

Bridging Heritage and Modernization: Contextual Project-Based Learning for Indonesian Papuan Student Identity Formation

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Abstract

This study examines the implementation and impact of the Papuan Cultural Studies and Modernization (PBPM) contextual project-based learning model at Sekolah Anak Indonesia (SAI), a boarding school serving indigenous Papuan students. The background of this research is Papua's low Human Development Index, largely due to educational disparities and culturally unresponsive curricula. This study employs a descriptive qualitative case study design to explore the implementation of Contextual Project-Based Learning (PBPM) and its influence on regional identity, motivation, and student engagement among Indonesian Papuan students. Data were collected through purposive sampling involving 32 students, 10 teachers, and 4 foundation members using interviews, observation, and documentation. Data collection involved semi-structured interviews, classroom observations, and analysis of relevant documents such as lesson plans, teaching journals, and student project reports, which were then examined using thematic analysis. The findings reveal that institutional support, curriculum flexibility, and community involvement are critical to PBPM's success. The learning model strengthens students' cultural identity, motivation, and practical skills, but faces challenges such as a shortage of culturally sensitive teachers, language barriers, and limited resources. PBPM offers an innovative framework that can be adapted to other indigenous educational contexts, with future research prospects including the development of bilingual instruction and alumni tracking. Keywords: project-based learning, indigenous education, cultural identity, Papuan, curriculum innovation

Introduction

Education plays a vital role in shaping the intellectual, social, and cultural development of individuals and communities. In Indonesia's multicultural landscape, equitable education remains a complex goal due to linguistic diversity, cultural plurality, and geographic disparities. Papua, home to hundreds of ethnic groups and indigenous languages, illustrates these complexities, consistently ranking among the lowest regions in Indonesia's Human Development Index. These challenges are often linked to a mismatch between standardized national curricula and the lived realities of Indigenous communities, leading to disengagement, low academic performance, and weakened cultural identity (Nugroho et al., 2021; Guenther et al., 2024).

Growing research emphasizes the significance of cultural awareness and culturally responsive education in addressing such disparities. Integrating Indigenous knowledge, values, and local worldviews into the curriculum has been shown to improve student engagement, motivation, and identity formation (da Silva et al., 2024; Silaban, 2023). Culturally responsive teaching also fosters mutual respect between schools and communities and enhances students' sense of belonging and relevance in education (Nasir & Handayani, 2020). However, implementing such approaches in Papua requires tailored strategies that consider regional challenges, such as limited infrastructure, teacher shortages, and the need for multilingual

instruction, while also empowering local participation and agency (Ahmad et al., 2022; Epstein, 2011)

In the context of Indigenous education, scholars have increasingly emphasized the importance of localized and community-driven approaches in addressing systemic inequities (Faruq & Bakar, 2025; Wika, 2025). These approaches recognize that education should not only aim for academic success but also affirm cultural identity, strengthen social cohesion, and support the transmission of knowledge across generations. In Papua, many students come from oral traditions and collectivist cultural backgrounds. However, educational models that are disconnected from these lived experiences often result in student disengagement and reduced relevance of formal schooling.

Culturally responsive education provides a meaningful path toward inclusive and equitable learning by ensuring that all cultures, including the often-overlooked Papuan culture, are acknowledged and valued within the educational process. Although the importance of culturally inclusive pedagogy has gained attention in educational discourse, the specific needs of Papuan learners have remained underrepresented in research and policy. This study responds to that gap by exploring how a culturally responsive and contextually grounded project-based learning model can support identity formation, enhance student motivation, and promote meaningful engagement among Papuan students. In doing so, the research contributes to broader efforts in advancing both educational equity and cultural preservation.

Moreover, recent government initiatives such as the *Merdeka Belajar* curriculum reflect a growing recognition of the importance of flexibility, local content, and student-centered learning (Kusumawati et al., 2025; Musa & Nurhayati, 2025). While the curriculum encourages contextualization through the use of non-textbook resources and project-based learning, the representation of Papuan culture remains significantly limited, particularly in widely circulated textbooks that continue to reflect dominant narratives from more developed regions. This imbalance underscores a persistent gap between policy aspirations and actual classroom practice, especially in culturally diverse and geographically remote areas like Papua.

