

## **Philosophical Values of the *Sedulur Sikep* (Samin Tribe) of Bojonegoro: Contextual Resources for Mathematics Learning**

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### **Abstract**

This study aims to identify the philosophical values embedded in the *Sedulur Sikep* (Samin) community in Bojonegoro and reconstruct them into a contextual mathematics learning design. The study employed a qualitative ethnographic approach involving six participants, consisting of community leaders and members selected purposively based on their knowledge of *Sedulur Sikep* teachings and practices. Data were collected through participant observation, in-depth interviews, and document analysis. Data analysis was conducted using open coding, thematic categorization, and interpretive analysis to examine the relationship between cultural values and mathematics learning contexts. The findings indicate that the values of *ora jumput* (not taking others' rights), *ora bedok* (honesty), and *ora srei* (not being greedy) function as ethical principles consistently reflected in social practices related to resource management, economic interactions, and everyday decision-making. These values were reconstructed into authentic contexts for mathematics learning through tasks involving fair distribution, procedural consistency, and decision-making under constraints. The integration of cultural values was framed through Contextual Teaching and Learning (CTL) and Realistic Mathematics Education (RME), positioning cultural practices as starting points for mathematical activity. The contribution of this study lies in proposing a learning design framework that connects *Sedulur Sikep* philosophical values with operational mathematical contexts. The findings extend ethnomathematics research beyond cultural identification toward the reconstruction of cultural values as resources for contextual mathematics learning design.

**Keyword:** ethnomathematics, *sedulur sikep*, philosophical values, contextual learning

## INTRODUCTION

Mathematics is understood as a discipline built through processes of abstraction, symbolization, and logical generalization. These characteristics make mathematics universal, yet it is often distant from students' concrete experiences, posing challenges in conceptual understanding (Genc & Erbas, 2019). While such difficulties are not experienced by all learners, research suggests that mathematical understanding can be enhanced when concepts are presented through meaningful and relevant contexts that relate to students' lived experiences. In mathematics education, the relevance of learning materials to students' experiences is considered an important factor in supporting engagement and conceptual understanding. This aligns with the findings of (Rodríguez-Nieto et al., 2025), which indicate that contexts lacking relevance to students' experiences lead to limitations in numerical and applied understanding (Nur et al., 2020)

One important consideration in mathematics education is the relationship between instructional content and students' sociocultural contexts. Research suggests that students' lived experiences, value systems, language practices, and cultural knowledge can influence how they construct mathematical understanding. The learning process is a constructive activity influenced by students' life experiences, value constructs, and cultural knowledge. Without a connection to cultural context, mathematical concepts become disconnected, particularly for students from strong cultural backgrounds, making the meaning of mathematics difficult to grasp (Gyamfi & Wren, 2022). A literature review conducted indicates that a range of studies have reported the potential of ethnomathematics to enhance student engagement, increase the relevance of learning, and strengthen connections between school mathematics and students' cultural experiences. Therefore, integrating cultural elements into mathematics instruction is considered a promising approach for developing learning environments that are more contextual and responsive to students' backgrounds. (Kabuye Batiibwe, 2024)

In this context, ethnomathematics serves as a pedagogical approach that bridges formal mathematics and students' cultural experiences. Ethnomathematics views mathematics as a product of cultural activities that develop within specific social contexts, meaning that mathematics learning cannot be separated from local cultural practices and values (Rosa & Orey, 2021). International literature reviews also note a growing interest in ethnomathematics research that examines the relationship between cultural practices and the contextualization of mathematics learning (Mosimege & Egara, 2023).

Ethnomathematics involves more than using culture as a learning context; it also provides opportunities to integrate the values embedded in community social practices into the construction of mathematical knowledge. In many educational settings, culture is often used merely as an illustration or background for mathematical tasks. For example, batik patterns or traditional architectural forms may be used to introduce geometric concepts without engaging with the values, ways of thinking, or social practices underlying those cultural artifacts. In such cases, culture functions primarily as an external context that helps attract students' attention but does not substantially influence the mathematical reasoning process. The social and normative values inherent in cultural practices do not merely serve as a superficial context but also play a role in shaping

students' holistic frameworks of thinking, including the affective and ethical dimensions of mathematics learning (Umbara & Suryadi, 2019). Such an approach is globally recognized as a strategy for developing culturally responsive pedagogy that not only enhances conceptual understanding but also strengthens positive attitudes toward mathematics and students' cultural identity (Nursyahidah et al., 2025)

One cultural community with strong and consistent traditions is the Samin Tribe in Bojonegoro Regency, East Java, known for principles of honesty, simplicity, solidarity, and moral consistency in daily life. In the context of mathematics education, such values demonstrate potential as a strong pedagogical foundation in helping students bridge their daily experiences with an understanding of abstract concepts (Ramadhani et al., 2022).

