



Translating Local Cultural Practices into Mathematics Tasks in Indonesian and Thai Primary Schools

Ratna Sari^{1*}, Hamidulloh Ibda¹, Eka Mahargiani Rokhma¹, Siti Wulan Asih²,

¹ Institut Islam Nahdlatul Ulama Temanggung, Indonesia

² Chariyathamsuksa Foundation School, Thailand

*Corresponding author: ratnasaree23@gmail.com

Abstract

Connecting primary mathematics to pupils' cultural experiences is widely encouraged, yet how teachers translate local practices into specific classroom tasks remains insufficiently documented. This study aims to compare the cultural resources, mathematical content, and instructional organization of ethnomathematics teaching in two primary schools in Indonesia and Thailand. The study employed a qualitative comparative case study design, drawing on unstructured interviews, non-participant classroom observations, and instructional documents. Data were analyzed through within-case descriptions and cross-case comparison. The findings revealed that the Indonesian school used tourism-related trading, coffee distribution, and market transactions mainly for arithmetic, grouping, and money calculations through worksheets and teacher-guided collaborative activities. In the Thai school, market transactions, patterned sarong fabrics, and the traditional game Teng te were connected to arithmetic, fractions, decimals, percentages, and geometry through project- and inquiry-oriented activities. Both schools used familiar community practices, yet they differed in the resources selected and how mathematical tasks were organized. These findings contribute a task-level comparison of culturally situated mathematics teaching and offer implications for designing context-sensitive primary mathematics tasks, without establishing their effectiveness for pupil learning.

ARTICLE HISTORY

Received:

15 April 2026

Accepted:

15 September 2026

Published:

30 September 2026

KEYWORDS

ethnomathematics;
culturally situated
mathematics;
comparative case
study; primary
education; local
wisdom



1. Introduction

Primary mathematics education involves more than teaching pupils to reproduce numerical procedures; it also requires opportunities to make sense of quantities, relationships, and representations in situations they can recognize. In primary classrooms, an emphasis on memorizing formulas without sufficient attention to meaning can leave pupils uncertain about how operations relate to everyday problems (Ningtyas et al., 2025). This concern makes the design of mathematically purposeful, contextually meaningful tasks an important issue. Research on mathematics task design also highlights the importance of making the intended mathematical processes explicit rather than assuming that a familiar



activity will elicit them (Alsina et al., 2024). Connecting lessons to familiar settings is one possible response, but familiarity alone does not guarantee that pupils will identify or explain the mathematical ideas embedded in those settings. Research on responsive mathematics teaching highlights the importance of how teachers attend to pupils' thinking and use it to guide instructional decisions (Alsina et al., 2026). Therefore, the educational question is not simply whether local contexts appear in mathematics lessons, but how teachers use them to create opportunities for mathematical activity.

Ethnomathematics offers a perspective on this question by recognizing mathematical ideas and practices in community activities, material objects, and culturally situated ways of reasoning. Trading, measuring, pattern making, and traditional games may involve quantities, spatial relationships, and procedures that can be connected to primary mathematics. Studies of Indigenous and place-based mathematics education argue for engaging seriously with community knowledge rather than reducing cultural practices to mere decorative examples in lessons (Hunter & Hunter, 2024; Nicol et al., 2023). Work on teachers' use of family knowledge similarly indicates that recognizing cultural resources involves the teacher's interpretation of pupils' experiences (Kim, 2024). Reviews of ethnomathematics scholarship likewise document the range of cultural objects and practices that have been brought into mathematics education (Riski et al., 2024; Turmuzi et al., 2023). However, identifying mathematical potential in a cultural activity is only an initial step. A teacher must also determine which mathematical relationships are relevant to a curriculum objective and how they can be represented in a task that pupils can examine.

Existing research provides evidence of both the promise and the complexity of culturally connected mathematics teaching. A meta-analysis of 16 studies reported a positive pooled effect of ethnomathematics-based learning on mathematical literacy and identified variation associated with study and instructional characteristics (Pratama & Yelken, 2024). This outcome-oriented evidence supports further attention to ethnomathematics, but it cannot explain how every classroom activity is designed or enacted. A review of culturally relevant mathematics and science education identifies teachers' beliefs and instructional resources as important considerations in implementation (Kolovou, 2023). In addition, studies of culturally responsive mathematical modeling and family-inspired mathematics routines illustrate how everyday experiences can be developed into questions, representations, and classroom exchanges rather than serving only as familiar illustrations (Suh & Calabrese, 2025; Turner et al., 2024). Taken together, these strands of research suggest a need to examine the instructional decisions through which cultural practices become mathematical tasks.