Without adequate empirical models that demonstrate how these principles can be meaningfully applied in Indigenous contexts, such reforms risk becoming symbolic rather than transformative. Sekolah Anak Indonesia (SAI), through its implementation of the PBPM model, offers a rare and valuable example of how education can be both inclusive and responsive to local realities. By centering Papuan culture, language, and lived experience, SAI's approach illustrates a culturally relevant pedagogy in action. This study positions itself as a critical contribution to addressing the representational gap in national curricula and advancing justice-oriented educational reform that truly includes all Indonesian learners.

Sekolah Anak Indonesia (SAI), managed by the Alirena Foundation, was established to address these needs through the innovative Papuan Cultural Studies and Modernization (PBPM) model. This contextual project-based learning approach blends Papuan cultural values with modern scientific and entrepreneurial skills, aiming to strengthen regional identity, motivation, and engagement among high school students while preparing them for modernization. SAI's inclusive admissions policy welcomes students from marginalized and conflict-affected regions, resulting in a highly diverse student body and reinforcing the school's role in providing stable, culturally relevant education (SAI, 2025). Enrollment and outcome data (see Figure 1) further illustrate both the effectiveness and challenges of PBPM in supporting student progression.

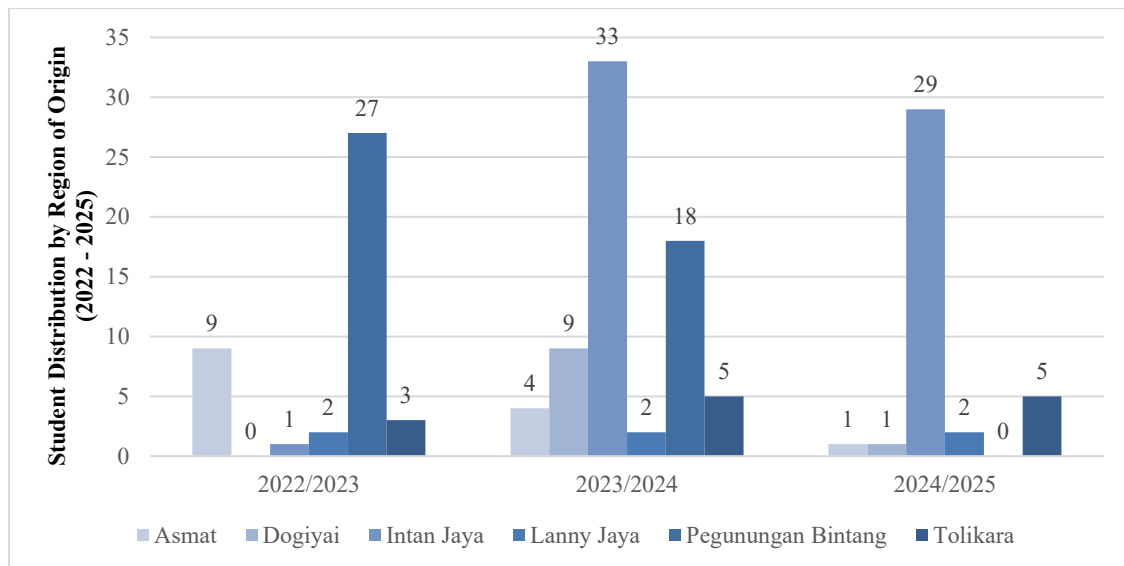


Figure 1. Student Distribution by Region of Origin (2022-2025)

Despite the promise of PBPM, empirical research on its implementation and impact at the senior high school level in Papua remains limited. While prior studies emphasized the theoretical potential of culturally responsive teaching, this study offers practical and contextualized evidence from an under-researched setting. It seeks to expand current understandings by providing grounded insights into how such models operate in complex sociocultural and educational environments. This study addresses this gap by systematically analyzing PBPM's implementation at SAI, its influence on the formation of regional identity and student engagement, and the key enabling and inhibiting factors encountered during its application. The research questions guiding this study are: (1) How is PBPM implemented for Papuan high school students? (2) In what ways does PBPM contribute to the development of regional identity, motivation, and engagement? (3) What factors support or hinder its implementation, and how might these findings inform the adaptation of similar models in other indigenous or culturally diverse educational settings?