The use of philosophical values in mathematics learning is not merely about treating culture as a situational context, but about treating cultural values as cognitive values that enrich the process of conceptual understanding. The integration of cultural values in ethnomathematics enables students to build a deeper understanding, where cognitive, affective, and social aspects are interconnected in the learning process (Putri et al., 2022). Previous research also indicates that the ethnomathematics approach has a positive impact on improving students' mathematics achievement across various educational contexts, particularly when cultural values and local practices are effectively integrated (Hebebcı & Usta, 2022)

Although ethnomathematics research has evolved within the field of mathematics education, many studies still focus on exploring mathematical elements within cultural artifacts without delving deeply into the role of philosophical values as a pedagogical foundation. Such an approach treats culture as a superficial element, thereby failing to fully harness the potential of ethnomathematics in fostering mathematical understanding that encompasses cognitive, affective, and value-based dimensions (Prahmana et al., 2021). This aligns with the findings (Tambunan, 2019) that there remains a strong need for research that considers the long-term impact and generalizability of ethnomathematics learning strategies across various cultural communities.

Mathematics instruction also requires a connection between abstract concepts and students' real-world experiences to make learning more meaningful. The Contextual Teaching and Learning (CTL) approach emphasizes that knowledge is constructed through students' active engagement in relating the material to everyday life contexts (Arjay, 2023). CTL is not only oriented toward conceptual mastery but also toward critical thinking and problem-solving skills through authentic experiences. In mathematics education, the principles of CTL are compatible with ethnomathematical perspectives that view students' cultural experiences as meaningful learning resources. By incorporating contexts that are familiar and culturally relevant to learners, mathematics instruction can become more meaningful and help students connect formal mathematical concepts with social practices they encounter in everyday life. Previous studies suggest that the use of local cultural contexts in mathematics learning has the potential to enhance student engagement and support deeper conceptual understanding by situating mathematical ideas within authentic and meaningful situations (Nursyahidah et al., 2025)

In line with CTL, the Realistic Mathematics Education (RME) approach emphasizes that mathematics must begin with realistic contextual situations that are close to students' lives (Lubis et al., 2021). In RME, context is not merely an illustration but serves as the starting point for the construction of mathematical concepts through a gradual process of mathematization. Recent research indicates that integrating RME with cultural contexts (ethno-RME) has a significant impact on students' mathematical abilities because students can build concepts from the realities they are familiar with (Nursyahidah et al., 2018). This underscores that mathematics learning rooted in social and cultural realities holds great potential for enhancing the quality of learning.

Furthermore, the integration of culture into mathematics learning through the ethno-mathematics approach serves as a bridge between local knowledge and formal mathematical concepts. Local culture contains various practices rich in mathematical ideas, such as patterns, comparisons, measurements, and structures. (Meeran et al., 2024). Studies show that the use of cultural contexts in learning not only improves numeracy literacy but also strengthens students' cultural identity and makes learning more meaningful and contextual (Kolar & Hodnik, 2021). Thus, culture is not merely an adjunct but a primary source in designing mathematical learning contexts.

The urgency of this research lies in the effort to expand the ethnomathematics perspective from the use of cultural contexts toward a strong philosophically grounded approach. The urgency of this study lies in expanding the ethnomathematics perspective from the use of culture as a learning context toward the utilization of cultural values as resources for designing mathematics learning. This direction is consistent with contemporary educational frameworks that emphasize the integration of knowledge, skills, attitudes, and values within the learning process. Thus, an examination of the philosophical values of the Samin Tribe as the foundation for contextual mathematics learning can provide significant theoretical and practical contributions, particularly in the development of ethnomathematics that is more culturally responsive and meaningful.

