

Integrating Community-Embedded Culturally Responsive Teaching in Orang Asli Primary Schools

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Abstract

This study aims to design a community-embedded culturally responsive teaching model for Orang Asli primary education in Malaysia by integrating indigenous knowledge into classroom practices. Despite national efforts to improve educational access and reduce dropout rates, Orang Asli students continue to experience disengagement due to the misalignment between mainstream curricula and their cultural contexts. Adopting a qualitative case study approach, data were collected through in-depth interviews with four Orang Asli teachers and four school principals. The respondents were selected using purposive sampling across four zones in Peninsular Malaysia: Northern, Central, Southern, and East Coast. Additional data were gathered through classroom observations and document analysis. Thematic analysis revealed three core components essential to the proposed model: (i) systematic integration of indigenous knowledge into curriculum content, (ii) active community involvement in instructional processes, and (iii) enhancement of students' self-assurance through cultural validation. Findings indicate that embedding local knowledge and community participation within teaching practices increases student engagement, strengthens cultural identity, and fosters a stronger sense of belonging to the school environment. The study contributes to the development of an inclusive pedagogical model tailored to indigenous contexts and offers practical implications for policymakers, educators, and curriculum designers seeking to promote equitable and sustainable education for minority communities in Malaysia.

Keywords: Indigenous Knowledge, Culturally Responsive Teaching, Orang Asli Education, Community Engagement, Inclusive Education, Malaysia

Introduction

Culturally responsive education has become increasingly recognised as a critical framework for addressing systemic inequities affecting minority and indigenous communities (Ladson-Billings, 1995; Gay, 2018; Paris & Alim, 2017). In the Malaysian context, the Orang Asli

comprising diverse indigenous groups in Peninsular Malaysia continue to encounter structural, geographic, and epistemological barriers within the formal education system. A persistent misalignment between the national curriculum and indigenous knowledge systems has contributed to diminished engagement, weakened academic motivation, and elevated dropout risks (Abdullah, 2022; Abd Jalil & Abdullah, 2024). When schooling fails to reflect students' cultural worldviews, ecological knowledge, and communal practices, education may be experienced as externally imposed rather than socially meaningful. In this regard, a culturally responsive, local knowledge-based approach offers a theoretically grounded pathway toward enhancing participation, identity affirmation, and academic achievement among Orang Asli learners (Bishop & Glynn, 1999; Gay, 2018).

The Malaysia Education Blueprint 2013–2025 represents a significant policy effort to strengthen national educational performance and expand access (Ministry of Education Malaysia, 2013). Improvements in enrolment rates and the implementation of initiatives such as the Zero Student Dropout Programme associated with a reduction in national dropout rates from 1.13% in 2020 to 0.99% in 2022 (Ministry of Education Malaysia, 2023) demonstrate measurable institutional progress. Nevertheless, aggregate national indicators risk obscuring persistent subnational disparities. Orang Asli students continue to experience disproportionate educational disadvantages (Renganathan, 2022; Ya Shin & Idrus, 2021), suggesting that access-based reforms, while necessary, remain insufficient to address deeper curricular and cultural incongruities.

Background of the Study

In Malaysia, the Orang Asli community comprising multiple indigenous subgroups with distinct linguistic, cultural, and ecological traditions has historically encountered structural inequities within the formal education system (Renganathan, 2022). These inequities are shaped by intersecting factors, including geographic remoteness, socioeconomic marginalisation, infrastructural limitations, and longstanding patterns of cultural exclusion. Educational disparities are reflected in comparatively lower attainment levels and higher dropout rates among Orang Asli students relative to national averages (Ya Shin & Idrus, 2021). Broader structural vulnerabilities, including health and socioeconomic risks among Orang Asli children, further compound educational disadvantage (Tokijoh et al., 2022).

A central concern lies in the cultural incongruence between mainstream curricular frameworks and indigenous knowledge systems (Abdullah, 2022). The national curriculum, largely constructed upon dominant cultural norms, linguistic assumptions, and standardised pedagogical models, frequently marginalises locally grounded epistemologies (Battiste, 2013; Bishop & Glynn, 1999). Indigenous ecological knowledge, communal learning practices, oral traditions, and culturally embedded value systems are seldom integrated systematically into classroom instruction (Nakata, 2007). This curricular disjuncture may generate a sense of alienation among Orang Asli learners, contributing to disengagement and diminished academic self-concept.

