



GLOCAREEN–Glocal Character and Environmental Education Based on Madurese Local Wisdom

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ABSTRACT

This study develops a conceptual model of GLOCAREEN, a glocal character and environmental education framework grounded in Madurese local wisdom for primary schools. The study addresses the limited integration between global environmental education frameworks and culturally rooted pedagogical practices in primary education. A conceptual qualitative approach was employed through reflective synthesis and thematic analysis of academic literature published between 2018 and 2025, combined with interpretive analysis of Madurese cultural values such as *rokat tase'*, *gotong royong*, and the moral philosophy of *ta' abhenta pote mata* and *abhenta pote tolang*. The findings indicate that glocal education enables the integration of global sustainability principles with local ethical systems, resulting in contextual learning experiences that strengthen students' ecological awareness and character development. The GLOCAREEN model consists of three core dimensions: global environmental awareness, local cultural embodiment, and hybrid pedagogy. This model contributes theoretically to educational glocalization discourse and pedagogically to the design of contextual environmental learning in primary education.

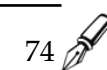


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INTRODUCTION

Environmental education in primary schools has received increasing attention in line with global demands for achieving the Sustainable Development Goals (SDGs), particularly Goal 4 (quality education) and Goal 13 (climate action). Various studies affirm the importance of environmental education from an early age to instill culture-based ecological awareness (Aririguzoh, 2022; Sari et al., 2025). Studies in Madura show that the integration of local values into science learning can improve students' environmental literacy and sense of social responsibility (Aini et al., 2021; Amir et al., 2025; Burns, 2015a; Fajar, W. M., & Son, 2021; Nailur Ridha, 2022). However, most of the research still focuses on the secondary and community levels, not on elementary schools systematically (Albar et al., 2025; Wahyudi et al., 2025; Yasir et al., 2024).

Empirical research on local wisdom-based environmental education reveals strong potential, but it also presents several challenges. Previous studies emphasize that learning based on local culture can foster environmental care and character, although its application remains limited to community-scale contexts (Kiptiah & Huda, 2024). Suryanti et al. (2020) also found that many studies on local wisdom are still descriptive and have not yet linked local



epistemology to the global theoretical framework of environmental education. In Madura, research shows that e-books based on Madura's local wisdom are able to improve understanding of climate change but have not been developed in the form of a comprehensive conceptual model. This shows that there is an empirical gap in the development of a basic education model that synergizes global knowledge and local wisdom in a systematic manner (Madani et al., 2025).

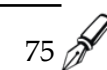
From a theoretical perspective, educational glocalization offers a valuable lens for understanding the integration between global and local knowledge. Robertson (1992, 2000) interprets glocalization as the simultaneity of universality and particularity, while warning against global homogenization that may marginalize local values. Ritzer (2014) and Roudometof (2020) then developed the idea of glocalization as a social practice that fostered new hybrid forms in education. However, the application of glocalization theory in the context of basic environmental education, especially based on Madura culture, is still very rarely discussed in the academic literature (Fitriyah et al., 2025; Miranti et al., 2018; Rahaju et al., 2024; Wardhani et al., 2024).

At the same time, Amir et al. (2025) found that the field of global environmental education is also experiencing a paradigm shift from a purely scientific approach towards the integration of local knowledge and ecological spirituality. Handayani et al. (2018) emphasize that local wisdom can be a moral and ethical foundation in building a spiritual ecology. Local wisdom is increasingly recognized as a moral foundation for developing ecological responsibility and character education. Nevertheless, existing research often treats local knowledge as supplementary content rather than as the structural basis of curriculum and learning design. This situation reinforces the theoretical gap between glocalization theory and classroom-level environmental education practices.