This study aims to explore how a culturally responsive, contextually grounded project-based learning model can enhance identity formation, motivation, and engagement among Papuan students. By examining the implementation of this model at Sekolah Anak Indonesia, the research offers empirical insights into inclusive educational practices within a marginalized and resource-limited setting. It provides a replicable framework for integrating local culture into the learning process, contributing both to scholarly discourse and to practical efforts in curriculum development and policy reform. The study highlights specific strategies that can inform broader educational transformation in multicultural contexts, emphasizing the urgent need to recognize and value Papuan cultural identity within the national education system. Ultimately, this research affirms that meaningful and equitable education must be rooted in cultural relevance, particularly for communities that have long been excluded from dominant narratives in Indonesian schooling.

Method

This study used a descriptive qualitative case study design to investigate the implementation and effects of the Papuan Cultural Studies and Modernization (PBPM) model at Sekolah Anak Indonesia (SAI), a private boarding school serving indigenous Papuan students. This approach enabled in-depth exploration of PBPM in its natural educational setting (Creswell & Poth, 2018;

Yin, 2018). A total of 46 participants were purposively selected, consisting of 32 students (grades 10–12), 10 teachers experienced in PBPM, and 4 key informants (administrators and foundation representatives). This sampling strategy ensured representation of diverse cultural, educational, and social backgrounds.

Data were collected over a three-month period using semi-structured interviews, classroom observations, and document analysis. Interview transcripts from students, teachers, and school leaders captured perspectives on the PBPM model, cultural integration, and its impact on identity and motivation. Classroom observations focused on teacher-student interactions and the use of culturally embedded materials across ten PBPM-integrated sessions. Document analysis included lesson plans, curriculum materials, assessment rubrics, and student portfolios to examine how Papuan cultural elements were incorporated. All data were organized thematically and analyzed through open and axial coding, with triangulation across sources to ensure validity and capture the complexity of culturally responsive pedagogy in practice.

To ensure data credibility, triangulation was rigorously applied across interviews, classroom observations, and document analysis. Findings from semi-structured interviews were cross-referenced with observation notes to validate participants' narratives regarding cultural integration and student engagement, while lesson plans, assessment rubrics, and student portfolios were examined to substantiate or challenge claims made in interviews. Observation data were also used to confirm the consistency between instructional intentions stated in documents and their actual classroom enactment. This cross-verification among data sources strengthened the validity of interpretations and provided a fuller understanding of the PBPM model in practice. Additional strategies such as member checking, peer debriefing, and reflexive journaling were employed to minimize researcher bias and enhance trustworthiness. Data were analyzed thematically using Braun and Clarke's six-phase framework, with themes organized around cultural relevance, identity development, and student engagement. Ethical clearance was secured from the school principal, with informed consent obtained from all participants. Anonymity was preserved through pseudonyms, and all data were stored securely, ensuring transparency and methodological rigor in exploring culturally responsive education within an Indigenous Papuan context.

Results

Institutional and Cultural Supporting Factors

The successful implementation of the PBPM model at Sekolah Anak Indonesia (SAI) is strongly supported by the Alirena Foundation, which ensures consistent provision of learning resources, continuous teacher training, and a culturally safe learning environment. As noted by one teacher during an interview, *"Kami rutin mengikuti pelatihan untuk mengaitkan budaya lokal dengan pembelajaran sains. Ini membuat anak-anak merasa pelajaran itu milik mereka sendiri."* This institutional commitment is complemented by a school culture that values participation, reflection, and meaning-making. Observation notes confirmed that teachers regularly adapted their instructional strategies to accommodate Papuan students' cultural backgrounds, such as using storytelling and visual aids grounded in local traditions.

