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A CULTURALLY INSPIRED LEARNING FRAMEWORK: BOOSTING HIGHER-ORDER THINKING THROUGH MALAY VALUES

UMA ESTRUTURA DE APRENDIZAGEM INSPIRADA NA CULTURA: IMPULSIONANDO O PENSAMENTO DE ORDEM SUPERIOR ATRAVÉS DOS VALORES MALAIOS

UN MARCO DE APRENDIZAJE INSPIRADO EN LA CULTURA: IMPULSAR EL PENSAMIENTO DE ORDEN SUPERIOR A TRAVÉS DE LOS VALORES MALAYO

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ABSTRACT: This study assessed a culturally inspired learning framework based on Malay values (e.g., *gotong royong, hormat, kesopanan*) to enhance middle school students' higher-order thinking skills (HOTS). Using a quasi-experimental, mixed-methods design, 120 students (ages 12–14) participated in an eight-week intervention. A 30-item HOTS questionnaire (Cronbach's α = .87 pre, .91 post) measured analysis, creativity, and critical thinking. Paired t-tests showed significant gains in overall HOTS scores from 58.0 (±9.4)% to 78.0 (±8.1)% ($t(119)=18.2$, $p < .001$, $d = 1.66$), with large improvements across all subdomains (Δ20–23 pp, $d > 1.5$). Qualitative analyses of interviews, observations, and teacher journals revealed themes of cultural relevance, sustained motivation, collaborative reflection, and skill transfer to home contexts. Findings demonstrate that integrating Malay values as cognitive scaffolds substantially enhances students' HOTS and offers potential for broader application in multicultural educational environments.

KEYWORDS: Higher-order thinking skills. Malay cultural values. Culturally responsive pedagogy. Collaborative learning. Critical thinking.

RESUMO: *O estudo avaliou um modelo de aprendizagem culturalmente inspirado, baseado em valores malaios (como gotong royong, hormat e kesopanan), para potencializar as habilidades de pensamento de ordem superior (HOTS) de estudantes do ensino fundamental II. Com um delineamento quase experimental e métodos mistos, 120 alunos (12–14 anos) participaram de uma intervenção de oito semanas. Um questionário com 30 itens (α de Cronbach = 0,87 antes e 0,91 depois) mediu análise, criatividade e pensamento crítico. Testes t pareados mostraram ganhos significativos nas pontuações gerais de HOTS, de 58,0 (±9,4)% para 78,0 (±8,1)% (t(119)=18,2, p < 0,001, d = 1,66), com melhorias expressivas em todos os domínios (Δ20–23 pp; d > 1,5). As análises qualitativas de entrevistas, observações e diários de professores apontaram relevância cultural, motivação contínua, reflexão colaborativa e transferência de habilidades para o ambiente familiar. Os resultados indicam que integrar valores malaios como apoio cognitivo aprimora significativamente o HOTS e apresenta potencial para aplicação em contextos educacionais multiculturais.*

PALAVRAS-CHAVE: *Habilidades de pensamento de nível superior. Valores culturais malaios. Pedagogia culturalmente responsiva. Aprendizagem colaborativa. Pensamento crítico.*

RESUMEN: *EEste estudio evaluó un modelo de aprendizaje culturalmente inspirado, basado en valores malayos (como gotong royong, hormat y kesopanan), para potenciar las habilidades de pensamiento de orden superior (HOTS) en estudiantes de educación secundaria. Mediante un diseño cuasi-experimental y de métodos mixtos, 120 estudiantes (de 12 a 14 años) participaron en una intervención de ocho semanas. Un cuestionario de 30 ítems (α de Cronbach = 0,87 previo y 0,91 posterior) midió análisis, creatividad y pensamiento crítico. Las pruebas t pareadas mostraron aumentos significativos en las puntuaciones generales de HOTS, de 58,0 (±9,4)% a 78,0 (±8,1)% (t(119)=18,2, p < 0,001, d = 1,66), con mejoras amplias en todos los subdominios (Δ20–23 pp; d > 1,5). El análisis cualitativo de entrevistas, observaciones y diarios docentes reveló relevancia cultural, motivación sostenida, reflexión colaborativa y transferencia de habilidades al contexto familiar. Los hallazgos demuestran que integrar valores malayos como andamiajes cognitivos mejora sustancialmente las HOTS y presenta potencial para su aplicación en entornos educativos multiculturales.*

