Developing a Pedagogical Framework for Culturally Responsive Teaching Practices in Orang Asli Primary Schools in Malaysia

Nur Hazira Binti Abu Bakar, Norwaliza Binti Abdul Wahab,

Faculty of Human Development, Universiti Pendidikan Sultan Idris (UPSI), 35900 Tanjong Malim, Perak, Malaysia

DOI: https://doi.org/10.47772/IJRISS.2026.101000225

Received: 14 October 2026; Accepted: 19 October 2026; Published: 01 November 2026

ABSTRACT

Indigenous learners may experience a disconnect between mainstream schooling and their communities' cultural and knowledge systems. In Malaysia, this issue is relevant to Orang Asli primary education, where culturally responsive teaching must be considered alongside curriculum and institutional demands. This qualitative multiple case study examined how teachers and school administrators in four Orang Asli primary school contexts understood and enacted culturally responsive teaching and the constraints they encountered. Ten participants (seven teachers and three administrators) contributed data through semi structured interviews, classroom observations, and document analysis. The data were analyzed thematically using ATLAS.ti. Three substantive patterns were identified: contextualized teaching strategies, efforts to integrate Indigenous knowledge, and constraints associated with curriculum and examination demands and teacher preparation. Documentary evidence suggested that cultural references appeared in some lesson plans but were not always embedded in core learning objectives. These findings informed a proposed framework comprising four dimensions, Input, Process, Mediating Mechanisms, and Output. The framework synthesis practices and issues identified in the participating schools with concepts from relevant scholarship. It remains a proposed, unvalidated framework; further review involving teachers, pupils, and Orang Asli community members is needed to assess its cultural appropriateness, feasibility, and potential usefulness. The study contributes a context specific framework for discussion and further investigation of culturally responsive teaching in Orang Asli primary schools in Malaysia.

Keywords: Culturally responsive pedagogy; Indigenous education; Orang Asli; qualitative multiple case study; culturally sustaining pedagogy

INTRODUCTION

Education is widely recognized as a fundamental human right and an important mechanism for social mobility and equitable development (United Nations, 2021). Nevertheless, Indigenous communities worldwide continue to experience educational marginalization, reflected in disparities in academic achievement, school completion, and meaningful participation in education (UNESCO, 2020). These inequities cannot be explained solely by material deprivation or geographical remoteness. They are also associated with misalignments between the epistemological assumptions, pedagogical practices, and value systems of mainstream schooling and those of Indigenous communities (McCarty & Lee, 2014; Smith et al., 2022). When learners' cultural and knowledge systems are marginalized, formal education may become disconnected from their lived experiences rather than serving as an empowering context for learning.

Culturally responsive pedagogy has emerged as one approach to addressing this disconnection. Building on the work of Ladson Billings (1995) and Gay (2018), this perspective positions students' cultural backgrounds as resources for teaching and learning rather than as deficits to be overcome. It emphasizes the importance of connecting instruction with learners' cultural frames of reference. Related approaches, including culturally sustaining and culturally revitalizing pedagogies, extend this emphasis by advocating the maintenance and strengthening of linguistic diversity, cultural vitality, and Indigenous knowledge systems, particularly in communities affected by historical and colonial processes (Paris & Alim, 2017). Research across several

national contexts has explored the potential of such approaches to support learner engagement and cultural identity (Harrison & Sellwood, 2023; Wrench & Garrett, 2020).

In Malaysia, Orang Asli pupils experience educational barriers that include disparities in achievement, school participation, and the alignment between curriculum content and their cultural knowledge systems and everyd-

ay experiences (Dong, 2022; Renganathan, 2022). Although government and non-government initiatives have sought to address these issues, some interventions have been criticised for remaining policy driven and insufficiently attentive to the realities of classroom practice (Selasih & Ahmad Azlan, 2025). Further empirical work is therefore needed to examine how educators understand and enact culturally responsive pedagogy in Orang Asli schools, as well as the institutional conditions that support or constrain these practices.

This study addresses this need by examining culturally responsive teaching practices in Orang Asli primary schools and proposing a contextually informed pedagogical framework. Using a qualitative multiple case study design, it explores the perspectives and practices of teachers and school administrators across four school contexts. Interviews, classroom observations, and document analysis are brought together to: (1) examine how culturally responsive teaching is understood and enacted; (2) identify the factors that constrain or enable its implementation; and (3) develop a proposed framework informed by the empirical findings and relevant scholarship. The framework is presented as a context specific proposition requiring further collaborative review and validation, rather than as an already validated intervention.

