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Integrating Acehnese Ethnoscience into Teacher-Child Interactions to Support Young Children's Social-Emotional Development

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ABSTRACT

High-quality teacher–child interaction is a core dimension of process quality in early childhood education, yet classroom interaction is often separated from the cultural knowledge that children bring from their families and communities. This study examines how Acehnese ethnoscience was integrated into teacher–child interactions and how the resulting learning experiences were associated with observable social-emotional behaviours in kindergarten. A descriptive qualitative design was employed at TK Negeri 1 Arongan Lambalek, Aceh Barat, Indonesia. One principal and two classroom teachers participated as key informants, while 30 Group B children were observed during two culturally grounded learning contexts: a traditional-market role-play activity and a traditional-house collaborative activity. Data were generated through interviews, participant observation, structured observation sheets, and documentation, and were analysed through iterative data condensation, thematic organisation, display, and verification. The findings show that culturally familiar contexts supported more dialogic and participatory interaction, including positive teacher responses, open-ended questioning, attentive listening, positive reinforcement, cultural connections, conflict guidance, collaboration, and opportunities for children to express ideas. Descriptive assessment data showed that most children were in the 'developing as expected' or 'developing very well' categories across cooperation, sharing, emotional regulation, group-task completion, confidence, turn-taking, and opinion expression. Three implementation constraints remained salient: teacher competence in designing ethnoscience-based learning, limited learning media, and instructional time. The study argues that ethnoscience is pedagogically valuable not only as cultural content but as an interactional context that can make early childhood learning more responsive, meaningful, and socially generative. The findings should be interpreted as context-specific qualitative evidence rather than causal proof of effectiveness.

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turnitin Page 6 of 17 - Integrity Submission Submission ID trn:oid:::1:3679919826

1. INTRODUCTION

Quality in early childhood education and care (ECEC) is increasingly understood as more than the presence of facilities, curriculum documents, teacher qualifications, or other structural conditions. What children actually experience in classrooms_the emotional climate, the responsiveness of adults, opportunities for participation, the quality of dialogue, and the ways teachers scaffold play and exploration_constitutes process quality. Recent evidence reinforces the importance of these everyday interactions. A global meta-analysis found that ECEC quality is meaningfully associated with children's developmental outcomes, although effect sizes vary by domain and context [1]. A systematic review of adult–child interaction measures similarly concluded that interaction quality is a central, observable component of educational quality and is linked to developmental and educational outcomes [2]. In this perspective, the question of educational quality is inseparable from the question of how teachers interact with children moment by moment.

Teacher-student interaction is particularly consequential during the early years because young children depend on relational support while learning to regulate emotion, communicate needs, enter peer play, negotiate conflict, persist in tasks, and interpret social expectations. Warm, sensitive, and consistent emotional support can provide a secure base for exploration and adjustment [3]. Observational studies also show that higher-quality teacher and child interaction is associated with social-emotional behaviour, self-regulation, empathy, and learning engagement [4]. At the same time, these relationships are not mechanically causal: children's characteristics can also influence teachers' perceptions and patterns of interaction [5]. This bidirectionality makes close, context-sensitive analysis important.

A second issue concerns culture. Interaction does not occur in a culturally neutral classroom. The meanings of cooperation, turn-taking, politeness, responsibility, emotional expression, participation, and adult-child communication are learned through family and community life. For this reason, social-emotional learning is more likely to be meaningful when it is connected to children's lived cultural experiences rather than presented as a decontextualised set of skills. [6] argue that culturally relevant social-emotional learning should be situated in authentic experience and informed by local values, beliefs, and practices. Research on culturally responsive teaching in preschool settings likewise highlights the importance of cultural sensitivity, contextualised curriculum, and professional support for teachers [7]. These insights suggest that local culture can function not merely as additional content, but as a resource for organising participation and interaction.