Empirical research in culturally responsive pedagogy suggests that when instructional practices acknowledge and integrate students' cultural frameworks, educational engagement and academic performance are enhanced. Indigenous knowledge within Orang Asli communities encompasses sophisticated understandings of environmental stewardship,

traditional subsistence practices, intergenerational knowledge transmission, and collective social norms. Abd Jalil and Abdullah (2024) emphasise the need for culturally responsive STEM education strategies tailored to Orang Asli students. Similarly, research on language instruction highlights the importance of inclusive, culturally grounded, and community-empowering pedagogical approaches (Wok et al., 2023).

Against this backdrop, there is a compelling need to conceptualise and develop a teaching framework specifically tailored to Orang Asli educational contexts, particularly in socioeconomically marginalised communities. Such a framework must move beyond assimilationist paradigms and position indigenous knowledge as a central, structurally embedded component of the learning process. Aligning with broader national commitments to equity and inclusivity, the development of an indigenous knowledge-based culturally responsive teaching framework represents both a pedagogical and ethical imperative. Accordingly, this study seeks to examine the design and implementation of such a framework, critically evaluating its potential to enhance engagement, strengthen identity affirmation, and improve educational outcomes among Orang Asli primary school students in Malaysia.

Literature Review

Indigenous Knowledge-Based Education

Indigenous knowledge-based education is grounded in the recognition that knowledge systems are culturally situated, relational, and historically constructed (Kimmerer, 2020). Indigenous knowledge encompasses locally generated understandings, ecological practices, social norms, spiritual traditions, and intergenerational modes of transmission embedded within specific communities. Unlike universalised curricular frameworks that privilege standardised Western epistemologies, Indigenous knowledge systems are context-bound and communally sustained. Their educational relevance lies not merely in cultural preservation but in their epistemic legitimacy as coherent and systematic ways of knowing that challenge dominant knowledge hierarchies within formal schooling (McKinley & Smith, 2020).

Scholars have argued that the marginalisation of indigenous knowledge within formal schooling constitutes a form of epistemic exclusion, whereby dominant knowledge systems are institutionalised while local epistemologies are relegated to peripheral status. Bishop and Glynn (1999) contend that educational reform must address the power relations embedded in curriculum design, particularly in contexts where indigenous learners are positioned within structures historically shaped by colonial and assimilationist logics. From this perspective, integrating indigenous knowledge into formal education is not an act of cultural accommodation but a restructuring of pedagogical authority and knowledge hierarchies.

Empirical research further demonstrates that indigenous knowledge integration enhances student engagement and academic participation. When curricular content reflects students' lived experiences, environmental familiarity, and communal values, learners are more likely to construct meaning actively rather than engage in rote assimilation of externally imposed knowledge. This alignment fosters cognitive coherence, as students can situate new academic concepts within culturally familiar interpretive frameworks. Moreover, the validation of indigenous epistemologies strengthens identity formation and promotes a sense of belonging within institutional spaces that have historically marginalised indigenous learners.

In the Malaysian context, indigenous knowledge within Orang Asli communities includes sophisticated ecological understandings, traditional subsistence strategies, medicinal knowledge, oral narratives, and collective decision-making practices. These knowledge systems represent valuable pedagogical resources that can enrich curriculum content while reinforcing cultural continuity. However, their systematic integration requires structural commitment rather than episodic cultural inclusion. Indigenous knowledge-based education therefore necessitates curriculum adaptation, teacher preparedness, and institutional recognition of community expertise as an authoritative source of knowledge. Malaysian qualitative evidence from multiple zones further demonstrates that indigenous knowledge-based teaching strengthens identity affirmation and engagement among Orang Asli pupils (Abdul Wahab et al., 2025).