Document analysis revealed that lesson plans included culturally embedded content, such as malo bark paintings, honai house architecture, and local flora in science instruction. For example, one lesson plan titled *"Sirkulasi Air di Honai"* connected environmental science with traditional housing structures, making abstract concepts more relatable. Students were observed engaging enthusiastically in a mapping project of local water sources, linking scientific observation with traditional ecological knowledge.

Community involvement also emerged as a key supporting factor. According to a parent's testimony, "*Kegiatan Family Time membantu kami terlibat langsung dalam pendidikan anak, terutama untuk mengajarkan nilai-nilai budaya kami.*" Monthly family sessions provided opportunities for intergenerational knowledge sharing, reinforcing cultural identity within the educational process. Visual documentation from these sessions, including photo portfolios and reflective journals, demonstrated active parental participation and student pride in showcasing their heritage.

Together, these institutional and cultural elements create an ecosystem that sustains the PBPM model. The data show that the integration of local wisdom, ethnoscience, and entrepreneurial thinking within the curriculum is not only possible but also effective in fostering student engagement, cultural affirmation, and contextualized learning. Table 1 below summarizes the key institutional and cultural factors and the corresponding evidence from interviews, observations, and documents.

Challenges in Implementation

Despite the strengths of the PBPM model, several implementation challenges persist at Sekolah Anak Indonesia. One key issue is the difficulty in recruiting teachers who are not only academically qualified but also culturally sensitive. A school administrator noted in an interview, "*We need teachers who are not only academically competent, but also willing to learn and appreciate the local culture.*" Teaching in this context requires empathy, adaptability, and a deep respect for Indigenous knowledge systems—qualities that are not always found in conventionally trained educators.

Another significant challenge involves linking lesson materials to Papuan cultural contexts. Document analysis showed that while some lesson plans incorporated local themes, others relied heavily on generic national content, making cultural integration uneven. Teachers expressed the struggle of adapting abstract scientific concepts to fit local examples, especially when textbooks provide few relevant references. As one teacher explained, "*The textbooks do not reflect the children's world here, so we have to create appropriate learning materials ourselves.*"

Language barriers also emerged as a major obstacle. Many students speak Indigenous languages at home, and their limited fluency in Bahasa Indonesia often hinders comprehension. Classroom observations revealed that teachers attempted to bridge this gap by incorporating Papuan folktales and oral storytelling into English and science lessons. For example, a Grade 5 lesson on ecosystems used the tale of *Kasuarina dan Sungai Tujuh* to introduce ecological balance, a method observed to increase student participation and comprehension.

Socio-economic disparities further compound these challenges. Some students were observed arriving late or missing school due to family responsibilities or financial hardship. Teachers noted low attendance as a recurring issue, particularly after harvest seasons. In an interview, one teacher stated, "*Some of the children have to help their parents in the garden or market, so they miss several days of school.*" Limited resources, especially in teaching aids and technology, also constrain the delivery of hands-on, project-based learning that PBPM aspires to implement.

Finally, balancing modernization and cultural preservation remains a complex endeavor. While the school actively integrates entrepreneurship and digital literacy, some community members expressed concern about cultural dilution. A parent shared, "*We are proud that our children are learning new things, but we don't want them to forget our customs and values.*" These tensions reflect the broader challenge of maintaining cultural integrity while preparing students for national and global participation

Impact on Student Identity, Motivation, and Outcomes

PBPM significantly strengthens students' cultural identity and pride by embedding local values, language, and traditions into the learning process. Motivation and engagement increase as learning becomes more relevant and contextual, with students becoming more active, creative, and confident. The model also equips students with technological, entrepreneurial, and problem-solving skills rooted in local wisdom, and fosters social cohesion among students from diverse ethnic backgrounds through collaborative projects and community-based learning.

Student Outcomes: Enrollment and Progression

Table 1. The enrollment and outcomes for 12th grade (2022-2025)

Academic Year	Number of Students	Withdrawn by Local Govt	Direct to Work	to Continue Studies
2022/2023	14	10	1	5
2023/2024	30	25	-	5
2024/2025	9	-	No result yet	

Table 1 summarizes 12th grade enrollment and outcomes over three academic years. "Transferred" refers to students reassigned by local government, while "direct to work" denotes students entering the workforce after graduation. Notably, no students dropped out, indicating strong retention.