Based on the discussion above, this study aims to address the central question of how the philosophical values of the Samin community in Bojonegoro can be identified and reconstructed into meaningful contexts for contextual mathematics learning. The study also examines the relevance of these values to the development of learning activities that support students' mathematical reasoning, problem-solving, and reflective thinking. Therefore, the focus of this research extends beyond identifying cultural elements to exploring how cultural values can be translated into operational and meaningful learning situations for students. The contribution of this study lies in proposing a conceptual framework that connects Sedulur Sikep philosophical values with the design of contextual mathematics learning through the integration of Contextual Teaching and Learning (CTL) and Realistic Mathematics Education (RME). In contrast to many ethnomathematics studies that primarily focus on identifying mathematical ideas embedded in cultural activities or artifacts, this study explores how cultural values can serve as resources for designing learning contexts and mathematical activities. In this way, the study extends the use of culture in mathematics education beyond the representation of cultural artifacts

and practices toward the utilization of community value systems as a basis for developing meaningful learning contexts.

## **METHODS**

### **Research Design**

This study employs a qualitative approach using ethnographic research to deeply examine the philosophical values embedded within the Samin community and their relevance as a foundation for contextual mathematics learning. This study employed a qualitative approach with an ethnographic design to examine the philosophical values embedded within the Sedulur Sikep (Samin) community in Bojonegoro Regency, East Java, Indonesia, and to reconstruct these values as resources for developing contextual mathematics learning. The Sedulur Sikep community was selected because it continues to preserve its traditional teachings and cultural practices across generations, providing a rich setting for exploring the relationship between value systems, social practices, and ways of thinking embedded in everyday life. The study was conducted in several Sedulur Sikep settlements where community teachings remain actively practiced. An ethnographic approach was chosen because the study sought not only to identify cultural values descriptively but also to understand how these values are interpreted, enacted, and transmitted within the community. Ethnography enables researchers to gain insight into tacit knowledge, routine social practices, and everyday interactions that may not be fully captured through interviews alone (Abduh et al., 2023). Through observations of daily activities and community interactions, the study explored how values such as *ora jumput* (not taking others' rights), *ora bedok* (honesty), and *ora srei* (not being greedy) are manifested in social practices and examined their relevance as resources for designing meaningful mathematics learning contexts. Therefore, ethnography was considered appropriate because it allows for an in-depth exploration of the relationship between cultural value systems and the development of learning designs grounded in authentic community experiences.

### **Sample and Data Collection**

The data sources in this study consisted of primary informants and supporting materials. The primary informants included six participants, comprising two Sedulur Sikep community leaders and four community members actively involved in everyday social life. Informants were selected through purposive sampling based on the following criteria: (1) being recognized by the community as a leader or active member of the Sedulur Sikep community; (2) possessing substantial knowledge of Sedulur Sikep teachings and values; (3) having lived and participated in community life for at least 20 years; and (4) being willing to participate in interviews and observation activities. Supporting data were obtained from cultural documents, community archives, scholarly literature, and previous studies related to the Samin community and ethnomathematics. The researcher served as the primary research instrument (*human instrument*) responsible for data collection, interpretation, and analysis. The researcher is a scholar in mathematics education with prior experience conducting studies on ethnomathematics and Javanese local culture. Although not a member of the Sedulur Sikep community, the researcher is

fluent in Javanese and conducted preliminary studies on the history and values of the Samin community before entering the field.

Data were collected through semi structured interviews, participant observation, and documentation. Interviews were conducted one to two times with each informant, with each session lasting approximately 60–90 minutes. The interview questions focused on participants' understanding of Sedulur Sikep teachings, everyday practices reflecting the values of *ora jumput*, *ora bedok*, and *ora srei*, and their perspectives on how these values are transmitted across generations. In-depth interviews allow for the exploration of informants' subjective experiences and meanings, while participatory observation provides direct access to social practices occurring in everyday life.