Culturally Responsive Teaching

Culturally responsive teaching (CRT) provides a pedagogical framework through which indigenous knowledge integration can be operationalised. CRT is premised on the assertion that culture shapes cognition, communication patterns, social interaction, and meaning-making processes. Consequently, effective pedagogy must be responsive to students' sociocultural contexts rather than assume cultural neutrality in teaching and learning. The theoretical foundations of CRT are closely aligned with sociocultural learning theory, which posits that knowledge is constructed through socially mediated interaction within culturally meaningful contexts. From this standpoint, classroom practices that disregard students' cultural identities risk producing cognitive and affective dissonance. Conversely, instruction that draws upon culturally familiar references, narratives, and community practices enhances accessibility and engagement. Paris and Alim (2017) extend this into culturally sustaining pedagogies that maintain minority cultural practices within schooling systems.

In relation to Orang Asli education, culturally responsive teaching holds particular significance. Ya Shin and Idrus (2021) highlight the importance of contextualising education policy to address the distinctive sociocultural realities of Orang Asli learners. Their analysis suggests that educational strategies tailored to indigenous contexts can mitigate disengagement by fostering relevance and inclusivity. However, the literature also cautions against superficial adaptations that reduce culture to symbolic representation without transforming pedagogical structures. Genuine cultural responsiveness requires sustained institutional commitment, teacher reflexivity, and community collaboration.

CRT extends beyond classroom technique; it encompasses relational ethics and identity affirmation. When educators acknowledge and respect students' cultural identities, they contribute to the development of positive academic self-concept and psychological security. For indigenous learners who may experience structural marginalisation, such validation can serve as a protective factor against disengagement. Thus, culturally responsive teaching is not merely a methodological preference but an equity-oriented pedagogical imperative.

In synthesising indigenous knowledge-based education and culturally responsive teaching, it becomes evident that meaningful reform in Orang Asli education must address both epistemological and relational dimensions of schooling. Indigenous knowledge provides substantive curricular content, while culturally responsive pedagogy offers the instructional framework through which such knowledge can be enacted. Together, these perspectives form

the conceptual foundation for the development of a community-embedded culturally responsive teaching model tailored to Orang Asli primary education.

Aim and Objectives

To explore and conceptualise a community-embedded culturally responsive teaching model for Orang Asli primary education through the integration of indigenous knowledge and community participation.

To explore how indigenous knowledge is integrated into curriculum and classroom practices within selected Orang Asli primary schools.

To examine how community members (e.g., elders, parents, local leaders) participate in and contribute to culturally responsive teaching practices.

To investigate how culturally responsive pedagogical practices are experienced by educators in relation to student engagement and self-assurance.

To develop a theoretically informed community-embedded teaching framework grounded in empirical findings.

Methodology

This study employed a qualitative research design grounded in a multiple-case study approach to explore the enactment of culturally responsive practices within Orang Asli primary schools in Peninsular Malaysia. The case study methodology was selected due to its suitability for examining contextually embedded phenomena where the boundaries between the phenomenon and its setting are not clearly delineated (Creswell & Poth, 2017). Given that culturally responsive pedagogy is inherently situated within specific sociocultural environments, a case-based design enabled in-depth exploration of pedagogical processes, relational dynamics, and institutional practices within authentic school contexts.

Four Orang Asli primary schools from four zones in Peninsular Malaysia; Northern Zone, Central Zone, Southern Zone, and East Coast Zone were purposively selected to ensure contextual relevance and depth of insight. The inclusion of schools across these geographically distinct zones enabled the study to capture variation in socio-cultural, environmental, and institutional contexts while maintaining analytical focus on indigenous education settings. This multi-zonal selection strengthened the study's capacity for analytical comparison and enhanced the potential transferability of findings across diverse Orang Asli communities within Malaysia.

Participants and Sampling Strategy

Purposive sampling was employed to identify participants with direct experiential knowledge of indigenous education practices. The sample comprised Four Orang Asli teachers and four school principals serving in the selected schools. These participants were selected on the basis of their professional roles, experience working with Orang Asli learners, and involvement in instructional or administrative decision-making processes. Although the sample size was modest, qualitative inquiry prioritises depth of insight over statistical generalisability. The participants' positionalities as both educators and institutional leaders within indigenous schooling contexts provided multi-layered perspectives on curriculum implementation, community engagement, and pedagogical challenges.