This need is especially relevant because cultural relevance and mathematical instructional quality are related but distinct. Analyzing elementary mathematics lessons, Thomas et al. (2024) found areas of overlap between high-quality instruction and culturally relevant pedagogy, while also identifying culturally important dimensions that conventional instructional-quality measures could miss. Their study cautions against assuming that a recognizable cultural example, by itself, constitutes culturally relevant teaching. From a complementary perspective, research on mathematical representations shows that judgments about their effective classroom use can vary across cultural settings (Dreher et al., 2024). These findings direct attention to what the teacher asks pupils to calculate, notice, represent, compare, or explain, and to how those actions are supported. They also suggest that comparisons between schools should focus on documented teaching practices rather than presume that a particular national context or a named teaching model is inherently stronger. Equity-oriented reviews similarly caution against reducing diversity in mathematics education to fixed cultural or national categories (Abtahi & Planas, 2024; Vithal et al., 2024).

Relevant work in Indonesia has examined mathematics instruction connected to Temanggung local wisdom and culturally situated mathematical activities in primary education (Latifah et al., 2023; Setiyadi et al., 2025). Studies have also investigated problem-based and inquiry-based approaches to mathematical comprehension (Supriatna et al., 2024). At a cross-cultural level, Payadnya et al. (2024) surveyed and interviewed educators in Indonesia and Thailand about the significance of ethnomathematics, reporting positive but contextually differentiated perspectives. These studies establish that local knowledge, instructional approaches, and Indonesia–Thailand comparisons are not new topics. However, the evidence they offer addresses different questions: instructional resources or outcomes in particular studies, and educators' perspectives in the cross-cultural investigation. It does not, on its own, provide a task-level comparison of how cultural resources are connected to mathematical content and classroom activities in the two school cases examined here.

The specific gap addressed in the present study concerns the translation of cultural resources into mathematics instruction within bounded primary-school settings. In particular, a more detailed comparison is needed of which community practices teachers select, which mathematical concepts they associate with those practices, and how the resulting tasks and activities are organized. This focus moves beyond cataloging local cultural objects or comparing educators' general attitudes. It also avoids assuming that differences observed in two schools represent national differences. Therefore, the study compares Tlahap State Primary School in Temanggung Regency, Central Java, Indonesia, and Chariyatham Suksa Foundation School in southern Thailand as two distinct cases. Their reported lessons draw on locally situated resources, providing a

basis for examining the relationship among cultural context, mathematical content, and instructional organization without ranking either setting.

The comparison treats cultural practices as situated resources rather than interchangeable instruments for presenting the same curriculum. A market worksheet and a patterned fabric can both support mathematics, yet they make different numerical or spatial features available for examination. A task-level perspective allows the analysis to ask what teachers made mathematically salient, which representations were provided, and which forms of response the tasks invited. This focus is narrower than evaluating pupils' mathematics achievement or the wider cultural meanings of the practices. It connects scholarship on community resources to investigations of the quality of mathematical instruction without conflating cultural familiarity with demonstrated learning.

Accordingly, this qualitative comparative case study has three objectives: to describe how ethnomathematics teaching was organized at Tlahap State Primary School; to examine the corresponding practices at Chariyatham Suksa Foundation School; and to identify similarities and differences across the cases in cultural resources, mathematical content, and classroom tasks. The analysis is intended to contribute a context-sensitive, task-level account of how teachers make aspects of community life available for mathematical study. More specifically, it considers the connections among selecting a cultural practice, identifying its mathematical features, representing those features in learning materials or problems, and organizing pupils' participation. These connections are examined as features of the reported practices, not proposed as a validated instructional model. Because the study describes teaching in two schools without independently assessing learning gains, its contribution lies in clarifying patterns of classroom implementation and informing future task design and research, rather than establishing the effectiveness of either approach.