### **Analyzing of Data**

Data analysis was conducted using of data condensation, data display, and conclusion drawing (Murtiyasa & Perwita, 2020). During the data condensation stage, all interview recordings were transcribed and field observations were organized into detailed field notes. Open coding was then applied to identify meaningful units related to teachings, social practices, and values embedded within the Sedulur Sikep community. Related codes were subsequently grouped into broader categories, such as honesty, fairness, social responsibility, and self-restraint. This process was conducted inductively to ensure that emerging themes originated from participants' perspectives and field data rather than from a predetermined mathematics education framework. The resulting categories were then analyzed thematically to uncover the cultural meanings underlying Sedulur Sikep social practices. The analysis focused not only on what community members do but also on the beliefs, values, and reasons that inform their actions. Accordingly, the ethnographic dimension of this study sought to understand how values such as *ora jumput*, *ora bedok*, and *ora srei* are interpreted, enacted, and transmitted in everyday life. These cultural themes were subsequently reconstructed into a contextual mathematics learning framework through an interpretive process that connected cultural values with meaningful mathematical situations, including fair distribution, decision-making under constraints, and problem-solving in authentic contexts. The purpose of this stage was not to claim that the Sedulur Sikep community explicitly employs formal mathematical concepts, but rather to explore how cultural values may serve as resources for designing meaningful mathematics learning activities.

## **RESULTS AND DISCUSSION**

### **Results**

Observation results indicate that the teachings of the Samin tribe of Bojonegoro are referred to as Sedulur Sikep. This term originates from two Javanese words: *sedulur*, meaning “sibling,” and *sikep*, meaning “attitude” or “life principle.” Thus, Sedulur Sikep can be interpreted as “brotherhood grounded in a specific way of life,” namely an attitude that upholds honesty, simplicity, and consistency in action. This term reflects their worldview, which places interpersonal relationships within a framework of equality and solidarity, without distinguishing based on social status or economic background.

The use of the term Sedulur Sikep also carries a deeper philosophical meaning compared to the term “Samin,” which, in certain historical contexts, was often imposed by outsiders. This community prefers to call itself Sedulur Sikep because the term represents an internal identity rooted in the teachings of Samin Surosentiko, which emphasize the importance of living honestly (*ora bedok*), not taking others’ rights (*ora jumput*), and avoiding greed (*ora srei*). The word “sikep” itself is not merely interpreted as “attitude” in the sense of behavior, but also encompasses consistency between thoughts, words, and actions. Therefore, being part of Sedulur Sikep means living a life guided by firm and harmonious principles, so that this identity is not merely a social label, but a reflection of a value system internalized in daily life.

Sedulur Sikep among the Samin community of Bojonegoro cannot be understood merely as a normative value system, but rather as a practical framework of thought that consistently guides individual actions in daily life. Principles such as *ora jumput* (not taking others’ rights), *ora bedok* (not lying), and *ora srei* (not being greedy) function as operational rules that shape how the community assesses situations, makes decisions, and interacts with its social environment. Principles such as *ora jumput* (not taking others’ rights), *ora bedok* (not lying), and *ora srei* (not being greedy) are reflected in various social practices, including resource management, economic relationships, and decision-making processes involving collective interests. According to the participants, these values are transmitted through role modeling and everyday practices, becoming important references for determining appropriate actions in different social situations. The findings suggest the existence of relatively consistent patterns of action and social practice within the Sedulur Sikep community. These values function as moral references for evaluating rights and responsibilities, maintaining social relationships, and regulating harmonious interactions among community members. In this context, the teachings of Sedulur Sikep possess a rational dimension because every action is grounded in clear considerations regarding right and wrong, rights and obligations, as well as the balance between the individual and the community. Thus, these values function not only as moral guidelines but also as a regulatory system containing a logical structure within the community’s social life.