Zone	Teachers	Gender	Code	Principles	Gender	Code
Northern Zone	1	Female	T1	1	Male	P1
Central Zone	1	Male	T2	1	Male	P2
Southern Zone	1	Male	T3	1	Male	P3
East Coast Zone	1	Female	T4	1	Male	P4

Data Collection Procedures

Data were generated through three complementary qualitative methods to ensure depth and contextual richness. The use of triangulated data sources; interviews, observations, and document analysis aligns with established qualitative rigor principles (Flick, 2018).

In-Depth Semi-Structured Interviews

In-depth semi-structured interviews were conducted with participating teachers and school principals to elicit detailed accounts of their experiences, pedagogical practices, and perspectives on indigenous knowledge integration and culturally responsive teaching. The semi-structured format allowed for conceptual flexibility while maintaining alignment with the study's research objectives.

Non-Participant Classroom Observations

Non-participant classroom observations were undertaken to examine how culturally responsive strategies were enacted in everyday instructional settings. These observations focused on teacher–student interactions, references to indigenous knowledge, patterns of student participation, and the overall classroom climate. Observational data enabled the researcher to move beyond self-reported accounts and capture pedagogical practices as they unfolded in situ.

Document Analysis

Document analysis was conducted on relevant curricular materials, lesson plans, and school-level instructional documents. This process provided insight into the formal representation of indigenous knowledge within curriculum frameworks and allowed for comparison between documented plans and observed classroom practices. The integration of these three data sources facilitated methodological triangulation, thereby strengthening the credibility and interpretive robustness of the findings. The combination of these methods enabled methodological triangulation, enhancing the robustness and interpretive depth of the findings.

Data Analysis

Data were analysed using thematic analysis informed by an inductive–deductive coding process. Interview transcripts, field notes, and documentary evidence were systematically coded to identify recurring patterns and conceptual categories. Initial open coding allowed themes to emerge from the data, while subsequent axial coding aligned these emergent patterns with the study's theoretical framework on culturally responsive pedagogy and indigenous knowledge integration. Three core themes were identified. These themes were refined through iterative comparison across cases to ensure conceptual coherence and analytical consistency.

1. Integration of indigenous knowledge into the curriculum
2. The role of community in teaching and learning processes
3. Enhancement of student self-assurance through cultural validation

Trustworthiness and Research Rigor

Ensuring trustworthiness in qualitative research requires systematic attention to credibility, dependability, confirmability, and transferability. In this study, credibility was enhanced through source triangulation, whereby multiple data sources interviews, observations, and documents were examined to corroborate emerging findings. As noted by Flick (2018), triangulation enables cross-verification of interpretations and reduces reliance on single-source accounts. Member checking was conducted through informal validation with participants to confirm the accuracy of interpretive representations. This process contributed to confirmability by ensuring that findings reflected participants' intended meanings rather than researcher-imposed assumptions. Dependability was strengthened through systematic documentation of research procedures, coding decisions, and analytical memos, thereby providing an audit trail of the inquiry process. While the findings are context-specific, thick description has been employed to allow readers to assess the potential transferability of insights to comparable indigenous education settings.

Ethical Considerations

Ethical clearance was obtained prior to data collection. Participants provided informed consent, and confidentiality was maintained through anonymisation of schools and individuals. Given the sensitivity surrounding indigenous education and community representation, particular care was taken to avoid deficit-based interpretations and to ensure respectful engagement with participants' perspectives. This methodological framework reflects a theoretically aligned and rigorously executed qualitative inquiry designed to examine the development of a community-embedded culturally responsive teaching model within Orang Asli primary schools.

Findings and Discussion

The findings are presented in alignment with the three core components identified in the abstract and underpinning the proposed community-embedded culturally responsive teaching model: (i) systematic integration of indigenous knowledge into curriculum content, (ii) structured community involvement in instructional processes, and (iii) enhancement of students' self-assurance through cultural validation. The discussion integrates empirical evidence from participant narratives with relevant theoretical perspectives to situate the findings within broader scholarly discourse.