2. Methods

This study employed a qualitative comparative case study design to examine ethnomathematics teaching, specifically how local cultural practices were incorporated into primary mathematics instruction in two school settings. The design was appropriate because the research sought to describe context-specific teaching practices and compare how cultural resources were translated into mathematical content and classroom tasks, rather than measure the effects of an intervention (Rukajat, 2018). Each school constituted a bounded case. Tlahap State Primary School, located in Temanggung Regency, Central Java, Indonesia, incorporated tourism-related trading, coffee distribution, and market activities into mathematics lessons. Chariyatham Suksa Foundation School in southern Thailand drew on traditional markets, patterned sarong fabrics, and the

game *Teng te*. These settings provided contrasting examples of the cultural resources and instructional tasks associated with mathematics teaching. Teachers and pupils participated in the lessons examined at both schools.

Data were collected through unstructured interviews, non-participant classroom observations, and analysis of instructional documents. Unstructured interviews were used to elicit accounts of how familiar community practices informed mathematics teaching and teachers' choices of learning contexts. Their open-ended format allowed participants to describe practices without predetermined response categories. Non-participant observations documented classroom activities and the use of cultural resources, while the researcher did not direct the lessons. Documentary sources included teaching modules, student worksheets (LKPD), and curriculum materials, which were examined for the mathematical topics and planned activities represented in the lessons. These sources provided complementary perspectives on teachers' accounts, classroom activities, and instructional materials; the analysis reported below was limited to task features identifiable from the documented accounts.

Data analysis drew on the iterative sequence of data collection, reduction, display, and conclusion drawing and verification described by Miles et al. (2014). Material relevant to cultural contexts, mathematical content, and instructional activities was selected from the available interviews, observation accounts, and documents and organized into a descriptive account for each school. The two case accounts were then examined using three common comparative dimensions: (1) the cultural resources incorporated into lessons, (2) the mathematical concepts addressed, and (3) the instructional approaches and tasks described. The resulting within-case descriptions and cross-case comparison provided the organizational basis for reporting the findings, including the comparative table in the Results section. This procedure was intended to identify similarities and differences in documented practices, not to rank the schools or infer national patterns.

Interviews, classroom observations, and instructional documents provided complementary evidence for the description of teaching practices. Applying the same analytic dimensions to both cases also made the basis of comparison explicit. The common dimensions made the basis of descriptive comparison explicit. Nevertheless, the availability of different kinds of data does not, by itself, demonstrate source-by-source corroboration, and the findings should be interpreted within the limits of the supporting documentation. Permission to conduct the research was obtained from both schools. Parents or legal guardians provided consent for pupils' participation, and pupils provided assent, as reported in the study's ethical declaration. The analysis concerned reported and observed instructional practices; it did not include independent assessments of changes in pupils' mathematical achievement, reasoning, motivation, or cultural identity.

Consequently, the study does not make causal claims about the effectiveness of either school's approach.

3. Results

The cross-case analysis identified three principal patterns. At Tlahap State Primary School, local tourism, coffee distribution, and market trading provided contexts for arithmetic tasks. At Chariyatham Suksa Foundation School, market activities, patterned sarong fabrics, and a traditional game were connected to arithmetic, measurement, and geometry. Across the two cases, cultural resources were incorporated into different types of classroom tasks and teaching activities. The findings are organized by school and then compared across three dimensions: cultural resources, mathematical content, and instructional organization.

3.1 Local Trading and Distribution as Contexts for Arithmetic at Tlahap State Primary School

At Tlahap State Primary School in Temanggung, Central Java, the documented mathematics activities drew on three settings associated with pupils' local environment: Taman Posong, coffee distribution, and Entho Parakan Market. Teachers reported that these contexts were selected in response to concerns about instruction focused primarily on memorizing formulas. Their teaching accounts described an effort to link arithmetic operations to familiar quantities, prices, and transactions.

The Taman Posong activities used local food vendors' work as the setting for written problems. Illustrated worksheets depicted buying-and-selling situations involving visitors and vendors, and asked pupils to calculate orders and prices. The mathematical content included number concepts, addition, subtraction, and calculations involving money. Cultural context was therefore represented in the situations pupils were asked to solve, rather than through a separate account of the tourist destination.