LITERATURE REVIEW

Culturally responsive pedagogy (CRP) draws on the work of Ladson Billings (1995) and Gay (2018), who emphasized the role of students' cultural backgrounds in effective teaching. These perspectives reposition culture as a resource for learning. Subsequent work on culturally sustaining and revitalizing pedagogies has extended this position by emphasizing the continuation and strengthening of Indigenous languages, epistemologies, and identities (McCarty & Brayboy, 2021; Smith, Avraamidou, & Adams, 2022). From this perspective, educational inclusion involves more than acknowledging cultural diversity; it also requires meaningful engagement with the knowledge systems through which communities interpret and experience the world.

Empirical studies globally demonstrate diverse strategies for implementing CRP. For instance, integrating indigenous games and narratives into classroom curricula has been shown to enhance motivation, foster cultural pride, and strengthen community school connections (Wrench & Garrett, 2020). In Australia, Harrison and Sellwood (2023) reported that embedding local ecological knowledge into science lessons enhanced pupils' engagement and identity affirmation. Similarly, in teacher professional development, Nganga and Kambutu (2024) highlighted the value of community based training that equips teachers with confidence and skills to adapt pedagogy for indigenous learners. In North America, Battiste (2017) stressed the importance of decolonizing curriculum frameworks to legitimise indigenous epistemologies, while Walsh (2020) in Latin America demonstrated how intercultural bilingual education fosters both linguistic maintenance and improved academic outcomes. Collectively, these studies indicate that CRP requires not only classroom level strategies but also systemic reform in teacher education and curriculum design.

Assessment practices form another critical dimension of CRP. Conventional standardized assessments often disadvantage indigenous learners due to linguistic and cultural biases, narrowing the space for authentic demonstration of knowledge (Kerr & Averill, 2024). Redesigning assessment through performance based tasks, project work, and multilingual adaptations has been shown to foster fairness while recognizing diverse epistemologies (Steele, Gower, & Bogachenko, 2024). Globally, scholars advocate integrated approaches that connect pedagogy, assessment, and teacher professional learning to achieve genuine equity (Sharma, Loreman, & Forlin, 2022; UNESCO, 2020). This growing body of evidence suggests that culturally responsive practices cannot be sustained without structural alignment in assessment and accountability systems.

In Malaysia, research underscores persistent barriers in Orang Asli education. Renganathan (2022) documented how curriculum rigidity, teacher unfamiliarity with indigenous culture, and resource limitations

hinder culturally responsive practices. Dong (2022) similarly observed that Orang Asli pupils' cultural resources are rarely recognized in lesson delivery, leading to disengagement. Policy reviews indicate that interventions often remain fragmented and policy driven rather than grounded in teachers' realities (Selasih & Ahmad Azlan, 2025). At the same time, small scale empirical studies highlight innovative practices. Zubairi and Sarjit (2020) reported the use of local narratives in literacy instruction, while Sajat et al. (2023) described how contextually relevant teaching examples improved pupil participation. Such efforts, however, tend to be isolated and lack systemic support.

Regional scholarship within Southeast Asia reflects similar challenges. In the Philippines, Bautista (2021) documented limited teacher training in integrating indigenous epistemologies, resulting in reliance on mainstream materials. In Indonesia, Suryadi and Supriyanto (2022) noted fragmented implementation of multicultural education policies, which often left indigenous learners marginalized. These comparative perspectives emphasize that while policy frameworks frequently acknowledge indigenous rights, practical enactment tends to rely on individual teacher initiative rather than systemic backing.

Taken together, the literature establishes culturally responsive, culturally relevant, and culturally sustaining pedagogy as important approaches to educational equity, but it does not remove the need to examine how these principles are negotiated in particular settings. The contribution of this study is not to replace established models or to claim a wholly new theory. Rather, it offers a context specific synthesis of educator accounts, classroom observations, and teaching documents from four Orang Asli primary school contexts in Malaysia. The synthesis organize the findings into a practical framework that links learner and community context, teaching processes, supporting mechanisms, and anticipated outcomes. This empirical grounding and explicit attention to institutional constraints distinguish the framework's intended use as a locally informed planning and discussion resource.

METHODOLOGY

This study used a qualitative multiple case study design to explore how culturally responsive teaching (CRT) is understood and enacted in Orang Asli primary schools in Malaysia. A qualitative approach was appropriate for examining participants' perspectives and practices within their social and institutional contexts (Moser & Korstjens, 2018). This section outlines the research design, site and participant selection, data collection, data analysis, trustworthiness, and ethical considerations.