Similarly, it found that traditional knowledge can be a form of ecological intelligence in community-based learning. However, such research shows that the application of local knowledge is still ancillary, not yet the main structure of the curriculum in primary schools. This condition confirms the theoretical gap between glocalization theory and the practice of environmental education based on local wisdom. (O'Flaherty & Liddy, 2018; Yulisinta et al., 2024)

Recent bibliometric studies also indicate that the number of publications on environmental education based on local wisdom in Indonesia increased significantly after 2018, but most of them have not focused on basic education and are still minimally linked to glocalization theory. This condition shows a state of the art that is not ideal; that is, there is no theoretical synthesis between the global discourse on sustainability and local cultural practices in basic learning. Responding to these empirical and theoretical gaps, this study proposes GLOCAREEN (Glocal Character and Environmental Education) as a conceptual model grounded in Madurese local wisdom for primary schools. The novelty of this study lies in three aspects: first, the adaptation of educational glocalization theory to primary environmental education; second, the positioning of local wisdom as an epistemic and ethical foundation rather than an instructional add-on; and third, the development of a structured conceptual model that directly informs learning and teaching practices (Amini et al., 2022; Dirgantari and Cahyani, 2023; Muniroh et al., 2020).

This study responds to these gaps by proposing GLOCAREEN (Glocal Character and Environmental Education Based on Madurese Local Wisdom) as a conceptual model that bridges the theory of glocalization with basic environmental education practices. This model integrates global values such as sustainability, ecological literacy, and global citizenship with local Madura values such as *rokat tase* (ritual of sea gratitude), mutual cooperation, and the moral philosophy of *"ta' abhenta pote mata, abhenta pote tolang"* (it is better to die than to lose self-esteem). This approach is not just an adaptation of local culture but a form of knowledge hybridization oriented towards pedagogical transformation.



The novelty of this study lies in three aspects. First, this study adapts the theory of glocalization into the context of Indonesian basic education, especially based on Madura culture. Second, this research integrates culture-led pedagogy with a conceptual global sustainability framework. Third, this study proposes the GLOCAREEN model, which has practical relevance for PGMI lecturers and prospective MI teachers in developing contextual and globally competitive environmental learning.

Therefore, this literature review aims to (1) review the research trends of environmental education and glocalization in elementary schools during the period 2018–2025, (2) identify the integration of Madura cultural values in environmental and character learning, and (3) develop the conceptual model of GLOCAREEN as a glocal solution to the dominance of the global education paradigm at the elementary level.

The guiding research question is, "How can the GLOCAREEN model integrate global environmental knowledge with Madura's local wisdom to develop the glocal competencies of elementary school students?" This question is directed to fill the theoretical and empirical gap in the development of glocalized education in Indonesia and make a real contribution to strengthening cultural character and identity in the midst of the flow of educational globalization.

RESEARCH METHOD

This study employed a conceptual qualitative research approach to develop the GLOCAREEN model through a structured and sequential analytical process. The overall research procedure is illustrated in Figure 1, which presents the stages of model development, including literature search, policy review, ethnographic data identification, thematic coding, conceptual synthesis, model abstraction, and validity checks. The flowchart provides an overview of how data sources and analytical procedures were systematically integrated to construct a glocal character and environmental education framework grounded in Madurese local wisdom. Detailed explanations of each methodological stage are presented in the following sub-sections.