Furthermore, observations indicate that Sedulur Sikep values influence how community members manage resources and conduct social and economic interactions in everyday life. Several participants explained that the distribution of agricultural yields and the use of shared resources are generally determined through collective deliberation, taking into account work contributions, family needs, and agreements perceived as fair by community members. Although these practices do not involve formal mathematical calculations explicitly articulated by participants, the decision-making process reflects considerations of proportionality, balance, and fairness in resource allocation. These findings suggest that such social practices provide meaningful situations that can be reconstructed into mathematics learning contexts related to comparison, ratio, and distribution. In the distribution of harvest yields, for example, the community implicitly applies the principle of distributive justice by considering work contributions, needs, and mutual agreement without domination or exploitation. This process reflects an understanding of the concepts of proportion, balance, and equality, which in mathematics

are known as quantitative relations. Therefore, *ora srei* is more appropriately understood as a form of boundary awareness and constraint-based decision making rather than as an example of mathematical optimization. In mathematics education, this value may be reconstructed into learning situations involving decision-making under constraints, enabling students to explore relationships among choices, limitations, consequences, and problem-solving strategies within meaningful contexts. These patterns demonstrate that the cultural practices of Sedulur Sikep contain implicit mathematical thinking structures, where concepts such as comparison, distribution, and balance have been internalized into daily life. Therefore, these values not only represent local wisdom but also possess epistemological potential as a source for constructing contextual and meaningful mathematical knowledge in learning.

The interview process reinforces the observational findings by revealing how the Samin community interprets these values as guidelines for thinking and act at the same time. One community leader explained, “*The important thing is not to take what does not belong to you; when something is shared, it should be fair so that no one feels disadvantaged*”. This statement suggests that fairness is understood not as an abstract concept but as a principle that should be enacted in everyday situations, particularly those involving collective interests and resource distribution. Similar perspectives were expressed by other participants, who emphasized the importance of maintaining social harmony through honesty and respect for the rights of others. Across the interviews, participants described *ora jumput*, *ora bedok*, and *ora srei* as values transmitted through role modeling and repeated social practices within the community. These findings indicate that the values play an important social role in shaping collective behavior and sustaining harmonious relationships among community members.

This statement indicates that the concept of “fairness” from the Samin perspective is not abstract, but operational and contextual in everyday practice. These values of honesty and fairness contain a clear logical structure: the existence of rules, consistency in application, and consequences for violations. Cognitively, this reflects a mathematical thinking process involving pattern recognition, rule establishment, and the consistent application of principles. Thus, the interview not only confirms the existence of these values but also reveals thinking mechanisms that can serve as a foundation for the design of mathematics instruction.

## **Discussion**

Analysis results indicate that the Sedulur Sikep values possess strong and operational relevance in contextual mathematics learning when these values are reconstructed into authentic problem situations closely aligned with students’ experiences. The findings indicate that the value of *ora jumput* (not taking others’ rights) is understood by members of the Sedulur Sikep community as a moral principle emphasizing respect for individual rights and fairness in social life. Based on observations and interviews, this value was reflected in various social practices related to resource sharing, the use of collective work outcomes, and interpersonal relationships within the community. These findings suggest that fairness is an important value maintained in everyday social interactions among community members.

Building on these findings, the researcher reconstructed the value of *ora jumput* into a contextual mathematics learning framework. In this process, the cultural value was not treated as an inherent mathematical concept embedded in community practice; rather, it served as a resource for designing learning activities relevant to students' experiences. In the classroom, teachers can present scenarios involving the distribution of harvests or resources that account for each individual's contribution. Through this context, students are guided to understand fractions, ratios, and equations as tools for achieving fair distribution. Thus, mathematical concepts are no longer positioned as abstract knowledge but as instruments for solving real-world problems with social and cultural significance.

Furthermore, the value of *ora srei* (not being greedy) can be integrated into learning through decision-making contexts involving specific constraints. From a mathematical perspective, this value relates to the concept of optimization, determining the best solution without exceeding predetermined limits. For example, students can be presented with a scenario where they must determine the maximum amount of resources they can take without harming others or violating existing rules. This process not only trains mathematical thinking skills but also instills an awareness of the importance of limits and balance in decision-making. Therefore, the proposed relevance of *ora srei* to mathematics learning should be understood as a conceptual reconstruction developed by the researcher based on cultural findings rather than as an empirically validated instructional outcome. Future studies are needed to implement and evaluate these learning designs in order to examine their effects on students' mathematical understanding, problem-solving abilities, and character development.