In Indonesia, the concept of ethnoscience offers one pathway for connecting formal educational experiences with culturally embedded knowledge. Ethnoscience broadly concerns knowledge systems, practices, classifications, tools, values, and interpretations that emerge within particular communities. In the present study, the term is operationalised pedagogically: Acehnese cultural practices and artefacts are used as contexts through which children observe, communicate, compare, negotiate roles, solve simple problems,

turnitin Page 6 of 17 - Integrity Submission Submission ID trn:oid:::1:3679919826

turnitin Page 7 of 17 - Integrity Submission Submission ID trn:oid:::1:3679919826

and participate in shared activity. This interpretation is consistent with recent Indonesian work showing that local wisdom and ethnoscience can enrich contextual learning in early childhood settings, while also revealing the need for stronger teacher capacity to translate local knowledge into pedagogically coherent activities [8]. More broadly, research on local-wisdom integration suggests that culturally grounded content can increase contextual relevance and learner engagement [9].

Acehnese everyday life provides culturally familiar situations that are especially suitable for play-based interaction. Two examples are the traditional market and the traditional house. A market involves sellers and buyers, requests and responses, choices, exchange, turn-taking, shared rules, and negotiation. A traditional-house activity can involve identifying parts of the house, arranging materials, assigning roles, building collaboratively, and discussing the social meanings attached to domestic and community space. These experiences create interactional demands that are difficult to reproduce through teacher-dominated instruction. They also align with evidence showing that pretend and role play can provide productive contexts for social participation when adults offer appropriate scaffolding rather than merely providing materials [10].

The preliminary observations underlying this study indicated a mismatch between these pedagogical possibilities and everyday classroom practice. Teaching was still frequently oriented toward early academic tasks and one-way instruction. Opportunities for children to explore, discuss, express ideas, collaborate, and use local culture as a learning resource were limited. Some children also showed difficulty cooperating in groups, waiting for turns, interacting positively with peers, regulating emotion, and completing collaborative tasks. These observations do not imply that cultural learning is a universal solution; rather, they point to the need to examine how a culturally familiar context might reshape interaction and create more opportunities for social-emotional behaviour to be enacted and supported.

Existing studies provide strong but fragmented foundations. The teacher-studentinteraction literature focuses on emotional support, instructional support, classroom organisation, or relationship quality [11]. The social-emotional learning literature focuses on structured programs and competencies [12]. Culturally responsive pedagogy highlights cultural continuity and responsiveness [13], while ethnoscience research often focuses on the contextualisation of academic content. Less attention has been given to the intersection of these domains in Indonesian kindergarten classrooms: how local cultural knowledge can operate as an interactional setting through which teachers support children's social-emotional participation.

Accordingly, this study contributes a contextually grounded account of Acehnese ethnoscience as an interactional resource. The novelty lies not in claiming a new experimental intervention, but in reframing local culture from content to interactional affordance. The study addresses three questions: (1) How is Acehnese ethnoscience implemented in teacher-student interaction through traditional-market and traditional-house activities? (2) What characteristics of teacher-student interaction and social-emotional behaviour are observable in these activities? and (3) What do these patterns imply for process quality in kindergarten education?

turnitin Page 7 of 17 - Integrity Submission Submission ID trn:oid:::1:3679919826

turnitin Page 8 of 17 - Integrity Submission Submission ID trn:oid:::1:3679919826

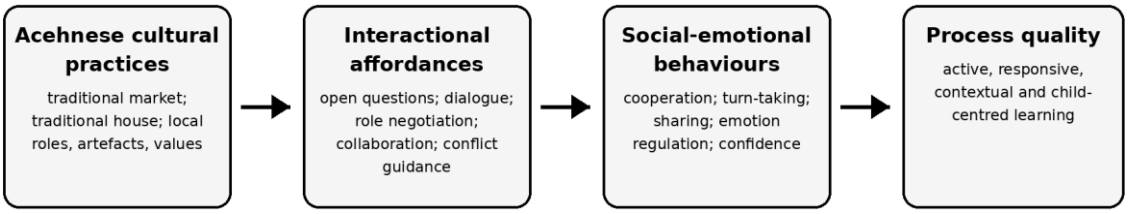


Figure 1. Analytical framework: local culture as an interactional context for social-emotional participation and process quality.