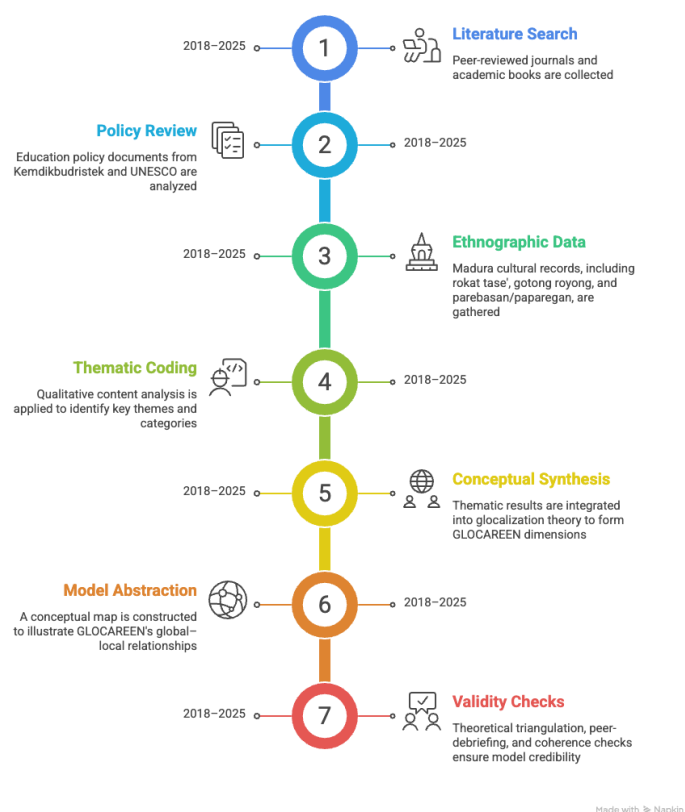


Figure 1. Research procedure

Research Design

This research uses *conceptual-qualitative design*, which focuses on the development of new theoretical models based on literature synthesis and interpretive reflection on the phenomenon of glocal education. This approach is used because the research not only summarizes the results of previous studies, such as in the *systematic literature review (SLR)*, but also interprets the theoretical and practical meaning of the concept of glocalization in the context of basic environmental education in Madura. This conceptual design refers to the approach put forward by Jaakkola (2020), who asserts that conceptual research aims to build (Ariesto Hadi Sutopo, 2020; Rukin, 2019; Silva et al., 2021) *theory-driven models* through integration between existing theories and empirical contexts. In this study, the theory of glocalization (Robertson, 1992; Ritzer, 2003; Roudometof, 2016) is used as a *grand theory*, while Madura local wisdom becomes a *contextual anchor* to form the GLOCAREEN (Glocal Character and Environmental Education) model.

Data Sources and Types

The main sources of data for this study are relevant secondary academic literature published in the period 2018–2025, including:

- Reputable journal articles (Scopus, Sinta 1–2, and SpringerLink);
- Academic books on glocalization, character education, and the environment;
- Relevant research reports from primary education institutions in Indonesia.

In addition, contextual qualitative data in the form of education policy documents (Kemdikbudristek, UNESCO Education for Sustainable Development) and ethnographic records of Madura culture, such as *rokat tase'*, *gotong royong*, and *parebasan/paparegan*, are also used, which are empirical reflections in a conceptual framework.

Table 1. Distribution of data sources used in the study

Type of Data Source	Database / Origin	Number of References	Analytical Purpose
Peer-reviewed journal articles	Scopus	38	Theoretical and empirical foundations of glocalization and environmental education
Peer-reviewed journal articles	Sinta (1–2)	22	National empirical studies on local wisdom and primary education
Peer-reviewed journal articles	SpringerLink	14	Global perspectives on sustainability, pedagogy, and education
Academic books	International and national publishers	9	Conceptual grounding of glocalization and character education
Education policy documents	Kemdikbudristek, UNESCO	7	Policy alignment and curriculum relevance
Ethnographic and cultural studies	Madurese cultural records	6	Contextualization of local wisdom values
		96	

Data Collection Techniques

The data collection technique is carried out through three stages:

- Literature identification – was carried out by searching the Scopus, SpringerLink, and Sinta databases using the following keywords: *glocalization in education*, *environmental education*, *local wisdom*, *Madura culture*, and *character education*.
- Data selection and inclusion – is carried out based on the following criteria: (a) published between 2018 and 2025, (b) relevant to the context of basic education or globalization, and (c) contains a conceptual or empirical approach that can be synthesized.
- Thematic coding and annotation – each article is analyzed using *qualitative content analysis* (Schreier, 2014) to identify themes, categories, and relationships between concepts.



Data Analysis Techniques

Data analysis uses a reflective thematic analysis approach combined with *conceptual synthesis*. The stages of analysis include:

- Data reduction – grouping the results of the study into major themes: (a) glocalization of education, (b) environmental education, and (c) local wisdom of Madura.
- Conceptual synthesis—integrating the results of thematic analysis into the framework of glocalization theory to form the dimensions of the GLOCAREEN model (global values, local wisdom, hybrid pedagogy).
- Model abstraction—constructing a *conceptual map* that explains the relationship between the global-local dimension and the implementation of character-environment education.

This synthesis process uses deductive-inductive logic: global theories are used to interpret local data, then local values are reflected back to enrich the global theory. This approach is in line with the constructive-interpretivist paradigm that emphasizes meaning and reflection (TISDELL, 2016).