Systematic Integration of Indigenous Knowledge into Curriculum Content

A central finding of the study concerns the pedagogical significance of embedding indigenous knowledge within formal curriculum structures. Participants consistently emphasised that incorporating Orang Asli cultural practices, traditions, and local environmental knowledge enhanced the relevance of classroom instruction. One teacher noted, "*When we incorporate the cultural practices and traditions of communities, such as the Orang Asli, we create a more relevant learning environment*" (T1). T2 affirmed this view, adding, "*Students feel seen and heard when their cultural knowledge is valued in the classroom.*" Another teacher similarly observed that engaging students through local contextual references fostered deeper

intellectual connection, explaining that students *“I feel seen and heard when their cultural knowledge is valued in the classroom”* (T4).

During one discussion, T3 reflected, *“If we teach science using examples from the forest or river that students know, they understand faster. They can relate.”* T4 agreed, noting, *“When I use traditional stories or hunting practices to explain mathematics concepts like measurement or estimation, students become more engaged.”* These exchanges illustrate a shared pedagogical recognition among teachers that indigenous knowledge enhances conceptual accessibility and classroom participation.

These accounts suggest that indigenous knowledge functions not merely as supplementary enrichment but as a mediating framework through which students construct meaning. From a sociocultural perspective, learning is facilitated when instructional content resonates with learners’ lived experiences. As T1 remarked in a follow-up conversation, *“It is not about replacing the syllabus, but connecting it with what they already know.”* T2 further elaborated, *“When lessons begin with their environment, their confidence increases before we move to abstract ideas.”* The integration of indigenous ecological knowledge, oral traditions, and community practices enables students to anchor abstract academic concepts within culturally familiar contexts, thereby strengthening cognitive engagement and interpretive coherence. School leaders echoed this perspective. P1 stated, *“Culturally responsive curriculum design helps to combat stereotypes and promotes inclusivity within the school.”* P2 similarly observed, *“When we acknowledge Orang Asli traditions formally in lesson plans, it changes how teachers and students perceive their culture.”* P3 added, *“It also sends a message to the wider school community that indigenous knowledge is legitimate knowledge.”* These reflections underscore the broader institutional implications of curricular integration beyond individual classroom engagement.

Consistent with prior scholarship (Hodge & Wright, 2022), the findings indicate that epistemic recognition enhances both academic participation and identity affirmation. However, participants also acknowledged structural challenges. T3 noted, *“We need more training to confidently integrate indigenous knowledge into subjects like mathematics and science.”* T4 expressed concern that *“without proper guidelines, some teachers may hesitate because they are unsure how far they can adapt the curriculum.”*

School leaders similarly emphasised institutional support. P2 remarked, *“Professional development is crucial if we want this approach to be sustained.”* P3 added, *“Policy flexibility would allow schools to collaborate more closely with the community.”* As noted in existing literature (Ya Shin & Idrus, 2021), culturally responsive practice cannot be reduced to isolated classroom strategies; rather, it necessitates systemic commitment to epistemological pluralism within education policy and teacher preparation frameworks.

Structured Community Involvement in Instructional Processes

The second theme highlights the pivotal role of community engagement in operationalising culturally responsive pedagogy. Participants described deliberate efforts to involve elders, parents, and local leaders in instructional activities. T1 stated, *“Inviting elders to share traditional narratives increases students’ interest and respect for learning.”* T2 added, *“We*

can align community knowledge with subjects, such as oral histories in social studies or medicinal practices in science."

T3 further observed, *"When elders explain concepts related to the forest or river, students listen more attentively."* Similarly, T4 noted, *"Parental involvement during cultural activities encourages students to participate more confidently."* These exchanges reflect a shared recognition that culturally responsive teaching extends beyond content adaptation to relational engagement.

School leaders echoed this perspective. P1 remarked, *"Structured cultural sessions should be integrated into the school calendar."* P2 suggested, *"Monthly community engagement programmes would ensure continuity rather than one-off events."* P3 emphasised, *"Community collaboration must be formally recognised within school planning."*

Community involvement serves multiple pedagogical functions. First, it reinforces the legitimacy of indigenous knowledge by positioning community members as recognised knowledge authorities. Second, it bridges formal schooling with informal cultural transmission processes, thereby reducing discontinuity between home and school contexts. As T1 succinctly stated, *"Students are more comfortable when learning reflects their home experiences."* Third, it allows students to observe the practical application of academic concepts within culturally meaningful contexts, a point highlighted by T2, who explained, *"Lessons become clearer when linked to real community practices."*

The findings therefore support the conceptualisation of community engagement as a structural pillar of the proposed model. Rather than treating parental or elder participation as occasional enrichment activities, participants consistently advocated sustained and organised collaboration. P2 concluded, *"Without institutional commitment, community involvement cannot be sustained."* This aligns with theoretical perspectives that emphasise relational pedagogy and community partnership as central to equitable Indigenous education.