Research Design

A qualitative multiple case study design was adopted because pedagogical practices are shaped by the contexts in which they occur (Baxter & Jack, 2008). Each of the four participating schools was treated as a case, enabling examination of patterns shared across sites as well as contextual differences in the enactment of CRT. This design supports an in depth analysis of a real world phenomenon while retaining attention to the institutional and sociocultural conditions in which it takes place.

Research Sites and Participants

The study was conducted in four primary schools located in Orang Asli education zones in Negeri Sembilan, Pahang, Perak, and Selangor. The sites were purposively selected to represent variation in geographical accessibility, proximity to urban centers, and Orang Asli ethnic group contexts. Ten participants were recruited through purposive sampling: seven teachers and three school administrators. Participants were required to be certified professionals with at least three years of direct experience in Orang Asli education. This criterion was intended to ensure that participants could draw on relevant professional experience when discussing culturally responsive teaching (Palinkas et al., 2015). Including both teachers and administrators enabled the study to consider classroom level practices alongside institutional perspectives.

Data Collection

Data were collected over six months using three methods: semi structured interviews, non-participant classroom observations, and document analysis. Interviews were the primary source of data and explored

participants' understandings of CRT, their reported teaching practices, and the barriers and enabling conditions they encountered. Each interview lasted approximately 60 to 90 minutes. Classroom observations were conducted with all teacher participants, with at least two sessions per teacher. A structured observation protocol was used to record teacher to pupil interactions, instructional materials, and instances relevant to culturally responsive practice. The document corpus included lesson plans, teaching materials, and school policy documents. Comparing interview accounts with observations and documentary records enabled the researchers to examine convergence and divergence across sources.

Data Analysis

The data were analyzed thematically, drawing on Braun and Clarke's (2019) approach, with ATLAS.ti (version 22) used to organise the dataset. Interview recordings were transcribed, and transcripts, observation field notes, and documents were brought together for analysis. Coding combined deductive attention to concepts in culturally responsive pedagogy with inductive attention to patterns arising from the data. Codes were compared across the three data sources and across the four cases, then grouped and reviewed as candidate themes. The analysis yielded three substantive patterns, contextualized teaching, integration of Indigenous knowledge, and constraints on implementation, which informed the development of the framework. ATLAS.ti supported data management and an analytical record; interpretive decisions remained the responsibility of the researchers. The relationship between the findings and the framework is made explicit in Section 4.4. The study did not conduct a formal outcome evaluation of the framework.

Trustworthiness and Ethical Considerations

The study addressed credibility, dependability, transferability, and confirmability (Nowell et al., 2017). Credibility was supported by comparing interview accounts with classroom observations and documentary evidence. An analytical record was maintained in ATLAS.ti, while contextual descriptions support readers in judging the relevance of the findings to other settings. Researcher reflexivity was considered in interpreting participants' accounts and observed practices. Ethical approval was obtained from the relevant university and Ministry of Education authorities, and informed consent was obtained from participants before data collection. Participant and school identifiers are reported through codes or pseudonyms to reduce the risk of identification.

RESULTS AND DISCUSSION

The findings are presented in three empirical themes, contextualized teaching strategies, integration of Indigenous knowledge, and challenges to implementation, followed by the development of the proposed framework. Interview excerpts are considered alongside classroom observations and documentary evidence. The analysis distinguishes participants' accounts from the researchers' interpretation and treats the proposed framework as a synthesis for further examination, not as a validated intervention.

Contextualized Teaching Strategies

Teachers described adapting instructional content to the everyday experiences of Orang Asli pupils, particularly through examples related to agriculture, fishing, and forest based livelihoods. Classroom observations provided examples consistent with these accounts, including mathematics and science lessons connected to familiar community practices. One teacher explained:

"…bila saya ajar matematik, saya gunakan contoh yang dekat dengan mereka, seperti mengira hasil getah atau ikan yang ditangkap. Murid lebih cepat faham sebab itu memang kehidupan seharian mereka." [TB4(G4)(19)]

("…when I teach mathematics, I use examples that are close to them, such as calculating rubber yields or fish they catch. Pupils understand faster because it is part of their everyday life.") [TB4(G4)(19)]

Similarly, a science teacher explained how she grounded abstract concepts in everyday agricultural practices:

"…saya kaitkan dengan tanaman jagung yang mereka nampak sendiri di kampung, jadi bila bercakap tentang fotosintesis mereka lebih mudah faham." [TB2(G2)(47)]

("…I related it to the corn plants they see in their village, so when discussing photosynthesis they understood more easily.") [TB2(G2)(47)]

Document analysis identified lesson plan notes such as "contoh dari kebun getah" ("an example from a rubber plantation"), suggesting that teachers sometimes planned connections between lesson content and pupils' everyday environments. However, these references were often brief illustrations rather than elements explicitly integrated into the learning objectives. Across the evidence presented, contextualisation was therefore evident but varied in depth and consistency, and appeared partly dependent on individual teachers' initiative.