Figure 2 illustrates the academic progress of students in Bahasa Indonesia and Mathematics across three grade levels during the July–December 2024 semester. In Bahasa Indonesia, there was a consistent upward trend in scores for all classes: the average score in class 10 increased from 46 to 52, in class 11 from 52 to 63, and in class 12 from 52 to 68. This pattern suggests that the contextual project-based learning approach, which integrates local cultural content, contributed positively to students' literacy development. In contrast, Mathematics scores showed only modest improvement or remained relatively stable over the same period. The average score in class 10 rose slightly from 49 to 52, in class 11 from 58 to 59, and in class 12 from 68 to 69. While there was no significant decline, the gains in Mathematics were not as pronounced as those observed in Bahasa Indonesia. These findings suggest that while the PBPM model effectively improves students' language abilities, achieving comparable advancements in mathematics may require additional focused efforts and specific strategies.

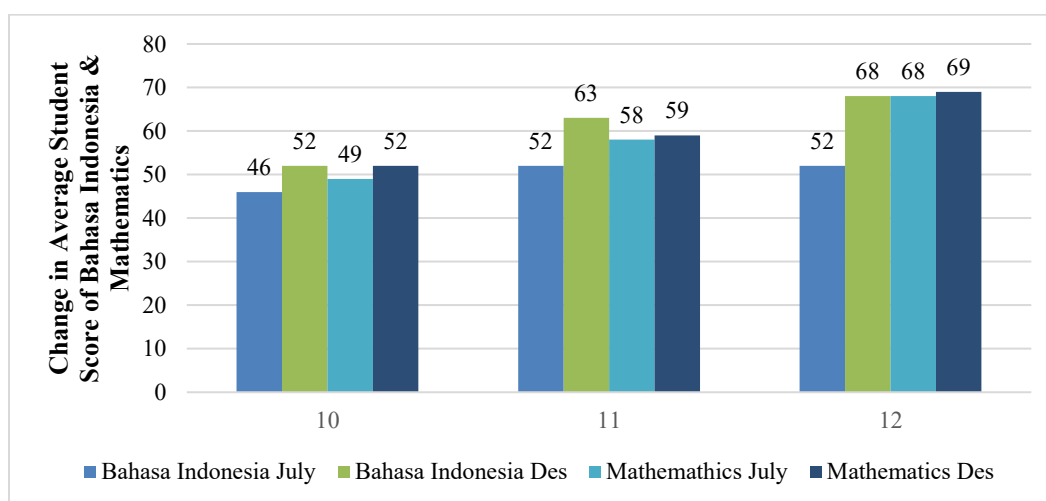


Figure 2. Change in Average Student of Bahasa Indonesia and Mathematics by Class (July and Desember 2024)

Discussion

Summary of Key Findings

This study demonstrates that the PBPM model at SAI successfully integrates Papuan cultural values with project-based learning, leading to notable improvements in students' cultural identity, motivation, and literacy outcomes. For instance, several teachers emphasized that students became more engaged when learning tasks were connected to local customs and storytelling: *"When students work on projects about their own culture, they become proud to present them in class,"* noted one English teacher. However, the impact on mathematics achievement was more modest, suggesting the need for stronger scaffolding in numeracy-focused projects. Institutional support, curriculum flexibility, and active community involvement emerged as critical enablers, as documented in school planning memos and community meeting records. Despite these strengths, the model faces ongoing challenges—including recruiting teachers with both cultural sensitivity and pedagogical competence, addressing persistent language barriers, and coping with limited resources such as laboratory tools and internet access. Observation data also revealed disparities in student participation due to socio-economic gaps, reinforcing the importance of equity-focused strategies within the PBPM approach.