2. METHOD

2.1 Research design and setting

The study used a descriptive qualitative design to examine interaction as it occurred within a natural kindergarten context. The design was selected because the primary purpose was to describe processes, meanings, interactional patterns, and contextual conditions rather than to test causal effects or estimate an intervention effect size. The research was conducted at TK Negeri 1 Arongan Lambalek, Aceh Barat Regency, Indonesia. The site was selected because local-cultural elements were already recognised within the school context and could be developed into observable learning activities relevant to the study focus.

2.2 Participants and learning contexts

The key adult informants were one school principal and two classroom teachers who were directly involved in planning and implementing learning activities. Thirty Group B kindergarten children were observed as participants in classroom activity. The study focused on two Acehnese ethnoscience contexts. In the traditional-market activity, children enacted seller and buyer roles, selected and shared materials, communicated requests, waited for turns, and followed agreed rules. In the traditional-house activity, children explored representations of Acehnese housing, organised materials, worked in groups, shared tasks, and discussed cultural features. These activities were treated as contexts for observing interaction, not as a standardised intervention whose dosage or causal effect was being tested.

2.3 Data sources and instruments

Data were generated through interviews, participant observation, structured observation, and documentation. Interviews with the principal and teachers addressed the implementation of ethnoscience-based learning, forms of teacher-student interaction, children's responses, and enabling or constraining conditions. Classroom observation focused on teacher responsiveness, open-ended questions, listening to children's ideas, positive reinforcement, cultural connections, conflict guidance, cooperation support, and opportunities for children to express ideas. A social-emotional observation sheet was used to record children's cooperation, turn-taking, sharing of tools and materials, opinion expression, emotion regulation, group-task completion, confidence, and recognition of

turnitin Page 8 of 17 - Integrity Submission Submission ID trn:oid:::1:3679919826

turnitin Page 9 of 17 - Integrity Submission Submission ID trn:oid:::1:3679919826

Acehnese culture through play. Documentary evidence included learning modules, child-development records, photographs of activities, and relevant school documents.

2.4 Data analysis and trustworthiness

Analysis followed an iterative qualitative cycle of data condensation, thematic organisation, data display, interpretation, and verification. Interview, observation, and documentary data were read comparatively and grouped around the research questions. The analysis produced four interconnected themes: (a) ethnoscience as a context for interaction, (b) characteristics of teacher-studentinteraction, (c) manifestations of children's social-emotional behaviour, and (d) implications for process quality. Structured observation categories_BB (not yet developed), MB (beginning to develop), BSH [*Berkembang Sesuai Harapan* (developing as expected)], and BSB (developing very well) were used descriptively to support the qualitative interpretation; they were not treated as inferential quantitative outcomes. Triangulation was undertaken across sources (principal and teachers) and methods (interviews, observations, and documentation), and member checking was used to compare the researchers' interpretations with informants' accounts. In reporting qualitative themes, attention was given to coherent patterns rather than to frequency alone, consistent with contemporary guidance that thematic quality depends on conceptual fit and analytic transparency rather than mechanical coding procedures [14].

3. RESULTS AND DISCUSSION

3.1. Acehnese ethnoscience as an interactional context

The findings indicate that the traditional-market and traditional-house activities changed the organisation of classroom interaction. Rather than functioning as stand-alone cultural lessons, the activities became settings for role play, discussion, exploration, shared decision-making, and group work. The teachers used culturally familiar objects and situations to initiate conversation and invite participation. Across the interview and observation data, cultural familiarity appeared to lower the threshold for children's verbal participation: children could draw on prior experiences of markets, buying and selling, household spaces, and family or community routines when responding to teachers or peers.