These findings are broadly consistent with literature on place based and experiential approaches in Indigenous education. Wrench and Garrett (2020), for example, examined the incorporation of Indigenous games into physical education, while Harrison and Sellwood (2023) discussed the integration of ecological knowledge into science teaching. In the present study, teachers' accounts and the observed examples indicate that familiar contexts were used to make selected lesson concepts more relevant. Because the study did not directly measure learning outcomes, however, the evidence should not be interpreted as demonstrating a causal improvement in pupils' comprehension.

The findings also point to a tension between contextualized teaching and curriculum demands. Renganathan (2022) has discussed the marginal positioning of Orang Asli cultural knowledge in formal education. The present cases suggest a similar concern: teachers incorporated familiar cultural and environmental references, but these were not always systematically embedded in core lesson objectives. Curriculum expectations and time constraints may therefore limit the continuity of such practices.

Overall, contextualisation emerged as a meaningful reported and observed practice, although its implementation was uneven. The evidence supports the need to examine how curriculum planning and school level support could enable teachers to connect subject content with pupils' lived experiences more consistently. Claims about effects on engagement or understanding should remain proportionate to the qualitative evidence available.

Integration of Indigenous Knowledge

Teachers and administrators described efforts to recognize Orang Asli knowledge by inviting pupils to contribute local knowledge to classroom discussions. Examples included knowledge of plants, food, and local history. One administrator observed:

"…murid di sini tahu tentang tumbuhan ubatan dan makanan hutan. Bila kita benarkan mereka berkongsi dalam kelas Sains, mereka jadi lebih bersemangat dan bangga." [TB9(P3)(21)]

("…pupils here know about medicinal plants and forest food. When we allow them to share in science lessons, they become more motivated and proud.") [TB9(P3)(21)]

Classroom observations included a science lesson in which pupils introduced traditional hunting tools and the teacher connected the discussion to physics concepts. A lesson plan also referred to pokok tongkat ali (the Tongkat Ali plant) when discussing medicinal plants. These examples illustrate ways in which local knowledge appeared in classroom activities and teaching materials. They do not, on their own, establish that the knowledge was represented comprehensively or that all community members would regard the representations as culturally appropriate.

These practices reflect a global pedagogical shift from additive multicultural approaches, where culture is treated as an optional enrichment to sustaining pedagogies, which centralise indigenous epistemologies as legitimate sources of knowledge (McCarty & Brayboy, 2021; Smith, Avraamidou, & Adams, 2022). Locally, Zubairi and Sarjit (2020) also demonstrated how integrating indigenous narratives into literacy instruction enhanced pupils' cultural pride and participation.

Nevertheless, the lesson plans reviewed for this study often positioned Indigenous content as an additional activity rather than as a central learning objective. This pattern is consistent with concerns that Orang Asli

knowledge may remain marginal within curriculum design (Renganathan, 2022). Similar challenges have been discussed in studies of Indigenous education in the Philippines and Indonesia (Bautista, 2021; Suryadi & Supriyanto, 2022).

The findings suggest that teachers' efforts to include Indigenous knowledge were constrained by curricular and institutional conditions. More systematic integration would require flexibility in lesson planning and collaboration with Orang Asli communities to ensure that knowledge is represented accurately, respectfully, and in context. The present study documents classroom examples of inclusion; it does not, on its own, establish how pupils or community members evaluate the cultural authenticity of these representations.

Challenges to Implementation

Participants identified institutional barriers that constrained the implementation of culturally responsive pedagogy. One recurring concern was the tension between examination oriented curriculum demands and the wish to incorporate community knowledge. One teacher explained:

"…kami mahu gunakan lebih banyak pengetahuan masyarakat, tetapi pada masa yang sama perlu ikut silibus peperiksaan. Kadang kadang memang tiada ruang." [TB3(G3)(11)]

("…we want to use more community knowledge, but at the same time we must follow the examination syllabus. Sometimes there is simply no room.") [TB3(G3)(11)]

Observation notes indicated that some lessons relied primarily on textbooks, particularly in upper primary classes where examination preparation was prioritised. When cultural content was included, it sometimes appeared in lesson plan notes as a supplementary activity, such as a discussion of forest foods. These examples suggest that cultural contextualisation was not consistently incorporated into the core structure of lessons.