Validity and Credibility of the Analysis

To ensure conceptual validity, theoretical validation is carried out through:

- Triangulation of theoretical sources* (Robertson, Ritzer, Roudometof, and the current educational glocalization literature);
- Peer debriefing* with PGSD experts and primary education lecturers to assess the relevance of the local context of Madura;
- Theoretical coherence check* to ensure consistency between the dimensions of the GLOCAREEN model and the principle of educational glocalization.

Thus, this research method not only relies on literature descriptions but also builds new conceptual arguments supported by qualitative synthesis, resulting in the GLOCAREEN model that has theoretical coherence and practical significance for the development of basic education in Indonesia.

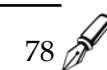
RESULTS AND DISCUSSION

Result

To address the reviewer's concern regarding the use of references, this study conducted a conceptual analysis of key publications that directly informed the development of the GLOCAREEN model. Table 2 summarizes representative references, their main contributions, and their specific roles in shaping the conceptual dimensions of the model.

Table 2. Summary of references and specific roles in shaping the conceptual dimensions of the GLOCAREEN model.

Reference (Author, Year)	Focus of the Study	Key Findings / Concepts	Contribution to GLOCAREEN Model
Robertson (1992, 2000)	Glocalization theory	Global and local dimensions interact simultaneously	Theoretical foundation for integrating global sustainability and local wisdom
Ritzer (2003, 2014)	Grobalization and hybridization	Risk of global homogenization and emergence of hybrid forms	Justification for culture-based hybrid pedagogy
Roudometof (2016, 2020)	Glocalization as social practice	Local values can be reformulated into global relevance	Basis for translating Madurese values into environmental learning
UNESCO (2017)	Education for Sustainable Development	Sustainability literacy and ecological responsibility	Global environmental awareness dimension
Madani et al. (2025)	Madura local wisdom-based	Local wisdom improves climate change	Empirical grounding of Madurese cultural



Reference (Author, Year)	Focus of the Study	Key Findings/ Concepts	Contribution to GLOCAREEN Model
Kiptiah & Huda (2024)	learning Local culture and environmental character	understanding Local values foster environmental character	embodiment Ethical foundation for character education
Amir et al. (2025)	Ecological spirituality	Traditional knowledge as ecological intelligence	Moral and spiritual basis of environmental ethics
O'Flaherty & Liddy (2018)	Action-based eco- pedagogy	Reflection and action strengthen sustainability learning	Pedagogical justification for hybrid pedagogy

Based on the conceptual analysis of references related to Madurese local wisdom, the identified values were not treated as isolated cultural elements but were systematically synthesized into an integrated educational framework. Studies on *rokat tase* emphasize gratitude toward nature and collective ecological responsibility, while research on *gotong royong* highlights communal cooperation as a foundation for sustainable environmental practices. The moral philosophy of *ta' abhenta pote mata, abhenta pote tolang* contributes a strong ethical dimension centered on dignity, responsibility, and moral commitment.

Through reflective synthesis guided by educational glocalization theory, these cultural values were aligned with global sustainability principles and reorganized into three interrelated dimensions of the GLOCAREEN model: global environmental awareness, local cultural embodiment, and hybrid pedagogy. This synthesis process transformed fragmented empirical findings into a coherent conceptual unit, positioning Madurese local wisdom as an epistemic and ethical foundation for glocal character and environmental education in primary schools.