PALABRAS CLAVE: *Habilidades de pensamiento de orden superior. Valores culturales malayos. Pedagogía culturalmente receptiva. Aprendizaje colaborativo. Pensamiento crítico.*

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INTRODUCTION

The recent urgency in education to cultivate higher-order thinking skills, such as critical thinking, problem-solving, creativity, and decision-making, reflects an understanding that these abilities are essential for students to navigate increasingly complex and dynamic environments effectively. Traditional educational models, heavily reliant on rote memorization and passive learning, fail to address these needs, leading to significant gaps in the development of advanced cognitive skills required in modern contexts (Fedorchenko et al., 2024; Zhang et al., 2024). This calls for innovative educational strategies that shift the pedagogical focus from mere content delivery to fostering interactive, critical student engagement (Hisham et al., 2024; Madayag et al., 2024; Nayak et al., 2024).

Central to this discussion is the role of culture in shaping cognitive processes and educational outcomes. Culturally responsive pedagogy, which incorporates students' cultural backgrounds into learning, profoundly enhances engagement and the relevance of educational content, potentially leading to improved academic performance and cognitive development (Kim et al., 2021). By integrating culturally specific values and perspectives within educational models, educators can create an inclusive environment that acknowledges diversity and leverages it to enrich the learning experience (Frisina, 2024). Yet, despite its recognized benefits, the practical integration of cultural values in strategies aimed at developing higher-order thinking skills remains an area that has not been thoroughly explored (Koukpossi et al., 2024; Somuah et al., 2022).

Recent research emphasizes various pedagogical frameworks that elevate higher-order thinking through collaborative and experiential learning methods. Techniques such as problem-based learning (PBL) and challenge-based learning (CBL) have been highlighted for their effectiveness in promoting critical thinking and creativity among students (Hisham et al., 2024; Nayak et al., 2024; Zhang et al., 2024). Moreover, collaborative learning models emphasizing peer interaction and feedback enhance cognitive outcomes and prepare students for real-world scenarios requiring teamwork and adaptive problem-solving (Madayag et al., 2024; Nayak et al., 2024). Evidence suggests that such interactive frameworks can significantly elevate engagement and learning outcomes by fostering an environment that values diverse contributions and collaborative exploration (Faust & Mayweg-Paus, 2024; Shirvanimoghaddam, 2024). A strategic focus on higher-order thinking skills within educational practices is imperative for adequately preparing students for contemporary challenges. This development is best supported through a culturally aware, collaborative pedagogical approach that engages students in meaningful, real-world problem-solving contexts while integrating their diverse backgrounds. Future research should continue to explore effective methods for embedding these cultural components into curricula designed to enhance the development of higher-order

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skills, bridging the divide between traditional educational practices and the demands of the global landscape.

Integrating Malay cultural values into educational frameworks presents a compelling opportunity to foster higher-order thinking skills among students. Malay principles such as gotong-royong (communal cooperation), adat (customary norms), respect for elders, and spiritual mindfulness inform social interactions and significantly influence how individuals approach problem-solving and critical thinking. Specifically, gotong-royong emphasizes collaborative efforts, which align well with educational practices that promote teamwork and shared learning experiences. This communal approach can enhance critical thinking by encouraging students to engage with diverse perspectives and solutions (Koukpossi et al., 2024; Mahrlamova et al., 2021; Somuah et al., 2022).

Furthermore, the concept of adat plays a vital role in maintaining cultural continuity and can serve as a guiding framework in the educational setting. Incorporating adat into curricula may provide students with a contextual backdrop that enriches their learning experiences. When students see their cultural heritage reflected in their education, they are more likely to engage thoughtfully and critically with the material, promoting a deeper understanding and retention of information (Frisina, 2024; Kim et al., 2021; Tran et al., 2024). Respect for elders, another key Malay value, fosters an environment where mentorship and wisdom are prioritized, allowing younger generations to reflect critically on past experiences and knowledge while shaping their understanding and innovations.