Administrators further noted a lack of teacher preparation:

"…guru baharu seringkali tidak tahu bagaimana hendak kaitkan pengajaran dengan budaya murid. Mereka perlukan latihan yang khusus."[TB8(P1)(03)]

("…new teachers often do not know how to connect their teaching with pupils' culture. They need targeted training.") [TB8(P1)(03)]

These findings echo scholarship that highlights the difficulty of sustaining culturally responsive pedagogy when curriculum, assessment, and teacher preparation are not aligned. The present data suggest that examination pressures and limited preparation were perceived by participants as barriers to implementation. This interpretation is based on the participating teachers' and administrators' accounts and the observed lessons; it should not be generalised to all Orang Asli schools without further evidence.

Taken together, the findings reveal a tension between teachers' stated willingness to incorporate culturally responsive practices and the institutional conditions in which they work. The data point to the potential value of targeted professional learning, curriculum flexibility, and assessment approaches that recognize varied ways of demonstrating learning. These implications require further consideration with teachers, pupils, and Orang Asli communities.

Development of the Proposed Framework

Drawing on interview, observation, and document analysis findings, the study proposes a Pedagogical Framework of Culturally Responsive Teaching Practices for Orang Asli primary schools (Figure 1). The framework is an empirically informed proposal and has not undergone independent validation or systematic review by pupils and Orang Asli community representatives.

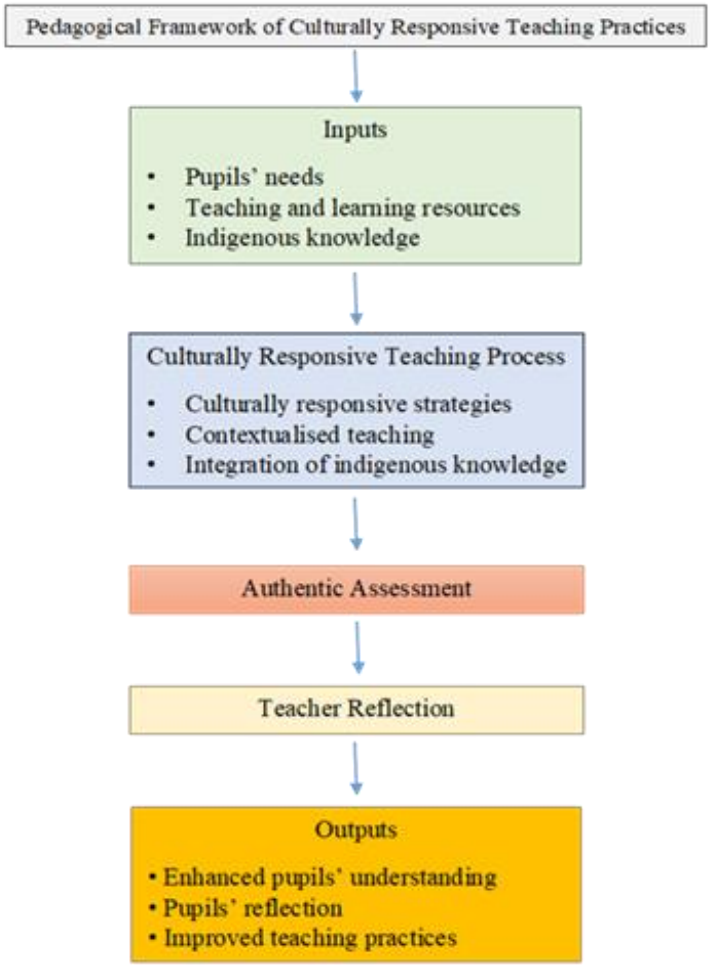


Figure 1. Proposed Pedagogical Framework of Culturally Responsive Teaching Practices for Orang Asli Primary Schools in Malaysia

The framework brings together the three empirical patterns and concepts from scholarship on culturally responsive pedagogy. It comprises four dimensions: Input, Process, Mediating Mechanisms, and Output. The Input dimension reflects evidence about pupils' everyday experiences, available teaching resources, and local knowledge; the Process dimension reflects teachers' use of contextualized examples and efforts to integrate Indigenous knowledge; the Mediating Mechanisms dimension groups authentic assessment and teacher reflection as proposed supports for sustained practice; and the Output dimension states anticipated rather than measured outcomes. The first two dimensions are most directly illustrated by the interview, observation, and lesson plan examples reported in Sections 4.1 and 4.2. The mediating mechanisms and outputs are more prospective and are informed by the conceptual literature as well as the study's identified needs. This distinction is important because the evidence base is stronger for describing current practices and constraints than for establishing the effectiveness of the proposed mechanisms or outcomes.