In the coffee-distribution activity, a worksheet presented a driver delivering coffee orders to four shops, each requiring a different quantity of boxes. Pupils were asked to determine quantities for individual deliveries and calculate the combined total. The classroom account also described the use of video material and group work. Pupils discussed possible solutions and explained calculations while working through a distribution problem involving grouping and arithmetic operations.

Entho Parakan Market provided a third context for problems in buying and selling. The lesson began with questions about pupils' experiences of visiting markets and used photographs of trading activities to establish the setting. Worksheets were then presented with transactions requiring subtraction and

other basic calculations. The teacher guided pupils through the problems step by step. In this activity, market photographs and written tasks served as classroom resources; a visit to the market was not reported.

Across the three contexts, the instructional accounts characterized the activities as problem-based and collaborative learning. Teachers introduced locally situated numerical problems, supplied visual or written materials, and guided pupils through calculations individually or in groups. Together, these activities placed locally situated arithmetic problems within teacher-guided individual and group work.

3.2 Markets, Textile Patterns, and Traditional Games as Mathematical Resources at Chariyatham Suksa Foundation School

At Chariyatham Suksa Foundation School in southern Thailand, the documented lessons incorporated three types of cultural resources: traditional market transactions, patterned sarong fabrics, and the game Teng te. These materials were associated with different areas of primary mathematics, extending from arithmetic and measurement to the identification of geometric features.

Traditional market activities were used to frame calculations involving buying and selling. Weighing and measuring situations were connected to fractions and decimals, while profit-and-loss examples introduced percentages. The tasks linked mathematical operations to quantities, prices, and measurements encountered in trading activities. The documented activities thus connected calculations with familiar quantities and measures used in trade.

Patterned sarong fabrics were introduced as visual resources for geometry. Pupils were asked to observe the fabrics, identify shapes, and examine the arrangements of patterns. In contrast to the transaction-based tasks, these activities required attention to geometric features of a cultural object rather than calculations involving prices or quantities.

The traditional game Teng Te provided a further setting for work with numbers and basic geometry. The teaching account connected game activities with mathematical questions about numbers, shapes, and decisions made during play. The school's teaching approaches were described as project-based and inquiry-oriented. Market-related activities were associated with projects, while the exploration of textile patterns and other local materials involved pupils observing and asking questions about mathematical features. The reported activities consequently included both context-based calculation and examination of the mathematical features of cultural materials.

3.3 Cross-Case Patterns in Cultural Resources, Mathematical Content, and Classroom Tasks

Both schools used familiar community practices as starting points for primary mathematics activities, particularly trading situations involving arithmetic.

The clearest difference concerned the range of contexts and the tasks built around them. The Tlahap case concentrated on transactions and agricultural distribution, with an emphasis on written arithmetic problems, photographs, video, and group calculations. The Thai case combined trading with textile patterns and a traditional game, incorporating measurement, percentages, and geometric observation. Task organization also differed: Tlahap foregrounded teacher-guided calculations and group problem solving, while the Thai case included visual exploration of textiles and game-related questions. Table 1 presents the task-level evidence reported for each cultural resource.

Table 1.

Cultural resources, mathematical content, and learning tasks across the two cases

School	Cultural resource	Mathematical content	Learning task or material
Tlahap (Indonesia)	Taman Posong food vendor activities	Number concepts, addition, subtraction, and money	Illustrated worksheets on customer orders and prices
	Coffee distribution	Quantities, grouping, and arithmetic operations	Worksheet on deliveries to four shops; calculation of individual and total quantities; group work and video
	Entho Parakan Market	Subtraction and other arithmetic calculations	Discussion of market experiences, trading photographs, and transaction worksheets
Chariyatham Suksa (Thailand)	Traditional markets	Arithmetic, fractions, decimals, percentages	Buying and selling, weighing, measuring, and profit and loss problems
	Patterned sarong fabrics	Geometry	Observation and identification of shapes and textile patterns
	Teng te	Numbers and basic geometry	Game-related mathematical questions about numbers and shapes

Source: Authors' synthesis of the teaching activities reported for both school cases.

These cross-case differences concern the reported organization of mathematics tasks. They do not establish differences in pupil learning outcomes or the relative effectiveness of the pedagogical approaches described.