3.2. Characteristics of teacher-studentinteraction

Eight interactional indicators were consistently visible during the two learning contexts: positive greeting and response, open-ended questioning, listening to children's ideas, positive reinforcement, linking activity to Acehnese culture, helping children resolve simple conflict, encouraging cooperation, and giving children opportunities to express ideas. The observation profile for the two participating teachers is presented in Table 1. The original local rubric used BSH (developing as expected) and BSB (developing very well) as descriptive categories.

turnitin Page 9 of 17 - Integrity Submission Submission ID trn:oid:::1:3679919826

turnitin Page 10 of 17 - Integrity Submission Submission ID trn:oid:::1:3679919826

Table 1. Observed teacher-student interaction in Acehnese ethnoscience activities

No.	Interaction indicator	Teacher 1	Teacher 2	Descriptive tendency
1	Positive greeting and response	BSB	BSB	Strongly evident
2	Open-ended questions	BSB	BSB	Strongly evident
3	Listening to children's ideas	BSB	BSB	Strongly evident
4	Positive reinforcement	BSB	BSH	Evident to strongly evident
5	Connecting activity with Acehnese culture	BSB	BSB	Strongly evident
6	Guiding simple conflict resolution	BSB	BSH	Evident to strongly evident
7	Encouraging cooperation	BSH	BSB	Evident to strongly evident
8	Providing opportunities to express ideas	BSH	BSB	Evident to strongly evident

Note. BSH = developing as expected; BSB = developing very well. Categories reproduce the descriptive rubric used in the study and are not inferential statistics.

The pattern in Table 1 indicates a shift from teacher transmission toward interaction that was more dialogic and participatory. Open-ended questions were especially important because they created space for children to connect the activity with their own experiences and formulate responses in their own words. Listening and positive reinforcement signalled that children's contributions were legitimate parts of the learning process. Conflict guidance and cooperation prompts were also embedded within the activity rather than delivered as separate moral instruction.

To make the recurrent qualitative patterns transparent, Table 2 synthesizes the core themes supported by the observation, interview, and documentation data.

Table 2. Matrix of core qualitative findings

Core theme	Illustrative evidence from the study	Interpretive meaning	Contribution to social-emotional development
Warm emotional support	Teachers consistently greeted children positively, listened carefully, and reinforced participation during both ethnoscience activities.	Interaction created emotional safety and helped maintain children's involvement in the learning process.	Supports confidence, positive engagement, and readiness to participate with peers.
Dialogic participation	Teachers posed open-ended questions and invited children to share ideas, stories, and opinions during classroom talk and play.	Interaction shifted from one-way instruction toward shared meaning-making and active participation.	Supports self-expression, communication, and turn-taking.
Cultural grounding of interaction	Traditional-market and traditional-house activities linked classroom interaction to familiar Acehnese experiences and routines.	Cultural familiarity increased relevance and reduced the distance between classroom content and children's everyday lives.	Supports engagement, cultural identity, and meaningful social participation.
Cooperative scaffolding	Teachers guided children in sharing materials, completing group roles, resolving simple conflicts, and helping peers.	The teacher functioned as a facilitator of collaboration rather than a sole transmitter of information.	Supports cooperation, empathy, emotion regulation, and collaborative task completion.

turnitin Page 10 of 17 - Integrity Submission Submission ID trn:oid:::1:3679919826

turnitin Page 11 of 17 - Integrity Submission Submission ID trn:oid:::1:3679919826

3.3. Characteristics of teacher-student interaction

The two ethnoscience activities generated situations in which social-emotional capacities were required in practice. Children had to share materials, wait for a role or turn, communicate preferences, accept another child's idea, cooperate toward a shared outcome, regulate frustration, and complete group tasks. These behaviours were observed within play rather than elicited through a decontextualised test. Table 3 presents the descriptive distribution recorded for 30 children.