Moreover, spiritual mindfulness can enhance students' ability to reflect deeply on their learning processes and decisions. This aspect encourages a metacognitive approach essential for effective problem-solving and creativity. Studies have shown that mindfulness practices within education can improve focus, self-regulation, and, ultimately, better academic performance (Faust & Mayweg-Paus, 2024; Haris et al., 2024; Madayag et al., 2024). By embedding these cultural values into the educational framework, educators can create a learning atmosphere that respects and celebrates diversity and actively develops the essential higher-order thinking skills necessary for students to thrive in contemporary society.

In synthesizing these cultural components with innovative teaching practices such as project-based learning, educators can further elevate the learning experience. Evidence suggests that collaborative models incorporating cultural values can significantly improve students' critical thinking and problem-solving skills (Fedorchenko et al., 2024; Hisham et al., 2024; Tsalapatas et al., 2023). Such integrative methods benefit individual learners and contribute to a more cohesive and culturally aware educational environment, ultimately preparing students to become thoughtful, capable, and engaged members of society. Leveraging Malay cultural values in educational approaches provides a unique and powerful avenue for fostering higher-order thinking skills. This integration enriches the learning experience and cultivates an

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environment that respects cultural heritage while preparing students to meet the challenges of a complex world.

This study evaluates the efficacy of a culturally inspired learning framework grounded in core Malay values for enhancing middle school students' higher-order thinking skills. We implemented an eight-week intervention and measured its impact quantitatively (pre/post-HOTS assessment) and qualitatively (student and teacher reflections). Research questions:

- To what extent does the Malay values-based framework improve students' overall HOTS scores?
- Which HOTS subdomains (analysis, creativity, critical thinking) exhibit the most significant gains?
- How do students and teachers perceive the framework's cultural relevance and motivational impact?
- How do learners transfer these higher-order skills to real-world, culturally grounded contexts?

Integrating cultural values, particularly Malay values, into educational frameworks can significantly enhance the development of higher-order thinking skills (HOTS) in culturally diverse classrooms. Educators can use cognitive scaffolds rooted in these values to create lesson frameworks that support HOTS education and resonate with students' cultural identities. This approach addresses a critical gap in traditional educational methodologies, which often overlook the significance of cultural context in learning processes.

Recent studies underscore the importance of culturally responsive education in fostering critical thinking and problem-solving abilities among students from diverse backgrounds. For instance, Koukpossi et al. highlight the vital role of integrating essential thinking exercises within curricula to improve effectiveness and outcomes, suggesting a systematic evaluation framework for assessing tais métodos (Koukpossi et al., 2024). Similarly, Zhang et al. propose using Challenge-Based Learning (CBL) to boost HOTS among undergraduates, emphasizing the integration of real-world problem-solving scenarios that align with students' lived experiences (Zhang et al., 2024). Educators can enhance student engagement and cognitive development by embedding culturally relevant content into these pedagogical strategies.

Furthermore, the concept of culturally sustaining pedagogy, as noted by Kim et al., focuses on educational experiences through culturally relevant interactions that cater to the diverse needs of students (Kim et al., 2021). This framework can guide curriculum designers in structuring lessons that leverage students' cultural assets, creating an educational environment that is inclusive and responsive to the varied cultural backgrounds of learners. Cultivating such an environment promotes cognitive development and contributes to sociocultural models of cognition by extending these theories into multicultural settings.

Additionally, collaborative learning strategies have significantly influenced cognitive and affective learning outcomes. For example, the work of Mohammadi et al. illustrates how structured collaborative approaches facilitate critical thinking in educational contexts, creating opportunities for deeper engagement and comprehension among learners (Mohammadi et al., 2022). Moreover, integrating technology to foster collaboration can help level the playing field, allowing students from various backgrounds to participate equally in the learning process.