4. Discussion

The two cases show that connecting culture with primary mathematics involved more than selecting familiar objects or activities. Teachers converted aspects of community life into instructional tasks by identifying mathematical content and choosing ways for pupils to engage with it. At Tlahap State Primary School, this translation was most evident in arithmetic problems involving tourism,

market trading, and coffee distribution. At Chariyatham Suksa Foundation School, markets, patterned textiles, and a traditional game were used to address both numerical and geometric topics. The central issue raised by the comparison is therefore not which school used more culture, but how cultural resources were made mathematically examinable through classroom tasks. This interpretation concerns the practices documented in the two cases, not demonstrated effects on pupils' learning.

4.1. From Familiar Cultural Practices to Mathematical Tasks

A cultural setting became an instructional resource when teachers selected a mathematical relationship within it and represented that relationship as a classroom problem. In Tlahap, food-vendor transactions at Taman Posong and trading activities associated with Entho Parakan Market were represented using illustrated worksheets that involved prices, orders, and subtraction. The coffee distribution problem required pupils to calculate deliveries to four shops and combine the quantities. These activities show how local livelihoods were reframed as tasks involving operations on quantities rather than simply mentioned as examples of village life. The photographs, video, and worksheets also made the contexts accessible within the classroom without requiring pupils to undertake the community activities themselves.

The Thai case illustrated a different, although overlapping, route from cultural material to mathematical content. Market transactions supported numerical and measurement-related problems, while sarong patterns served as objects for identifying geometric shapes and arrangements. The game Teng Te provided a context for questions about numbers and basic geometry. In these examples, the mathematical focus depended on the feature of the practice that the teacher chose to foreground: quantities and prices in transactions, shapes in textiles, and numbers or spatial arrangements in play. The comparison thus suggests that a cultural resource does not prescribe one particular mathematical topic or instructional format.

This task-centered interpretation is consistent with scholarship that regards community and Indigenous knowledge as substantive resources for mathematics education rather than decorative references (Hunter & Hunter, 2024; Nicol et al., 2023). It also resonates with analyses of the relationship between actions and mathematical artifacts: an object acquires instructional significance through the activity and representations organized around it (Shvarts et al., 2024). The present cases add classroom-level illustrations of this relationship by specifying the tasks and materials through which teachers connected everyday practices to curriculum content. Research on task design within Māori-medium teacher education similarly illustrates the need to consider cultural practices and curriculum ideas together without treating them as interchangeable (Trinick &

Allen, 2024). They do not, however, establish how pupils themselves interpreted every connection.

A further distinction concerns the form in which each cultural setting was represented mathematically. At Tlahap, the market and coffee-distribution situations were presented primarily as written numerical problems; the local practice provided quantities, prices, and operations for pupils to calculate. In the Thai case, patterned fabrics and a game also offered visual or activity-based material for identifying shapes and arrangements. These routes call for different questions: calculating a total, relating quantities to a measure, or noticing regularity in a pattern. The study documents the selection of resources and tasks more clearly than the mathematical quality of pupils' responses. Accordingly, the connection from cultural practice to mathematical content, task representation, and classroom activity should be understood as an analytic description of lesson design. Further evidence would be needed to determine how these different representations shaped pupils' interpretations of the mathematics.

4.2. Teacher Guidance and the Quality of Mathematical Opportunities

The educational value of a familiar context cannot be inferred from its presence in a worksheet or project. What matters for mathematical learning is also the work pupils are invited to do with the quantities, relationships, or shapes involved. At Tlahap, the coffee-distribution task could provide opportunities to identify relevant quantities, organize information, and explain how separate deliveries contribute to a total. Group discussion and teacher guidance were reported as part of the activity. Nevertheless, the available account does not show whether pupils compared alternative strategies, justified operations, or revised their thinking. Accordingly, these features are better described as opportunities for mathematical reasoning than as evidence that deeper reasoning was achieved.

A similar distinction applies to the Thai activities. Observing a sarong pattern can introduce geometry, but conceptual engagement would depend on whether pupils were asked to compare shapes, describe properties, or justify classifications. Likewise, participating in or discussing Teng te does not by itself demonstrate mathematical understanding. Research examining the mathematical potential of the traditional game Bola Bekel provides a related example of how game structures may be analyzed for curriculum connections. However, it does not establish learning outcomes for the Teng te activity examined here (Digdayana et al., 2024). The project-based and inquiry-oriented descriptions indicate the intended organization of the lessons. However, the manuscript provides insufficient detail about the sequences of pupils' questions, products, and teacher prompts to establish the extent to which these approaches met formal model-specific criteria.