Table 3. Descriptive social-emotional assessment of 30 children

No.	Indicator	BB	MB	BSH	BSB	BSH+BSB	% BSH+BSB
1	Cooperating with peers	0	1	9	20	29	96.7
2	Waiting for a turn	4	1	8	17	25	83.3
3	Sharing tools and materials	0	1	11	18	29	96.7
4	Expressing an opinion	0	5	7	18	25	83.3
5	Regulating emotion	0	3	6	21	27	90.0
6	Completing a group task	2	2	12	14	26	86.7
7	Showing self-confidence	0	2	15	13	28	93.3
8	Recognising Acehnese culture through play	0	4	6	20	26	86.7

Note. BB = not yet developed; MB = beginning to develop; BSH = developing as expected; BSB = developing very well. The cultural-recognition indicator is reported because it was included in the study instrument, but it is conceptually distinct from core social-emotional competence.

The descriptive pattern was strongest for cooperation and sharing: 29 of 30 children (96.7%) were in BSH or BSB for each indicator. Emotion regulation was in BSH or BSB for 27 children (90.0%), and self-confidence for 28 children (93.3%). Group-task completion reached 26 children (86.7%) in BSH or BSB. Waiting for a turn and expressing an opinion showed the largest need for continued support, with 25 children (83.3%) in BSH or BSB for each indicator. These distributions should not be interpreted as evidence that the activities caused improvement because no baseline comparison or control condition was used. They instead show that the activities provided observable opportunities for these behaviours to emerge and be supported.

Figure 3 presents the same descriptive pattern visually by plotting the percentage of children in the BSH and BSB categories for each indicator. The chart is included only as a readability aid and does not replace the qualitative interpretation.

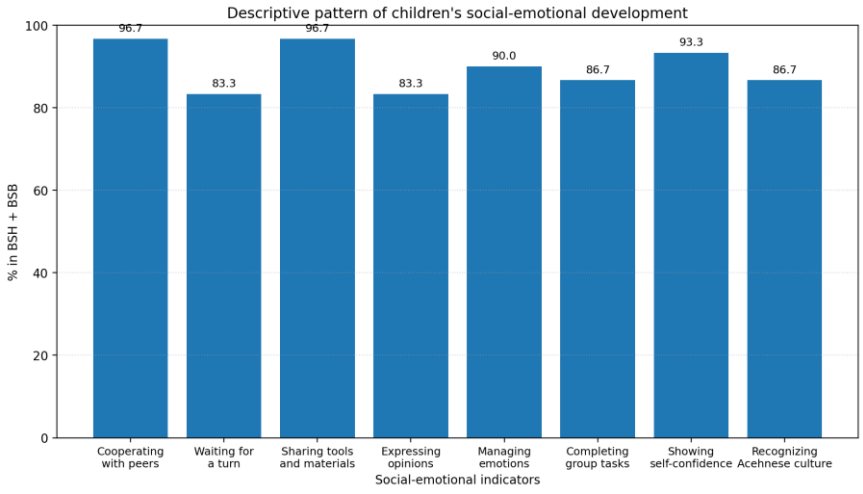


Figure 3. Percentage of children in the BSH+BSB categories across social-emotional indicators

turnitin Page 11 of 17 - Integrity Submission Submission ID trn:oid:::1:3679919826

turnitin Page 12 of 17 - Integrity Submission Submission ID trn:oid:::1:3679919826

3.3. Characteristics of teacher-student interaction

Across data sources, the ethnoscience activities were associated with four process-level changes. First, learning became more contextual because children could connect school activity with familiar cultural experience. Second, communication became more reciprocal as teachers asked more open questions and children contributed ideas. Third, participation became more collaborative because activities required shared roles and materials. Fourth, teachers functioned less as transmitters of instructions and more as facilitators of interaction and problem solving.

Three constraints were consistently identified across the data: teacher competence, limited learning media, and time allocation. These constraints were evident in the need to adapt cultural content into developmentally appropriate play, provide sufficient materials, and fit culturally grounded activities within regular classroom schedules.

Because the study draws on multiple sources of evidence, Table 4 provides a compact triangulation display that shows how the main analytical claims were supported across data sources.

