaged in empathetic and appreciative communication through Sipakalebbi, and employed positive behavioural guidance and social empathy reinforcement through Sipakainge. These observations align with the quantitative effectiveness data, collectively confirming that the SIPA model functions as a coherent and operationally grounded pedagogical framework.

4.6 Formative and Summative Evaluation

Formative evaluations conducted throughout the development and implementation phases yielded continuous improvements to the model's design, particularly in relation to its applicability across diverse school contexts. The summative evaluation confirmed high teacher competency in SIPA-based inclusive learning, improved instructional practice quality, and broad positive acceptance of the model. These outcomes support the recommendation of the model for wider implementation.

4.7 Discussion

The results confirm that effective inclusive education relies not only on instructional differentiation and curriculum adjustment, but equally on the relational, cultural, and socio-emotional dimensions of the learning environment. This finding is consistent with the inclusive pedagogy framework, which emphasizes meaningful participation, equity, and respect for each student's dignity [4, 3]. The integration of Bugis-Makassar cultural values (SIPA) into the developed learning model demonstrates that local

wisdom can function as a robust pedagogical foundation for strengthening the contextual and sustainable implementation of inclusion.

The needs analysis findings — that students with special needs face both academic challenges and socio-emotional barriers affecting participation and classroom safety — reinforce the argument that inclusive education must extend beyond structural and administrative provisions to address students' psychosocial needs [23, 24]. The SIPA cultural values provide an ethical framework that facilitates acceptance of diversity, strengthens social relationships, and cultivates a supportive classroom climate, consistent with research demonstrating the centrality of teacher-student interaction quality in determining inclusive practice outcomes [25].

The integration of SIPA cultural values into learning objectives, instructional strategies, adaptive media, and authentic assessment in the design and development phases aligns with the principles of culturally responsive pedagogy and Universal Design for Learning [22]. Espada-Chavarria et al. [22] emphasized that culturally responsive UDL practices enable learning flexibility while recognizing students' identities as pedagogical resources. The SIPA model extends this framework by adding moral and relational dimensions grounded in local wisdom, thereby situating inclusive pedagogy not merely as an access-enabling mechanism but as a means of establishing dignified, participatory learning relationships.

The implementation results, demonstrating significant gains in teacher competency and preparedness ($g = 0.73$), are consistent with studies emphasizing that teacher capacity and sustained professional support are key determinants of inclusive education success [26, 27]. Teacher capacity development through the SIPA model operated simultaneously at two levels: technical understanding of adaptive learning strategies and internalization of cultural values that guide pedagogical decision-making and daily classroom interactions.

From a global perspective, the present findings enrich the discourse on inclusive pedagogy by providing empirical evidence from a Global South context. The SIPA model demonstrates that the integration of local wisdom is not merely particularistic but can function as a conceptual bridge between global pedagogical theory and the practice of inclusive education at the classroom level [10, 7, 21]. Importantly, replication and scaling of the SIPA model must be accompanied by systemic institutional strategies to ensure sustained learning outcomes, including policy support, ongoing professional development, and cross-stakeholder collaboration [26, 27].

5 Conclusion

This study developed and validated an inclusive learning model grounded in the SIPA cultural values of the Bugis-Makassar community in South Sulawesi. The model demonstrated very high content validity (Aiken's $V = 0.97$) and produced significant improvements in teacher understanding and instructional readiness ($g = 0.73$, high category). Classroom observations across all implementation sites confirmed consistently strong application of SIPA principles, rated in the very good category across all measured aspects.

The SIPA-based inclusive learning model contributes to strengthening inclusive education practices by integrating Sipakatau, Sipakalebbi, and Sipakainge as operational pedagogical principles that shape learning interactions, classroom relationships, and students' social-emotional development. By making local cultural wisdom the foundation of instructional design, the model creates more humane, participatory, and contextually meaningful learning spaces for all students, including those with special needs.

The study contributes to the broader theory of culturally responsive inclusive pedagogy by demonstrating that local wisdom systems from non-Western contexts can provide robust, empirically validated frameworks for advancing equity, diversity, and the humanization of education. Future research should examine the model's effectiveness across different educational levels and cultural settings, and explore systemic conditions that support its sustainable implementation.

6 Limitations and Future Directions

Several limitations of this study warrant acknowledgement. First, the cross-sectional implementation design, while appropriate for initial model development, limits the ability to assess long-term retention of SIPA-based practices and sustained changes in student outcomes. Longitudinal research tracking both teacher practice and student development across at least one full academic year would provide stronger evidence of sustained impact.

Second, the study focused on inclusive schools within South Sulawesi, where the Bugis-Makassar cultural context is prevalent. The extent to which the SIPA model's principles may be adapted or translated to other cultural contexts requires further investigation. Replication studies in diverse cultural settings would enhance the model's external validity and contribute to comparative discourse on local wisdom integration in inclusive education.

Third, while classroom observations provided rich qualitative evidence of SIPA implementation quality, future studies should incorporate direct measures of student social-emotional outcomes and learning achievement to more comprehensively evaluate the model's developmental impact. Mixed-method designs combining observational protocols, student self-reports, and academic performance data would strengthen the evidence base.

Declarations

Author Contributions

Syamsuddin: Conceptualization, methodology, data collection, formal analysis, writing – original draft. Bastiana: Conceptualization, data collection, writing – review and editing. Zulfitriah: Conceptualization, data collection, writing – review and editing. Nurul Mutahara B: Conceptualization, data collection, writing – review and editing, project administration.

Competing Interests

The authors declare that they have no known competing financial interests or personal relationships that could have influenced the work reported in this article.

Ethics Approval

This study received ethical approval from the Research Ethics Committee of Universitas Negeri Makassar (Approval No.: [to be inserted upon acceptance]). All procedures involving human participants were conducted in accordance with institutional research ethics guidelines and internationally recognized ethical standards for educational research. Informed consent was obtained from all individual participants. Participation was voluntary, and all respondents were assured of the confidentiality and anonymity of their data.

Ethical Considerations

The student participants in this study were aged between 10 and 12 years. As all participants were under the age of 16, informed consent was obtained from their parents or legal guardians prior to data collection. Assent was also obtained from the students. All data were anonymized to ensure participant confidentiality

Consent to Participate

All participants were informed about the purpose of the study, and their participation was voluntary. Informed consent was obtained from all individual participants involved in the study.

Consent to Publish

Consent to publish: not applicable.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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