The Input dimension identifies three foundational considerations: pupils' needs, teaching and learning resources, and Indigenous knowledge. In the study, references to pupils' everyday experiences and the use of locally familiar examples support the relevance of considering learners' linguistic, social, and cultural contexts. Teaching resources may be adapted to include examples from the surrounding environment, such as forest plants, fishing, or rubber tapping, where these examples are appropriate to the learning objectives and local context. Indigenous knowledge is included as a potential source of meaningful subject connections. These components should be developed in consultation with relevant communities rather than treated as uniform across Orang Asli groups.

The Process dimension concerns the teaching practices through which cultural responsiveness may be enacted. It includes culturally responsive pedagogy, contextualized teaching, and integration of Indigenous knowledge. Contextualized teaching connects subject concepts with relevant experiences, while integration of Indigenous

knowledge requires more than adding occasional cultural examples: it involves considering how community knowledge can be represented respectfully alongside curriculum content. The examples of rubber yields, fishing, corn plants, forest foods, medicinal plants, and traditional tools reported in Sections 4.1 and 4.2 illustrate the kinds of connections participants described or that were documented in lessons. These examples are illustrative rather than exhaustive, and local knowledge should not be treated as uniform across Orang Asli communities.

The Mediating Mechanisms dimension group authentic assessment and teacher reflection. These are proposed supports for developing and sustaining culturally responsive practice. Authentic assessment may provide opportunities for pupils to demonstrate learning through varied tasks that remain aligned with curriculum objectives and are culturally and linguistically appropriate. Teacher reflection may help educators examine whose knowledge is represented, how pupils participate, and how lessons could be improved. The evidence reported in this study provides less direct support for these two components than it does for contextualized teaching and Indigenous knowledge integration. They should therefore be understood as theoretically informed propositions for further investigation, not as practices whose effectiveness has been established by this study.

The Output dimension outlines anticipated outcomes, including pupils' understanding of lesson content, learner reflection, teacher professional learning, identity affirmation, self-expression, and equitable participation. These are intended outcomes of the proposed framework, not outcomes verified through a formal evaluation in the present study. Interviews and observations indicate that culturally familiar examples were used and that participants perceived them as meaningful; they do not establish that the framework improves achievement, identity development, or engagement over time. These outcomes require assessment in subsequent validation and evaluation research.

Practical and Policy Implications

The proposed framework may inform discussions about teacher education, curriculum development, and education policy in Malaysia. Initial and continuing teacher education could provide opportunities for teachers to examine culturally responsive approaches, learn from local contexts, and develop strategies for integrating relevant knowledge into subject teaching. The present study points to perceived needs for more targeted preparation, but it was not designed to evaluate teacher education policy or compare training programs.

For curriculum development, the findings point to the need to consider how Orang Asli knowledge can be represented meaningfully within mainstream subjects rather than being confined to occasional supplementary activities. Collaboration among teachers, school leaders, curriculum planners, JAKOA, and Orang Asli community members could help ensure that materials are accurate, locally relevant, and respectful of community knowledge. Such collaboration should form part of the next stage of framework review and validation; it is not evidence that the framework has already been implemented or evaluated.

Although the framework was developed in the context of Orang Asli primary schools, some of its broad principles, such as recognizing learners' cultural resources, contextualizing instruction, and encouraging teacher reflection, may be relevant to other diverse educational settings. Their transferability should nevertheless be examined in each context rather than assumed.

In summary, the proposed framework organises the study's findings and identifies possible areas for professional learning and policy development. Its practical value will depend on clear links to empirical evidence, consultation with Orang Asli communities, and subsequent review with teachers and other relevant stakeholders.