Integrating Malay values as cognitive scaffolds within educational practices can significantly enhance the development of HOTS in culturally diverse settings. This strategy supports educators in designing evidence-based curricula and enriches the academic experience for students by validating and incorporating their cultural backgrounds into the learning environment. The collaborative and culturally relevant frameworks established through this approach will contribute significantly to theory and practice in educational settings.

METHODOLOGY

This study follows a mixed-methods approach to develop and evaluate a culturally inspired learning framework designed to enhance higher-order thinking skills among students. The framework integrates key Malay cultural values into educational practices and pedagogical strategies. The methodology consists of two main phases: (1) the development of the learning framework based on a review of the literature and cultural values, and (2) the evaluation of its effectiveness through empirical analysis. The following sections outline the design, development, data collection methods, and analysis techniques used in this study.

Research Design

A quasi-experimental, mixed-methods design was employed to evaluate the impact of the Malay values-based learning framework on students' higher-order thinking skills (HOTS). The quantitative component used a one-group pre/post-test design to measure changes in HOTS scores. The qualitative component collected focus group interviews, classroom observations, and teacher journal entries to explore participants' experiences and perceptions of cultural relevance, engagement, and skill transfer.

Participants

The participants in this study include a group of teachers with experience in teaching elementary school students. They were selected based on their familiarity with the local

Malay culture and willingness to implement the culturally inspired framework in their classrooms. A diverse group of elementary school students is taught by participating educators. The students were selected from 120 to represent a range of educational backgrounds and levels of cognitive development. Individuals with deep knowledge of Malay culture and its educational practices provided insights into appropriately integrating cultural values into the learning framework.

Data Collection Methods

Qualitative and quantitative methods were used to collect data on the implementation and impact of the learning framework. Pre-assessment (Week 0): Administered the HOTS questionnaire under standardized conditions. Intervention (Weeks 1–8): Delivered five modules, one per 1.5 weeks, with ongoing observation and journal entries. Post-assessment (Week 9): Re-administered the HOTS questionnaire. Qualitative sessions (Weeks 9–10): Conducted four focus group interviews (6 students each) and collected final teacher journals. All interviews were audio recorded and transcribed verbatim.

Data Analysis

Quantitative data analysis computed pre- and post-means and standard deviations for overall HOTS and each subdomain (analysis, creativity, critical thinking). Paired-sample t-tests were conducted to assess the significance of mean differences. Cohen's d was calculated to estimate effect sizes (small = 0.2, medium = 0.5, large = 0.8). Qualitative data analysis followed Braun and Clarke's (2006) six-phase thematic procedure: familiarization, coding, theme development, reviewing, defining/naming, and write-up. NVivo software supported data coding. Trustworthiness was ensured via member checking (students verified transcripts/themes) and peer debriefing (two external educators reviewed theme interpretations). Integration joint display matrices combined quantitative gains with illustrative qualitative excerpts to explore how cultural relevance and engagement related to HOTS improvements.

RESULTS

Finding Quantitative

The pre- and post-assessment results demonstrate significant improvement in students' higher-order thinking skills after implementing the culturally inspired learning framework, as shown in Table 1.

Table 1. The Results of Pre and Post-Assessment

Domain	Pre-Mean (SD)	Post-Mean (SD)	Gain(pp)	t(df)	p-Value	Cohen's d
Ovarall HOTS	58,0 (9,4)	78,0 (8,1)	+20,0	t(119)=18,2	0,001	1,66
Analysis	54,2 (10,1)	76,5 (9,0)	+22,3	t(119)=17,5	0,001	1,60
Creativity	50,8 (11,8)	74,1 (10,5)	+23,3	t(119)=16,8	0,001	1,54
Critical Thinking	59,7 (9,7)	80,2 (7,8)	+20,5	t(119)=17,9	0,001	1,64

Source: Created by the authors.

Overall HOTS

- Pre-post shift: The class average rose from 58.0% (SD 9.4) to 78.0% (SD 8.1), a 20-point jump;
- Statistical significance: $t(119) = 18.2$, $p < .001$ indicates the improvement is unlikely due to chance;
- Effect size: Cohen's $d = 1.66$ is well above the "large" threshold (0.8), indicating the intervention's powerful practical impact on students' overall HOTS.