Enhancement of Students' Self-Assurance Through Cultural Validation

The third theme concerns the psychosocial impact of culturally responsive practices on students' self-assurance and institutional belonging. Participants reported observable shifts in students' confidence, participation patterns, and willingness to contribute during classroom discussions when their cultural identities were validated. P1 remarked, *"When students see their traditions and language reflected in lessons, they feel more connected to the school."* P2 similarly noted, *"Culturally relevant instruction reduces alienation and makes learning more accessible."*

Teachers provided classroom-level observations to support these claims. T2 explained, *"When traditional stories are included in reading activities, students participate more actively, especially when they recognise the narratives."* T1 added, *"Students who were previously quiet became more confident once they felt their culture was respected."* T3 observed, *"Validation of their background encourages them to speak without fear of being judged."* T4 further stated, *"When lessons reflect their lived experiences, students demonstrate greater enthusiasm and persistence."*

These findings suggest that cultural validation functions as a catalyst for strengthening academic self-concept. When Indigenous students perceive their heritage as respected rather than marginalised, they are more likely to experience psychological security within the classroom. Importantly, enhanced self-assurance was not described solely in emotional terms but also in relation to academic engagement. As P3 noted, *“We observed improved attentiveness and more consistent participation when culturally responsive approaches were applied.”* Collectively, the data indicate that culturally responsive pedagogy operates both as an epistemological intervention and as a socio-emotional support mechanism, fostering confidence, engagement, and sustained participation in learning.

Collectively, the three themes demonstrate the interdependence of epistemic integration, community partnership, and identity affirmation. Indigenous knowledge integration enhances curricular relevance; structured community involvement legitimises and sustains that integration; and cultural validation strengthens students’ self-assurance and engagement. These components form the empirical foundation of the proposed community-embedded culturally responsive teaching model. The findings reinforce the argument that equitable education for Orang Asli learners requires more than access-based reforms. It necessitates a reconfiguration of pedagogical structures to recognise indigenous knowledge as a foundational, rather than peripheral, element of schooling.

Conclusion

This study examined the development and implementation of a community-embedded culturally responsive teaching model grounded in the integration of indigenous knowledge within Orang Asli primary schools in Malaysia. The findings indicate that systematically incorporating local knowledge, alongside structured community engagement and identity-affirming pedagogical practices, enhances students’ engagement, participation, and self-confidence in classroom learning. These results suggest that culturally responsive education is not merely an alternative pedagogical approach but a necessary response to longstanding curricular and epistemological misalignments that have historically marginalised indigenous learners within formal schooling systems. Integrating indigenous knowledge into curriculum frameworks creates learning environments that are culturally relevant and responsive to the lived experiences of Orang Asli students. When teaching practices recognise students’ cultural backgrounds and community-based knowledge systems, they strengthen academic engagement while fostering a deeper sense of belonging within the school environment. In this way, culturally responsive teaching serves as an important bridge between formal education and the sociocultural realities of indigenous communities. This study was motivated by the persistent mismatch between mainstream schooling practices and the cultural contexts of Orang Asli learners, which has contributed to disengagement and limited educational participation. Addressing this gap requires not only improved access to education but also pedagogical approaches that recognise indigenous knowledge systems as legitimate sources of learning. Accordingly, this study contributes to the field of indigenous education by proposing a community-embedded culturally responsive teaching model that demonstrates how indigenous knowledge can be integrated into classroom practices through structured collaboration between schools and local communities. The findings offer both theoretical insights and practical guidance for developing more inclusive and culturally sustainable educational practices. However, sustainable implementation requires strong institutional support, including ongoing teacher professional development and mechanisms

that enable sustained collaboration with indigenous communities. In conclusion, culturally responsive education grounded in indigenous knowledge offers a viable pathway toward greater educational equity for Orang Asli students in Malaysia. Future research should examine the long-term impact and scalability of this model across diverse indigenous educational contexts.