CONCLUSION

This study examined how teachers and school administrators in four Orang Asli primary school contexts understood and enacted culturally responsive pedagogy, as well as the institutional conditions shaping its implementation. Analysis of interviews, classroom observations, and documents identified three central patterns: the use of contextualized teaching strategies, efforts to integrate Indigenous knowledge, and

constraints associated with curriculum and examination demands and teacher preparation. These findings informed the development of a proposed Pedagogical Framework of Culturally Responsive Teaching Practices for Orang Asli primary schools.

The study's principal contribution is a context specific synthesis of classroom practices and institutional constraints into a proposed framework organised around Input, Process, Mediating Mechanisms, and Output. The framework foregrounds pupils' lived experiences and Indigenous knowledge in lesson planning and teaching, while also recognizing that these practices are shaped by curriculum demands and teacher preparation. Its contribution is an empirically informed local organization of existing culturally responsive pedagogy principles, rather than a claim to supersede established models. The framework's distinctive value and cultural appropriateness require further scrutiny by educators and Orang Asli community representatives.

Practically, the framework may serve as a discussion and planning resource for teachers and school leaders seeking to examine cultural responsiveness in curriculum delivery, assessment, and professional reflection. The findings also suggest that teachers' efforts may be difficult to sustain without institutional support. Because the framework has not been validated, it should be treated as a preliminary proposal rather than a proven model or intervention.

Several limitations should be acknowledged. The study involved ten teacher and administrator participants across four school contexts and did not systematically include pupils' or community members' perspectives. The findings therefore cannot establish the cultural authenticity of every classroom representation or demonstrate effects on learning outcomes. Although the multiple case design and triangulation provide contextually grounded insights, the available reporting offers limited detail for a systematic comparison of all four cases. In addition, the proposed framework has not been independently validated. Future research should involve teachers, pupils, and Orang Asli community representatives in reviewing its components; document how codes and themes map to framework dimensions; and examine feasibility and potential outcomes in varied school contexts.

This study offers an empirically informed starting point for further development of culturally responsive teaching in Orang Asli primary schools. Its contribution lies in bringing together educators' accounts, classroom observations, and teaching documents to propose a contextually grounded framework. Further collaborative validation and evaluation are necessary before claims can be made about its effectiveness, wider applicability, or contribution to measurable learning outcomes.

ACKNOWLEDGEMENTS

This research was conducted under the Fundamental Research Grant Scheme (FRGS / 1/2023 / SS10 / UPSI / 02/1) funded by the Ministry of Education Malaysia.

Conflict of Interest

The authors declare that they have no conflict of interest regarding the publication of this article.

Author Contribution

The authors confirm the following contributions: study conception and design: Nur Hazira Binti Abu Bakar and Norwaliza Binti Abdul Wahab; data collection: Nur Hazira Binti Abu Bakar; analysis and interpretation: both authors; manuscript preparation: both authors. Both authors reviewed and approved the final manuscript.

REFERENCES

1. Goodfellow,Bautista, J. (2021). Indigenous education in the Philippines: Challenges in integrating local knowledge into formal schooling. Asia Pacific Education Review, 22, 415 to 427 (2021). https://doi.org/10.1007/s12564-020-09693-4
2. Battiste, M. (2017). Decolonizing education: Nourishing the learning spirit. Canadian Journal of Education, 40, 1 to 25 (2017). https://doi.org/10.2307/canajedu40.1.1