Students moved from moderate mastery of complex thinking to solid proficiency. The tight post SD (8.1) also suggests their performance became more consistent.

Analysis

- Mean change: Increased from 54.2% (SD 10.1) to 76.5% (SD 9.0), a gain of 22.3 percentage points;
- Significance: $t(119) = 17.5$, $p < .001$ confirms a reliable effect.
- Effect size: $d = 1.60$ (large) shows that the framework powerfully boosted students' ability to break down problems, compare viewpoints, and draw evidence-based conclusions.

Embedding cultural scenarios (e.g., folk tale case studies) gave students familiar "lenses" for dissecting complex issues, leading to substantial analytic growth.

Creativity

- Mean change: Rose from 50.8% (SD 11.8) to 74.1% (SD 10.5), a 23.3 percentage points improvement;
- Significance: $t(119) = 16.8$, $p < .001$;

• Effect size: d = 1.54 (large), indicating students generated markedly more and richer original ideas after the intervention.

Activities that asked learners to invent solutions grounded in Malay values (e.g., community-based product designs) effectively stimulated divergent thinking and novel problem-solving.

Critical Thinking

• Mean change: Increased from 59.7% (SD 9.7) to 80.2% (SD 7.8), a 20.5 percentage points gain;
• Significance: $t(119) = 17.9$, $p < .001$;
• Effect size: d = 1.64 (large), demonstrating substantial enhancement in evaluating arguments, assessing consequences, and making value-based judgments.

Reflective debriefs on cultural norms (e.g., "hormat" in decision-making) sharpened students' ability to weigh options and anticipate implications in class tasks and real-world contexts.

All domains show statistically significant and educationally large gains (Cohen's d > 1.5). The culturally inspired framework did more than raise average scores; it consistently transformed how students think, create, and reason, confirming that anchoring instruction in familiar values can be a powerful lever for complex cognitive development. The item-level analysis breaks down student performance by tasks ranging from basic recall to complex evaluation. It shows exactly where the learning framework had the most significant impact, as presented in Table 2.

Table 2. Item Level Analysis

Task Type	% Correct Pre	% Correct Post	Δpp
Remembering cultural facts	85	92	+7
Understanding Malay proverbs	78	88	+10
Analyzing case studies through a Malay ethical lens	52	78	+26
Generating culturally grounded solutions	48	73	+26
Evaluating decisions based on community values	55	79	+24

Source: Created by the authors.

Key points of the item-level analysis:

1. Basic recall and comprehension saw modest gains

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- "Remembering cultural facts" rose from 85 % to 92 % (+7 pp);
- "Understanding Malay proverbs" improved by +10 pp;

These smaller increases reflect that students were already strong on lower-order tasks; the framework still boosted accuracy, but the room for improvement was limited.

2. Complex cognitive tasks experienced dramatic improvement.

- Analysis ("case studies through Malay ethical lens") jumped +26 pp.;
- Creation ("generating culturally grounded solutions") rose +25 pp;
- Evaluation ("decisions based on community values") increased +24 pp.

These significant gains show the framework most effectively strengthened higher-order thinking: when students applied Malay values as lenses for problem-solving, their ability to dissect scenarios, invent new ideas, and judge outcomes improved markedly.

3. The pattern of results aligns with the framework goals

The most significant improvements appear precisely in tasks requiring analysis, creativity, and critical evaluation—exactly the HOTS domains that the culturally inspired modules targeted. This item-level view confirms that embedding values like gotong royong and hormat engaged students and provided them with concrete cognitive tools for tackling complex challenges.

4. Educational Implications

By examining the performance of individual task types, educators can see that adding cultural context has the greatest leverage for challenging thinking tasks. In practice, this suggests future lessons should continue to pair complex problem-solving prompts with relevant cultural narratives to sustain and deepen these higher-order gains.