Comparison with Previous Studies

The positive effects of PBPM on student identity and engagement align with global research on culturally responsive education (Gay, 2010; Ladson-Billings, 1995). The strengthened cultural identity and pride observed at SAI resonate with findings from Bishop and Vass (2021), who documented how culturally responsive schooling (CRS) in Australian Indigenous contexts fosters deeper engagement and academic improvement by centering Indigenous knowledge, community relationships, and critical reflection on deficit discourses. Their study highlights the importance of teacher professional learning and authentic community involvement in disrupting colonial legacies and creating culturally safe, empowering educational spaces for Indigenous learners. Complementing these perspectives, empirical research on PBPM at SAI reveals that the program effectively integrates Papuan local wisdom—such as history, language, customs, and cultural arts—with modern skills including agriculture, animal husbandry, entrepreneurship, and technology, thereby equipping students to navigate globalization without losing their cultural identity (Bawor et al., 2023). This skill-based, asset-driven approach not only enhances academic and non-academic achievements but also fosters students' appreciation and preservation of Papuan culture, addressing the dual challenge of modernization and cultural continuity.

Unlike standardized project-based learning models in urban contexts (Thomas, 2000; Parker et al., 2013), PBPM's adaptive curriculum explicitly prioritizes local wisdom—such as *malo bark* paintings and *honai* traditional houses—as pedagogical tools, consistent with the CRIE framework that advocates for curricula actively embracing Indigenous knowledge (NYSED, 2019). A unique aspect of PBPM is its explicit integration of entrepreneurship as a bridge between tradition and modernization. This approach combines traditional knowledge with modern skills, differing from programs like the Aboriginal Summer School for Excellence in Technology and Science (ASSETS), which focus primarily on STEM competencies without explicitly incorporating cultural elements (Chakma, 2024). The PBPM model, therefore, addresses concerns in the literature about the risk of cultural erosion in modernizing Indigenous education by ensuring that students are equipped for both cultural preservation and economic participation, as evidenced by graduates' successful application of entrepreneurial and technological skills in their communities (Bawor et al., 2023).

Academic Outcomes and Equity Challenges

The differential impact of PBPM—significant gains in Bahasa Indonesia but only modest improvement in Mathematics—mirrors patterns observed in project-based learning studies in low-income and Indigenous settings (Widiana et al., 2021; Rubino, 2024). These studies suggest that contextualized, culturally relevant learning environments naturally support literacy development, but additional strategies are needed to improve numeracy, such as integrating local numeracy practices and mother tongue instruction into mathematics teaching (Ball, 2011). Supporting this, recent literature reviews and empirical studies on Project-Based Learning in Indonesia show that this approach effectively boosts scientific literacy and creativity by involving students in meaningful, collaborative projects that foster critical thinking and ICT skills (Muskania & Wilujeng, 2015; Werdiningsih et al., 2021). However, obstacles such as limited resources, time constraints, and inadequate teacher training can impede the full implementation of the program, especially in subjects focused on numeracy. Meta-analyses reveal that although project-based and case-based learning approaches positively influence children's numeracy skills, the extent of this effect varies and often requires additional instructional support to achieve optimal results (Obsesi Journal, 2025). The absence of dropouts at SAI, contrasting with national trends (UNICEF, 2016), underscores the model's potential for retention, though the “undecided” status of some students highlights the need for ongoing support and tracking after graduation.

Teacher Recruitment and Language Barriers

Recruiting teachers who are both academically qualified and culturally sensitive remains a persistent challenge, consistent with findings from Trumbull and Nelson-Barber (2019) and Kalkan & Dağlı (2021). PBPM's use of psychological assessments in teacher recruitment is an innovative response, potentially serving as a model for other indigenous schools. Language barriers, especially students' struggles with Bahasa Indonesia, reflect broader dilemmas in multilingual indigenous education (Ball, 2011). While PBPM mitigates some of these issues through culturally grounded content and the use of Papuan folktales in English instruction, future iterations could benefit from structured bilingual approaches, as demonstrated by Hawaii's KEEP project.