3. Creswell, J. W., & Poth, C. N. (2018). Qualitative inquiry and research design: Choosing among five approaches (4th ed.). Sage, Thousand Oaks (2018).
4. Dong, Z. (2022). Cultural mismatch and learning barriers among Orang Asli pupils in Malaysia. International Journal of Educational Development, 89, 102534 (2022). https://doi.org/10.1016/j.ijedudev.2021.102534
5. Gay, G. (2018). Culturally responsive teaching: Theory, research, and practice (3rd ed.). Teachers College Press, New York (2018).
6. Harrison, N., & Sellwood, J. (2023). Embedding ecological knowledge in science classrooms: Lessons from Aboriginal education. Teaching and Teacher Education, 124, 104004 (2023). https://doi.org/10.1016/j.tate.2022.104004
7. Kerr, H., & Averill, R. (2024). Addressing inequities in assessment for indigenous learners. Assessment in Education: Principles, Policy & Practice, 31, 178 to 196 (2024). https://doi.org/10.1080/0969594X.2023.2225678
8. Ladson Billings, G. (1995). Toward a theory of culturally relevant pedagogy. American Educational Research Journal, 32, 465 to 491 (1995). https://doi.org/10.3102/00028312032003465
9. McCarty, T. L., & Brayboy, B. M. J. (2021). Culturally sustaining schooling for indigenous youth. Harvard Educational Review, 91, 1 to 27 (2021). https://doi.org/10.17763/1943-5045-91.1.1
10. Nganga, L., & Kambutu, J. (2024). Enhancing teachers' cultural competence through community based professional development. Journal of Teacher Education, 75, 211 to 225 (2024). https://doi.org/10.1177/00224871231145678
11. Renganathan, S. (2022). Negotiating indigeneity in Malaysia: Education, marginalization, and the Orang Asli. Race Ethnicity and Education, 25, 815 to 831 (2022). https://doi.org/10.1080/13613324.2020.1850013
12. Sajat, M., Zainal, H., & Roslan, M. (2023). Contextualized teaching and participation among Orang Asli pupils in Malaysia. Malaysian Journal of Learning and Instruction, 20, 55 to 78 (2023). https://doi.org/10.32890/mjli2023.20.2.3
13. Selasih, N., & Ahmad Azlan, M. (2025). Policy implementation and indigenous education in Malaysia: A critical review. Kajian Malaysia, 43, 89 to 112 (2025). https://doi.org/10.21315/km2025.43.1.4
14. Sharma, U., Loreman, T., & Forlin, C. (2022). Developing inclusive education systems: Lessons from international contexts. International Journal of Inclusive Education, 26, 907 to 925 (2022). https://doi.org/10.1080/13603116.2020.1712622
15. Smith, J., Avraamidou, L., & Adams, J. (2022). Culturally sustaining pedagogy in science education: Revitalising knowledge and identity. Journal of Research in Science Teaching, 59, 1205 to 1228 (2022). https://doi.org/10.1002/tea.21765
16. Steele, A., Gower, C., & Bogachenko, T. (2024). Exam oriented accountability and the challenges of culturally responsive pedagogy. Teaching Education, 35, 1 to 17 (2024). https://doi.org/10.1080/10476210.2023.2201125
17. Suryadi, H., & Supriyanto, E. (2022). Multicultural education policies and indigenous learners in Indonesia: Fragmented implementation. Compare: A Journal of Comparative and International Education, 52, 867 to 884 (2022). https://doi.org/10.1080/03057925.2021.1917445
18. UNESCO. (2020). Global education monitoring report 2020: Inclusion and education. UNESCO Publishing, Paris (2020). https://doi.org/10.54675/unesco2020.34
19. United Nations. (2021). State of the world's indigenous peoples: Rights to education. United Nations, New York (2021). https://doi.org/10.18356/9789210056083
20. Walsh, C. (2020). Intercultural bilingual education in Latin America: Persistence and change. International Journal of Bilingual Education and Bilingualism, 23, 707 to 720 (2020). https://doi.org/10.1080/13670050.2017.1420030
21. Wrench, A., & Garrett, R. (2020). Games and culture: Incorporating indigenous practices into physical education. Sport, Education and Society, 25, 245 to 258 (2020). https://doi.org/10.1080/13573322.2018.1482260
22. Zubairi, A., & Sarjit, S. (2020). Local narratives and literacy instruction among Orang Asli pupils. Journal of Nusantara Studies, 5, 189 to 207 (2020). https://doi.org/10.24200/jonus.vol5iss2pp189-207
23. Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. The Qualitative Report, 13(4), 544 to 559. https://doi.org/10.46743/2160-3715/2008.1573

24. Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. Qualitative Research in Sport, Exercise and Health, 11(4), 589 to 597. https://doi.org/10.1080/2159676X.2019.1628806
25. Moser, A., & Korstjens, I. (2018). Series: Practical guidance to qualitative research. Part 3: Sampling, data collection and analysis. European Journal of General Practice, 24(1), 9 to 18. https://doi.org/10.1080/13814788.2017.1375091
26. Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. International Journal of Qualitative Methods, 16, 1 to 13. https://doi.org/10.1177/1609406917733847
27. Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. Administration and Policy in Mental Health and Mental Health Services Research, 42, 533 to 544. https://doi.org/10.1007/s10488-013-0528-y
28. McCarty, T. L., & Lee, T. S. (2014). Critical culturally sustaining/revitalizing pedagogy and Indigenous education sovereignty. Harvard Educational Review, 84(1), 101 to 124. https://doi.org/10.17763/haer.84.1.q83746nl5pj34216
29. Paris, D., & Alim, H. S. (Eds.). (2017). Culturally sustaining pedagogies: Teaching and learning for justice in a changing world. Teachers College Press.