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References

- Abdullah, A. H. (2022). A systematic review of what Malaysia can learn to improve Orang Asli students' mathematics learning from other countries. *Sustainability*, 14(20), Article 13201. <https://doi.org/10.3390/su142013201>
- Abd Jalil, A. H., & Abdullah, A. H. (2024). STEM education and mathematics performance among Orang Asli primary school students in Johor, Malaysia: Challenges and recommendations. In Proceedings of the IEEE Frontiers in Education Conference. IEEE. <https://ieeexplore.ieee.org/document/10893311>
- Battiste, M. (2013). *Decolonizing education: Nourishing the learning spirit*. Purich Publishing
- Bishop, R., & Glynn, T. (1999). *Culture counts: Changing power relations in education*. Dunmore Press.
- Creswell, J. W., & Poth, C. N. (2017). *Qualitative inquiry and research design: Choosing among five approaches (4th ed.)*. Sage Publications.
- Flick, U. (2018). *An introduction to qualitative research (6th ed.)*. Sage Publications.
- Gay, G. (2018). *Culturally responsive teaching: Theory, research, and practice (3rd ed.)*. Teachers College Press.
- Kimmerer, R. W. (2020). The role of Indigenous knowledge in science and conservation. *Journal of Forestry*, 118(3), 298–300. <https://doi.org/10.1093/jofore/fvaa015>
- Ladson-Billings, G. (1995). Toward a theory of culturally relevant pedagogy. *American Educational Research Journal*, 32(3), 465–491. <https://doi.org/10.3102/00028312032003465>
- McKinley, E., & Smith, L. T. (2020). Towards self-determination in Indigenous education research: A critical analysis of theories and practices. *Educational Philosophy and Theory*, 52(1), 1–12. <https://doi.org/10.1080/00131857.2019.1631247>
- Ministry of Education Malaysia. (2013). *Malaysia Education Blueprint 2013-2025 (Preschool to Post-Secondary Education)*. Putrajaya: Ministry of Education Malaysia. Retrieved from <https://www.moe.gov.my>
- Nakata, M. (2007). The cultural interface. *The Australian Journal of Indigenous Education*, 36(S1), 7–14. <https://doi.org/10.1017/S1326011100004646>
- Norwaliza Abdul Wahab, Nur Hazira Abu Bakar, Siti Rahaimah Ali, Mohamad Termizi Borhan, Goh Swee Choo. (2025). Culturally Responsive Teaching Practices among Indigenous Primary School Teachers: A Qualitative Study from Four Zones in Malaysia, *Journal of Advanced Research in Social and Behavioural Sciences*, 40 (1), 87-97
- Paris, D., & Alim, H. S. (2017). *Culturally sustaining pedagogies: Teaching and learning for justice in a changing world*. Teachers College Press.

- Renganathan, S. (2022). Research concerning the Indigenous Orang Asli and education: A review of problem representations. *Diaspora, Indigenous, and Minority Education*, 16(2), 87–101. <https://doi.org/10.1080/15595692.2021.2007073>
- Tokijoh, N. I., Bakar, A. A., Othman, N., & Noordin, R. (2022). The prevalence and risk factors associated with Entamoeba complex infection among Orang Asli school children in Perak, Malaysia through molecular approach. *Parasitology International*, 89, Article 102551. <https://doi.org/10.1016/j.parint.2022.102551>
- Wok, W. C., Jamil, M. R. M., Idris, N., Mat, N., & Noh, M. S. O. (2023). Pengajaran bahasa Melayu kepada murid Orang Asli: Menelusuri isu, cabaran dan masa depan melalui lensa inklusiviti dan pemeraksanaan komuniti. *Jurnal Pendidikan Bahasa Melayu*. <https://ejournal.upsi.edu.my/index.php/JPB/article/view/11603>
- Ya Shin, W., & Idrus, R. (2021). *Contextualising education policy for Orang Asli children*. Institute for Democracy and Economic Affairs (IDEAS).