Table 4. Triangulation matrix across the main analytical foci

Analytical focus	Observation	Interview	Documentation	Integrated conclusion
Teacher-studentinteraction quality	Visible in greetings, questioning, listening, positive reinforcement, and conflict support.	Confirmed by teachers' and principal's accounts of more dialogic classroom interaction.	Supported by learning plans and classroom records showing discussion and play-based activities.	Interaction was warm, responsive, and participatory across both ethnoscience activities.
Integration of Acehnese ethnoscience	Visible in traditional-market and traditional-house activities and related classroom talk.	Adults described local culture as a familiar and motivating learning context.	Modules, photos, and school materials reflected the use of local culture in learning.	Ethnoscience functioned as a meaningful cultural context for interaction and learning.
Children's social-emotional development	Observed in cooperation, sharing, turn-taking, confidence, emotion management, and participation.	Teachers explained that children were more willing to join, collaborate, and communicate.	Assessment sheets and field records supported positive descriptive tendencies.	Most indicators showed predominantly BSH and BSB patterns, with some need for support in turn-taking and group-task completion.
Enabling conditions and constraints	Some activities required teacher support, sufficient materials, and classroom time.	Teachers and principal identified competence, media availability, and time allocation as practical constraints.	Planning documents indicated that ethnoscience activities were present but not yet routine across all themes.	Implementation was promising but depended on teacher capacity, learning media, and scheduling conditions.

turnitin Page 12 of 17 - Integrity Submission Submission ID trn:oid:::1:3679919826

turnitin Page 13 of 17 - Integrity Submission Submission ID trn:oid:::1:3679919826

4. Discussion

4.1. Ethnoscience as a culturally situated interactional resource

This pattern is important because it suggests that the pedagogical value of ethnoscience lies partly in what it makes interactionally possible. When the learning context is recognisable, teachers can ask questions that invite children to compare school activities with lived experience, explain their choices, or negotiate a role. Children, in turn, have more material for contribution than when responding to decontextualised teacher questions. The resulting interaction is therefore not simply 'culture added to the curriculum'; it is a reorganisation of participation around shared cultural references.

This interpretation aligns with culturally relevant social-emotional learning, which emphasises that social-emotional competencies are enacted through culturally situated experiences rather than existing independently of context [15]. It is also consistent with research on culturally responsive preschool teaching showing that cultural sensitivity and curriculum design require active teacher mediation [16]. In the present study, the cultural activity itself did not guarantee high-quality pedagogy. Its value depended on how teachers used the context to ask questions, listen, redistribute participation, and scaffold peer interaction.

4.2. Teacher-student interaction and social-emotional development

These findings correspond with process-quality research that places emotional support, classroom organisation, language-rich interaction, and engagement support at the centre of high-quality ECEC [17]. [18] similarly found that interaction quality in early care settings is associated with social-emotional behaviour and self-regulatory development. [19] further emphasised the value of active facilitation, timely feedback, and verbally rich support for social competence. The present study extends these insights by showing how culturally familiar activities can supply a concrete interactional structure in which these practices occur.

The results also reinforce the importance of consistency. [20] found that children with lower regulation capacities were better adjusted in classrooms where teachers were more consistent in warm and responsive emotional support. Although the present study did not measure interaction consistency over an extended period, the convergence of observations across the two teachers suggests that culturally grounded routines may help make responsive interaction more intentional. This is an important hypothesis for future longitudinal work rather than a causal conclusion from the current design.

The learning mechanism appears to involve the combination of play structure and teacher scaffolding. The market provided recognisable social roles_seller, buyer, queueing participant, chooser of goods_and implicit rules of exchange. The traditional-house activity required shared planning, materials management, division of tasks, and explanation. Such settings naturally produce moments of disagreement, waiting, helping, negotiation, and joint attention. Research on social pretend play supports the view that play can promote social competence when adult support is responsive and when children have opportunities to co-construct roles and scenarios [21]. [22] similarly emphasise the value of combining

turnitin Page 13 of 17 - Integrity Submission Submission ID trn:oid:::1:3679919826

turnitin Page 14 of 17 - Integrity Submission Submission ID trn:oid:::1:3679919826

structured and free-play opportunities because each creates different developmental affordances.