Table 1. Integration of Sedulur Sikep Philosophical Values into Mathematics Learning

Philosophical Values of Sedulur Sikep	Mathematical Word Problems	Mathematical Topics	Grade Level
<i>Ora jumput</i> (not taking what belongs to others)	In a farming community, 120 kg of harvested corn will be distributed among three families who participated in the harvesting process. To ensure fairness, the community agrees that the distribution should be based on each family's work contribution. Family A worked for 4 days, Family B for 3 days, and Family C for 2 days. (a) Develop a mathematical model that can be used to distribute the harvest fairly. (b) Determine the amount of corn each family should receive. (c) Explain why your distribution can be considered fair based on the available information. (d) If the total harvest increases to 180 kg while the work contributions remain the same, how would the distribution change?	Ratio and proportion, direct proportion, mathematical modeling	Grade VIII (Junior High School)
<i>Ora bedok</i> (honesty/consistency)	During a community farming meeting, a member reports that the corn harvests from three plots of land were 45 kg, 60 kg, and 75 kg. The member also states that the average harvest from the three plots is 65 kg. As part of the group discussion, other members want to verify whether the statement is consistent with the available	Mean, data interpretation, mathematical reasoning	Grade VII (Junior High School)

<i>Ora srei</i> (not being greedy / efficiency)	<p>data. (a) Calculate the average harvest based on the given data. (b) Determine whether the statement is correct. (c) If the statement is inconsistent with the data, identify the error and provide the correct average value. (d) Explain why accurate information is important for collective decision-making.</p> <p>A farming community has 120 kg of corn seeds available for the next planting season. There are six farming families, and based on previous experience each family requires at least 15 kg of seeds to cultivate its land. The community also wishes to keep some seeds in reserve in case of crop failure or unexpected future needs. (a) Determine the minimum amount of seeds required by all families. (b) Calculate the amount of seeds remaining after the minimum needs of all families have been met. (c) If the remaining seeds are kept as a shared reserve to support the community in the following season, how many kilograms of reserve seeds are available per family? (d) Explain why choosing not to use all available seeds may be considered a responsible decision for the community.</p>	Arithmetic operations, mean, problem solving, data interpretation	Grade IX (Junior High School)
<i>Rukun</i> (togetherness/harmony)	<p>A learning group consists of four students who harvested corn from a school garden. Their harvests were 118 kg, 122 kg, 120 kg, and 120 kg, respectively. In the spirit of togetherness, they want to examine whether the harvests are relatively balanced so that no large disparities exist among group members. (a) Calculate the mean harvest of the group. (b) Determine the difference between each student's harvest and the group mean. (c) Based on your calculations, explain whether the harvest distribution can be considered relatively balanced. (d) If one student later receives an additional 15 kg of harvest, how would the mean and the level of balance within the group change? Justify your answer.</p>	Statistics (mean, deviation), data analysis	Grade VII (Junior High School)

Table 1 reveals that the philosophical values of Sedulur Sikep serve not only as a narrative context but can also be reconstructed into an operational mathematical framework for learning. The principle of “ora jumput” is strongly represented in the concepts of comparison and proportional distribution, where justice is modeled through the mathematical equivalence of ratios that can be tested. Meanwhile, “ora bedok” is reflected in the verification and proof processes that demand logical consistency between models, procedures, and results. Thus, cultural values serve not only as the initial context but also as an epistemological bridge in building meaningful mathematical understanding. From a theoretical perspective, this approach is consistent with the principles of *Contextual Teaching and Learning* (CTL), which emphasize connecting learning

materials to real-life situations in order to promote meaningful understanding. Furthermore, the cultural contexts incorporated into the proposed learning design have the potential to support key characteristics of *Realistic Mathematics Education* (RME), particularly the use of meaningful contextual problems as starting points for mathematical learning (Nur et al., 2020). Within the RME perspective, cultural values may function as sources of contextual situations that enable students to develop mathematical models and problem-solving strategies progressively (Lubis et al., 2021)

Furthermore (Oladejo et al., 2022), the integration of Sedulur Sikep values into contextual learning also strengthens the implementation of the Contextual Teaching and Learning (CTL) approach, particularly in the relating, experiencing, and applying components. The value of “ora srei,” for example, can be linked to the concept of optimization, which teaches constraints and efficiency, while the value of “rukun” fosters collaboration in the process of discussing and negotiating solutions. Recent research indicates that a CTL approach grounded in local culture enhances student engagement and critical thinking skills because learning becomes more relevant to their lives (Abdulhadi et al., 2023).