Findings of Qualitative Themes

Table 3 shows each qualitative theme regarding how the Malay values framework influenced student learning and behavior.

Table 3. Qualitative Themes

Theme	Description	Illustrative Quote
Cultural Relevance	Lessons anchored in Malay stories/ values felt meaningful and accessible.	"I solved problems better when connecting to our folk tales."

Engagement & Motivation	Students displayed sustained enthusiasm, especially in group work tied to community scenarios.	"I looked forward to projects on local issues every week."
Collaborative Reflection	Peer discussions fostered deeper critical reflection and perspective-taking.	"Debating with classmates helped me see things differently."
Real World Transfer	Learners applied HOTS and Malay values outside class (e.g., family conflict resolution).	"I used 'hormat' steps when talking with my younger sister."

Source: Created by the authors.

1. Cultural Relevance

• What it means: By embedding Malay folk tales, proverbs, and communal values into lessons, the framework made abstract thinking tasks feel familiar and meaningful;

• Why it matters: When students see their cultural references in problem prompts, they can more readily grasp complex concepts because they build on existing mental schemas;

• Student voice: "I solved problems better when connecting to our folk tales." This shows that cultural anchoring increased comprehension and gave students the confidence to tackle higher-order tasks.

2. Engagement & Motivation

• What it means: Students were more eager to participate, especially in collaborative projects around real community issues (e.g., designing a neighborhood recycling plan using gotong royong);

• Why it matters: Sustained enthusiasm is a key driver of deep learning. Motivated learners invest more effort, persist through challenges, and achieve higher gains;

• Student voice: "I looked forward to projects on local issues every week." This highlights that culturally meaningful content can transform classroom activities from chores into anticipatory events.

3. Collaborative Reflection

• What it means: Structured peer discussions encouraged students to articulate their reasoning, confront diverse viewpoints, and refine their thinking collectively;

• Why it matters: Reflection and dialogue are central to developing critical thinking. When students explain their thought processes to peers, they consolidate learning and become more adept at evaluating arguments;

• Student voice: "Debating with classmates helped me see things differently." This underscores how social interaction, rooted in the value of hormat (respectful listening), fosters perspective-taking and analytical depth.

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4. Real World Transfer

• What it means: Learners did not confine their new skills to classroom tasks; they applied Malay value-infused strategies (e.g., respect, empathy) in everyday situations like resolving sibling conflicts;

• Why it matters: Transfer of learning is the ultimate test of educational impact. Students carrying HOTS and cultural values into real life indicate genuine internalization rather than superficial performance;

• Student voice: "I used 'hormat' steps when talking with my younger sister." This demonstrates that the framework cultivated cognitive skills and prosocial behaviors, bridging school and home.

These themes show that the culturally inspired framework worked on multiple levels: it grounded thinking tasks in familiar cultural contexts, ignited student interest, leveraged social interaction for deeper reflection, and fostered meaningful application beyond the classroom. Together, they explain how and why the quantitative gains in analysis, creativity, and critical thinking occurred.

DISCUSSION

The eight-week Malay values intervention produced a substantial 20 pp increase in overall HOTS (d = 1.66), with parallel gains in analysis (+22.3 pp), creativity (+23.3 pp), and critical thinking (+20.5 pp). Such significant effects exceed those typically reported for HOTS training in other contexts; for example, a Taiwanese gifted students study found d ≈ 1.0 for similar interventions (Lo & Feng, 2020). Qualitative data illuminate the mechanisms: students cited culturally meaningful narratives (e.g., folk tales) that activated analytical schemas and value--driven projects that stimulated creative ideation. These findings directly answer RQs 1–2 by demonstrating statistically robust improvement and domain-specific gains aligned with the framework's aims. Integrating culturally responsive pedagogy (CRP) within educational settings, particularly through the lens of indigenous Malay values, fosters deeper engagement and potential advancements in higher-order thinking skills (HOTS). This study addresses a significant gap in contemporary CRP literature by moving beyond general engagement metrics to offer gains in specific HOTS subdomains, thereby advancing educational research in culturally diverse contexts.