This distinction between cultural familiarity and mathematical engagement is important in relation to previous research. Alsina et al. (2024) reported that mathematical tasks designed by pre-service early childhood teachers often included communication opportunities but less consistently promoted justification and verification; that study offers a useful design-focused comparison, not direct evidence about the pupils in the present cases. Studies of culturally responsive mathematical modeling and teacher responsiveness emphasize how classroom questions, representations, and responses to pupils' ideas shape opportunities for reasoning (Alsina et al., 2026; Turner et al., 2024). Thomas et al. (2024) likewise distinguish culturally relevant pedagogy from the simple inclusion of recognizable examples. Read alongside these studies, the present cases indicate that the pedagogical issue is not merely whether a task contains a cultural reference, but whether its design makes the intended mathematical relationship explicit and open to examination. Stronger evidence from pupils' explanations would be required to evaluate the quality of that examination.

4.3. Contextual Variation Without Ranking National Approaches

The cases shared a concern with connecting mathematics to familiar experiences, but their instructional emphases differed. Tlahap's reported activities were concentrated on numerical problems arising from trade and distribution and were organized largely through teacher-supported worksheets and group calculations. At Chariyatham Suksa, the inclusion of patterned fabrics and Teng te extended the range of reported tasks to observation of shapes and game-related questions, alongside market calculations. These differences are interpretable as variations in the resources selected and the mathematical purposes assigned to them, rather than as evidence of a fixed Indonesian or Thai approach to ethnomathematics.

This cautious interpretation matters for cross-cultural comparison. Payadnya et al. (2024) investigated Indonesian and Thai educators' perspectives on ethnomathematics, whereas the present study compares task descriptions from one primary school in each country. The studies, therefore, address different levels of evidence: educators' reported perspectives on one hand, and the content and organization of school-level activities on the other. The present comparison adds specificity about the resources and tasks associated with the two selected schools. However, its sampling does not support claims about national teaching traditions or the prevalence of particular instructional models. Research on mathematical well-being across cultures also underscores the importance of examining educational experiences in relation to particular communities and relationships rather than assuming culturally uniform meanings (Hunter & Hill, 2025).

Nor should the instructional labels be read as an effectiveness ranking. Research comparing problem-based and inquiry-based learning has examined

mathematical comprehension outcomes in other settings (Supriatna et al., 2024), and a meta-analysis has synthesized outcomes of ethnomathematics-based instruction (Pratama & Yelken, 2024). Such evidence is relevant to the wider field, but it cannot substitute for outcome measures that were not collected in the present comparative case study. Here, the defensible comparison concerns what was taught, which cultural resources were selected, and how the reported tasks were organized.

4.4. Scholarly Contribution and Implications for Elementary Education

The study's main contribution is a task-level account of how cultural resources, mathematical content, and instructional organization were brought together in two bounded school settings. The comparison suggests a useful analytical sequence for examining ethnomathematics teaching: selecting a locally recognizable practice, identifying its mathematical features, representing those features in a teachable task, and organizing pupils' engagement with the task. These elements are an interpretive synthesis of the reported cases, not an empirically validated developmental model. Their value lies in shifting attention from cataloging cultural objects to analyzing what teachers ask pupils to calculate, notice, compare, and explain.

Distinguishing task opportunities from demonstrated learning also clarifies the status of this contribution. The evidence consists of teaching accounts, lesson descriptions, and instructional materials, rather than experimental comparisons or extended records of pupils' learning trajectories. The task-level comparison can therefore illuminate forms of instructional mediation: teachers selected quantities from commercial contexts and geometric features from material culture or play, and then organized corresponding mathematical activities. Using common comparative dimensions makes such patterns visible even when the local resources differ. These dimensions are neither exhaustive nor culturally neutral measures of instructional quality. In particular, a school task may simplify a practice that carries social, economic, or historical meanings beyond the selected mathematical properties. Investigating those meanings would require further engagement with teachers, pupils, and community members, and would extend the present study beyond its available evidence.