From a social-emotional learning perspective, the findings are consistent with the broader evidence that preschool is an important site for supporting emotion knowledge, self-regulation, cooperation, and prosocial behaviour [23]. Conversation is especially relevant. In an experimental nursery study, [21]. showed that teacher-led conversations about inner states and prosocial behaviour enhanced toddlers' prosocial conduct. The present findings do not replicate that intervention, but they point in the same direction: teachers' questions, listening, reinforcement, and guidance created a conversational layer around play through which children could practise social-emotional responses.

Waiting for turns and expressing opinions deserve specific attention. Both require more than knowledge of a classroom rule. Turn-taking involves impulse control, tolerance of delay, and sensitivity to others, while opinion expression requires language, confidence, and awareness of the social situation. The lower descriptive pattern on these indicators suggests that teachers may need to plan explicit opportunities for quieter or less self-regulated children to participate. This also cautions against interpreting a culturally familiar activity as equally accessible to all children; individual differences remain important.

4.3. Ethnoscience and kindergarten process quality

The four process-level changes identified in the results correspond closely to contemporary descriptions of process quality as the child's actual experience of responsive, engaging, and developmentally supportive interaction [24]. The findings therefore support a conceptual shift: ethnoscience can be understood as an interactional design resource. Its contribution to quality does not lie only in whether children learn the name of a traditional house or identify objects associated with a market. It lies in whether those cultural references enable teachers and children to do different things together_ask, explain, negotiate, compare, wait, help, disagree, repair conflict, and complete a shared activity. This interactional interpretation is particularly relevant to early childhood education because development is mediated through participation and relationships.

The implementation constraints are equally important. Local culture does not automatically become good pedagogy. Teachers need to select culturally meaningful content, translate it into developmentally appropriate play, anticipate interactional opportunities, and scaffold children without taking over the activity. Research on culturally responsive teaching in preschools similarly identifies professional support and teacher efficacy as important conditions for implementation [25]. The results therefore point to professional learning as a necessary companion to curriculum innovation.

The study also has a theoretical implication for the relationship between culture and teacher-studentinteraction. Much of the interaction literature treats emotional and instructional support as general dimensions that can be observed across settings, while culturally responsive research stresses the situated meaning of teaching. These perspectives are not contradictory. [18] argue that interactional dimensions can be observed across cultures, whereas [20] emphasise that social-emotional competence must be culturally

turnitin Page 14 of 17 - Integrity Submission Submission ID trn:oid:::1:3679919826

turnitin Page 15 of 17 - Integrity Submission Submission ID trn:oid:::1:3679919826

situated. The current study suggests a productive integration: general interactional qualities such as responsiveness, dialogue, and scaffolding may be enacted through locally specific cultural contexts.

4. CONCLUSION

This study shows how Acehnese cultural knowledge can be integrated into early childhood learning as more than a topic of cultural introduction. Through traditional-market and traditional-house activities, local culture became an interactional context that supported dialogue, role negotiation, cooperation, conflict guidance, turn-taking, idea expression, and shared problem solving. The strongest contribution of the approach was therefore relational and process-oriented: culturally familiar experiences gave teachers concrete opportunities to build responsive and participatory interaction.

Most children were observed in the developing-as-expected or developing-very-well categories across the study's social-emotional indicators, particularly cooperation, sharing, emotion regulation, and confidence. These patterns are consistent with the view that culturally situated, play-based interaction can create rich opportunities for social-emotional learning. However, the design does not permit causal claims, and several children still required support in turn-taking, opinion expression, and group-task completion. Teacher competence, media availability, and time also shaped implementation.

For quality improvement in kindergarten, the central implication is that local culture should be designed as a context for high-quality interaction. When ethnoscience is translated into responsive questioning, child participation, collaborative roles, and emotionally supportive guidance, it can connect cultural continuity with the everyday process quality that young children actually experience in classrooms.

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