Furthermore, from an RME perspective, this integration process can be explained through the stages of horizontal and vertical mathematization. Horizontal mathematization occurs when students transform contextual situations rooted in Sedulur Sikep values into mathematical models, such as converting a problem involving the division of harvest yields into a ratio or equation. Furthermore, vertical mathematization occurs when students generalize, formalize, and reflect on these models until they become more abstract mathematical concepts. This process demonstrates that cultural values serve as both a starting point and a guiding principle in learning, ensuring that students not only grasp procedures but also the conceptual meaning behind them. This is supported by international studies confirming that the integration of ethnomathematics within the RME framework can significantly enhance mathematical sense making and problem solving skills (Rosa & Orey, 2021).

The theoretical implication of this integration is that contextual mathematics learning based on the Sedulur Sikep values has a strong foundation both culturally and pedagogically. CTL provides an implementational framework for linking context to students’ learning experiences, while RME provides an epistemological foundation for the process of mathematical concept construction (Ramadhani et al., 2022). Based on the conceptual reconstruction developed in this study, the proposed instructional design incorporates the stages of context construction, mathematical modeling, exploration, reflection, and generalization as interconnected learning processes. These stages are intended to provide opportunities for students to gradually connect contextual experiences with formal mathematical ideas. However, the present study did not implement or evaluate this instructional design in classroom settings. Therefore, any potential contribution to students’ mathematical understanding, reflective thinking, or character development should be regarded as a theoretical proposition rather than an empirically established finding. Future studies are needed to investigate these possibilities through classroom-based implementation and evaluation.

Based on the observations and interviews, this study identified three central philosophical values within the Sedulur Sikep community, namely *ora jumput*, *ora bedok*, and *ora srei*. These values were subsequently reconstructed into culturally relevant contexts for mathematics learning. Drawing on this pedagogical reconstruction, the researcher proposes a contextual mathematics learning design that integrates principles from Contextual Teaching and Learning (CTL) and Realistic Mathematics Education (RME). It is important to note that this model does not represent an empirically tested instructional intervention; rather, it is a conceptual framework developed from the ethnographic findings of the study. The proposed model consists of five interconnected stages: cultural context construction, mathematical modeling, exploration and problem solving, reflection and verification, and concept generalization.