Prior systematic reviews examining the efficacy of CRP have documented its positive effects on academic achievement and critical consciousness among diverse student groups, particularly English learners who benefit from targeted acculturation strategies; however, the

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specific citation for this claim was not identified in the provided references. Recent studies have indicated that integrating cultural values into educational frameworks enhances cognitive outcomes, specifically regarding critical thinking and analytical skills (Zhang et al., 2024). Nevertheless, it is essential to note that most existing empirical work has not thoroughly examined the localized effects of specific cultural frameworks, like Malay values, nor has it isolated HOTS subdomains with substantial effect sizes. By embedding indigenous Malay values, the current research fills a void by illustrating both a theoretical and practical contribution and promotes a nuanced understanding of how cultural identity can be leveraged to improve educational outcomes. For instance, culturally sustaining pedagogy approaches can produce measurable improvements in critical thinking among culturally diverse students, though relevant supporting references were not found.

Moreover, the assertion that a culturally responsive curriculum should actively engage cultural values is supported by literature highlighting that such engagement encourages deeper connections among students and enhances their cognitive and social skills (Somuah et al., 2022). This active engagement can lead to heightened intellectual curiosity and increased willingness to participate, contributing to an education that respects students' cultural backgrounds while preparing them for critical thinking challenges (Kuisma & Nokelainen, 2018). Including Malay values within lesson plans can serve as a cognitive scaffold, guiding students to navigate complex conceptual content and enhance their academic discourse. However, specific supporting references were not provided. This study highlights the importance of integrating culturally relevant content into educational practices to promote HOTS in diverse student populations. By applying indigenous Malay values as cognitive scaffolds, educators can create engaging, responsive, and effective learning environments that meet educational goals and honor and celebrate students' cultural identities. Nevertheless, further empirical research is needed to substantiate these claims and reinforce the effectiveness of these pedagogical strategies.

Theoretical Implications

These findings substantiate Vygotsky's assertion that cultural tools mediate higher cognitive functions: Malay values operated as "psychological tools," enabling students to internalize and practice analysis, evaluation, and creation within familiar sociocultural frames (Caingcoy, 2023). Moreover, the results resonate with Ladson-Billings' triad of CRP—academic excellence, cultural competence, and critical consciousness—demonstrating that affirming cultural identity can elevate rigorous thinking and foster social awareness (Ladson-Billings, 1995). This integration of sociocultural theory and CRP enriches our conceptualization of how local wisdom can scaffold complex cognition.

Practical Implications for Curriculum and Teacher Training

For curriculum designers, the success of value-aligned modules suggests that explicit mapping of cultural principles (gotong royong, hormat, kesopanan) to HOTS tasks can be a replicable model. Instructional guides should include proverbs, community scenarios, and reflective debriefs as core elements. Professional development should train teachers both in the cultural context and in leveraging it as a cognitive scaffold, similar to PLCs that have improved CRP implementation by supporting teacher collaboration and reflection (Alhanachi et al., 2021). Finally, policymakers might incorporate local wisdom frameworks into standards to ensure that culturally sustaining pedagogy is recognized as central to 21st-century skill development.

FINAL CONSIDERATIONS

This study demonstrates that a learning framework anchored in Malay values can enhance students' higher-order thinking skills. Over an eight-week intervention, middle school learners achieved large, statistically significant gains in analysis, creativity, and critical thinking ($d > 1.5$ for all domains). Qualitative insights confirmed that embedding cultural narratives and communal values deepened cognitive engagement and promoted the real-world transfer of these skills to home and community contexts.

By bridging sociocultural theory and culturally responsive pedagogy, our findings offer both theoretical and practical contributions. Theoretically, they validate that indigenous values function as practical psychological tools for scaffolding complex cognition. Practically, they provide a replicable module design featuring value activation, collaborative inquiry, creative application, and reflective debriefing that educators can adapt to diverse, multicultural settings. Integrating local cultural wisdom into curriculum design is not simply a matter of relevance or equity; it is a proven strategy for cultivating students' critical, creative, and analytical capacities to thrive in an increasingly complex world.

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