Novel Contributions and Implications

A notable contribution of this research is the documentation of PBPM's hybrid model, which uniquely combines local wisdom, entrepreneurship, and contextual project-based learning at the high school level in Papua—a context rarely explored in prior studies (Djubaedi et al., 2024; Widiana et al., 2021). The findings reinforce the importance of sustained institutional support, curriculum flexibility, and strong community partnerships for the success and scalability of culturally responsive models. Policymakers should prioritize ongoing teacher professional development with a focus on cultural competence, support flexible curricula that integrate local wisdom and modern skills, and foster school-community collaboration (Epstein, 2011; Paccaud et al., 2021). Addressing resource gaps, especially in teaching aids and technology, will require collaborative efforts with local governments, businesses, and NGOs (Prasastiningtyas et al., 2024; Rana, 2024).

Limitations and Future Directions

While this research offers important insights, its qualitative single-case study design may not fully represent the wide range of indigenous educational experiences throughout Papua (Lincoln & Guba, 1985). Future research should adopt mixed-methods and comparative approaches, and examine the scalability and long-term impact of PBPM and similar models in other regions. Further, integrating structured bilingual numeracy instruction and alumni tracking systems could enhance both academic outcomes and post-graduation success.

The PBPM experience at SAI offers a replicable framework for culturally responsive, project-based education in marginalized contexts. By addressing both opportunities and challenges, this study contributes new theoretical and practical insights for advancing equity and relevance in indigenous and multicultural education in Indonesia and beyond.

Suggestions for Future Research

Given the limitations of this qualitative single-case study and the contextual challenges encountered, future research should explore the implementation of the PBPM model or similar culturally responsive project-based models across multiple indigenous or marginalized regions. A comparative, multi-site approach would provide richer insights into the scalability and adaptability of such models in diverse cultural and socio-economic settings. Furthermore, adopting mixed-methods designs that combine qualitative depth with quantitative measurement of learning outcomes (especially in Mathematics and entrepreneurship) would strengthen the generalizability and empirical robustness of findings.

In terms of variables, future studies could specifically examine the impact of bilingual instruction in numeracy, incorporating local language use in Mathematics teaching to overcome language-related learning barriers. Additionally, longitudinal research that tracks alumni trajectories—such as employment, entrepreneurship, and further education—would provide valuable information on the long-term effects of culturally responsive education on life outcomes. Research might also investigate the role of teacher professional development and psychological profiling in improving recruitment and retention of culturally competent educators in indigenous settings.

Further inquiry is needed into the integration of technology and digital media within indigenous curricula without compromising cultural authenticity. As PBPM emphasizes entrepreneurship and modernization alongside cultural preservation, future studies could test interventions that merge digital learning platforms with local knowledge systems. These explorations would be critical to refining hybrid education models that empower indigenous youth to thrive in both their local communities and a globalized world.

Conclusion

This study has explored the implementation and impact of the PBPM model at SAI, highlighting how a flexible, culturally grounded, and project-based curriculum can bridge the gap between heritage and modernization for indigenous Papuan students. The findings show that strong institutional support, adaptive curriculum design, and active community involvement are key enablers for the success of PBPM. The model significantly enhances students' regional identity, motivation, and engagement by embedding local languages, traditions, and values into the learning process, while simultaneously equipping students with technological and entrepreneurial skills needed for future challenges. Notably, PBPM also fosters social cohesion and practical problem-solving abilities among students from diverse backgrounds.

However, the study also reveals persistent challenges, including limited educational infrastructure, a shortage of culturally sensitive teachers, language barriers, socio-economic disparities, and the ongoing tension between modernization and cultural preservation. These findings underscore the complexity of implementing culturally responsive education in marginalized contexts and the need for continuous investment in teacher development, infrastructure, and community partnerships.

Looking ahead, the PBPM model offers a promising framework that can be adapted and scaled to other indigenous or culturally diverse educational settings. Future research should prioritize longitudinal and comparative studies to evaluate the sustained effects and scalability

of the PBPM model, as well as investigate the incorporation of structured bilingual education and focused numeracy instruction. Additionally, further development of alumni tracking and support systems will be essential to ensure sustained student progression and post-graduation success. Overall, this study affirms that culturally responsive, project-based education not only strengthens student identity and engagement but also empowers indigenous youth to become agents of positive change in their communities and beyond.

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