For primary teachers, this synthesis points to practical questions that can inform lesson planning. A teacher using a market context could specify whether pupils are expected merely to compute change or also to explain why subtraction represents the transaction. A distribution context could require pupils to show and compare ways of grouping quantities, while textile patterns could support the naming and comparison of geometric properties. Photographs, locally meaningful stories, games, and worksheets may provide feasible representations when direct visits are impractical. In each instance, alignment between the cultural context,

the targeted concept, and the requested pupil response is more informative than the cultural label attached to the activity.

For integrated elementary education, the cases illustrate possible points of contact between mathematics, local economic life, material culture, and play. Place-oriented perspectives call attention to the socio-ecological relationships that school mathematics may make visible or overlook (Coles et al., 2024). Work in primary education on local-wisdom character education and ethnoscience further demonstrates that community knowledge can inform different curricular domains, although those studies address outcomes beyond the scope of the present mathematics comparison (Mansur & Sholeh, 2024; Rosita et al., 2026). This may help curriculum designers consider pupils' communities as sources of instructional material while maintaining clear mathematical objectives. However, the data do not establish broader outcomes in cultural identity, social participation, values, or interdisciplinary competence. Treating those outcomes as future possibilities rather than observed benefits keeps the implications proportionate to the evidence and consistent with the broader concern that culturally responsive pedagogy must also provide substantive mathematical learning opportunities (Hunter & Miller, 2022; Thomas et al., 2024).

4.5. Limitations and Directions for Further Research

Three limitations qualify these interpretations. First, the study examined one school in Indonesia and one in Thailand, so its findings are context-specific and should not be generalized to either national education system. Second, although the manuscript identifies interviews, non-participant observations, and instructional documents as data sources, it provides limited information about participant selection, observation coverage, coding decisions, and the provenance of individual claims. The Results also lack attributed interview excerpts, field-note extracts, or samples of pupils' work that would allow readers to inspect the evidence behind each theme. Third, pupils' achievement, conceptual understanding, motivation, and cultural identification were not independently assessed. The study consequently cannot determine learning effectiveness, causal mechanisms, or the superiority of one instructional approach.

Further research should document complete lesson sequences and triangulate teachers' accounts with observation records, instructional artifacts, and pupils' explanations. Comparing how pupils interpret the same cultural context when different questions or representations are used could clarify the relationship between task design and mathematical reasoning. Multi-site studies with transparent case-selection and coding procedures could examine the transferability of the task-design patterns identified here. If learning outcomes are investigated, they should be assessed with designs and measures suited to the claims being made. These developments would move the evidence beyond

descriptions of culturally situated activities toward a closer understanding of how pupils engage mathematically with them.

5. Conclusion

The two cases showed that teachers translated familiar cultural practices into primary mathematics tasks, but selected different resources and organized learning differently. At Tlahap State Primary School, tourism-related trading, coffee distribution, and market transactions supported arithmetic, grouping, and money calculations through worksheets and collaborative problem solving. At Chariyatham Suksa Foundation School, markets, patterned sarong fabrics, and Teng te were used to address arithmetic, measurement, and geometry through activities described as project-based and inquiry-oriented. These differences concern task content and organization, not the demonstrated effectiveness of either approach.

The study contributes a task-level comparison of how local practices became mathematics resources: teachers identified a familiar activity, selected its mathematical features, and represented them through problems or exploratory tasks. The comparison suggests that lesson planning should connect cultural contexts to explicit mathematical objectives and to questions that invite pupils to explain operations, quantities, or geometric properties. This is a practical implication for task design, not evidence that cultural familiarity itself improves learning.

The findings are limited to two school cases and the reported teaching accounts and materials. Without sufficiently detailed evidence of pupils' responses or independent learning assessments, the study cannot establish gains in understanding, motivation, or cultural identity, nor does it support national generalizations. Future studies should examine classroom interactions and pupils' work across additional schools to assess the transferability and educational significance of these task-design patterns.

Declarations

All authors approved the final manuscript and declared no competing interests. Research permission was obtained from both schools, with parental consent and pupil assent secured. The study adhered to ethical standards and protected participant confidentiality. Grammarly assisted with academic language refinement and citation consistency. No research data, observations, or findings were AI-generated. The authors verified the manuscript and assume full responsibility for its accuracy, integrity, and scholarly content.

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