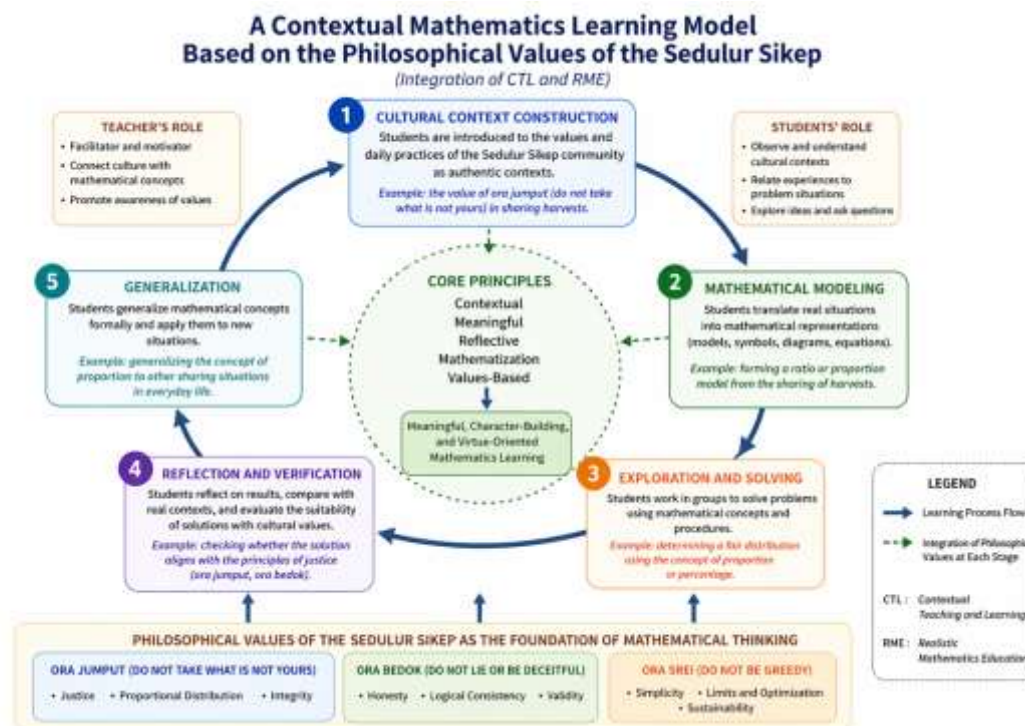


Figure 1. Conceptual Framework for Contextual Mathematics Learning Developed from Sedulur Sikep Values

Based on the figure above, the process of contextual mathematics learning based on the philosophical values of Sedulur Sikep takes place through five systematic stages, namely context construction, mathematical modeling, exploration, reflection, and generalization. This model integrates cultural values into the learning process, enabling students to connect mathematical concepts with their real-life experiences. The Sedulur Sikep values serve as a foundation for thinking, guiding students in understanding mathematical problems more meaningfully. In the first stage, namely context construction, learning begins by introducing contextual problems grounded in the daily lives of the Sedulur Sikep community. In this stage, values such as *ora jumput* (not taking what does not belong to oneself) are presented as a basis for thinking in understanding mathematical problems.

Next, in the mathematical modeling stage, students are guided to transform contextual problems into mathematical representations, such as ratios, proportions, or symbolic forms. This stage reflects the process of horizontal mathematization within the framework of Realistic Mathematics Education (RME), where real-world situations are translated into mathematical models. This process not only enhances students' representational skills but also instills the value of *ora bedok*, which emphasizes consistency between context, models, and solution processes (Vääätäjä & Ruokamo, 2021). The third stage, exploration and problem solving, places students as active learners who collaboratively solve problems using mathematical concepts. Values such as *rukun* (harmony) and *ora sreï* (not being greedy) are integrated into this process, particularly in decision-making that considers balance and fairness. This stage aligns with the principles of Contextual Teaching and Learning (CTL), where students actively experience and apply mathematical thinking.

In the reflection and verification stage, students evaluate the solutions they have obtained by comparing them with real contexts and cultural values. This process represents vertical mathematization in RME, where students not only solve problems but also validate and generalize their findings. The value of *ora bedok* is emphasized again as a principle of honesty in verifying the correctness of solutions.

Finally, in the generalization stage, students formulate mathematical concepts more formally based on their learning experiences. At this stage, there is an integration between conceptual understanding and philosophical values, enabling students to not only master mathematical content but also develop reflective and contextual ways of thinking. Consequently, the stages of context construction, mathematical modeling, exploration, reflection, and generalization should be understood as components of a proposed instructional design developed from the ethnographic findings and informed by CTL and RME perspectives. Further research is needed to examine how the model functions in classroom implementation and to evaluate its potential contributions to students' mathematics learning (Boričić et al., 2020).

## CONCLUSION

Based on observations, interviews, and document analysis, this study identified that the philosophical values of the Sedulur Sikep community, particularly *ora jumpu*, *ora bedok*, and *ora sreï*, continue to function as guiding principles in the community's social life. The findings indicate that these values are associated with notions of fairness, consistency, responsibility, and self-restraint in various social practices. Further analysis suggests that these values can be pedagogically reconstructed into learning contexts that are relevant to students' lived experiences. In this study, such reconstruction was represented through the development of contextual mathematics learning examples and a conceptual instructional design informed by the principles of *Contextual Teaching and Learning* (CTL) and *Realistic Mathematics Education* (RME). The primary contribution of this study lies in connecting ethnographic findings on Sedulur Sikep values with the development of meaningful contexts for mathematics learning. Unlike many ethnomathematics studies that focus on identifying mathematical ideas embedded in

cultural artifacts or practices, this study positions cultural values as a resource for pedagogical reconstruction in mathematics education. Although the proposed instructional design has not yet been implemented in classroom settings, the study provides a conceptual framework that may inform future research and instructional development. Future studies are therefore needed to implement and evaluate the proposed design in order to examine how students engage with Sedulur Sikep cultural contexts in processes of mathematical modeling, reasoning, and learning.

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