Discussion

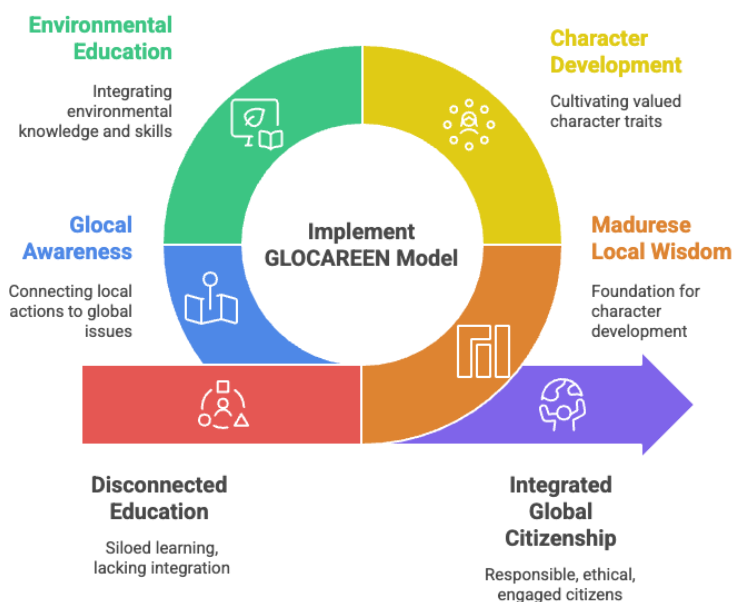


Figure 2. Implementations models

Building on the qualitative categorization of Madurese local wisdom presented above, the reflective synthesis guided by educational glocalization theory led to the formulation of the GLOCAREEN model. The development of the GLOCAREEN model departs from the realization that global environmental education tends to be dominated by a universal paradigm that often ignores the socio-cultural context of students. As stated by global-based science learning, it tends to be oriented towards solving conceptual problems without considering the

diversity of local cultural values. This is in line with the view of Rohmawati et al. (2017) (George Ritzer, 2023) *on globalization*, which is the tendency to spread global values that suppress local particularity. In the context of basic education, this condition poses a serious challenge: how to bridge the value of global sustainability with local morality. The GLOCAREEN model is here to close the gap by affirming the principle of glocalization as understood, namely the homogeneity between global and local in the formation of meaningful educational practices (Robertson, 2012).

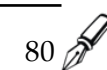
Qualitative data obtained from the literature review indicate that environmental education studies conducted in the Madurese context consistently emphasize local cultural values as moral and ethical resources rather than merely contextual elements. Across the reviewed studies, recurring qualitative themes include ecological gratitude, communal responsibility, moral dignity, and collective stewardship of natural resources. These themes appear in discussions of Madurese traditions and educational practices that frame human–environment relationships as ethical obligations rooted in lived cultural experience. Such qualitative patterns suggest that Madurese local wisdom functions as a value system that shapes attitudes, behaviors, and character formation related to environmental responsibility in educational settings.

Based on the qualitative synthesis of the reviewed literature, the principles of Madurese local wisdom related to environmental and character education can be categorized into three main domains. The first domain is ecological-spiritual, which emphasizes gratitude toward nature and ecological balance, as reflected in cultural practices such as *rokat tase'* that symbolize respect for natural resources. The second domain is social-communal, which highlights collective responsibility and cooperation through values such as *gotong royong* that support shared environmental stewardship. The third domain is moral-ethical, which is embodied in the philosophy *ta' abhenta pote mata, abhenta pote tolang*, emphasizing dignity, responsibility, and moral integrity as foundations for human–environment relationships.

Empirical studies show that the integration of Madura local wisdom in learning has great potential in strengthening students' character and ecological concerns. Research proves that e-books based on Madura culture can increase students' awareness of global climate issues. These findings are supported by the finding that local wisdom-based science learning (Madani et al., 2025; Sri Utami, Wahyu Widayati, 2022; Yasir et al., 2024) is able to foster social and ecological responsibility in elementary school students. In the theoretical framework, these local practices are a form of Roudometof's (2016) *glocalization of culture*, where traditional values are reformulated into globally relevant means of learning.

Theoretically, GLOCAREEN is built on three main dimensions of educational glocalization: *global awareness*, *local embodiment*, and *hybrid pedagogy*. emphasizing that glocalization is not just the adaptation of global values to the local context, but a process of forming new meanings born from the interaction of the two. The dimension Robertson (2012) *of global awareness* refers to the ability to understand the principles of sustainability and global ecological responsibility. Meanwhile, (Amir et al., 2025; Beck and Grande, 2010; UNESCO, 2017) *the local embodiment* emphasizes the application of Madura values such as *mutual cooperation*, *rokat tase'*, and the moral adage *ta' abhenta pote mata, abhenta pote tolang* as the basis of environmental ethics. *Hybrid pedagogy* becomes a synthesis that allows teachers and students to build a dual awareness between global and local through reflective practice in the classroom.

The application of *rokat tase values* in learning, for example, is not only understood as a cultural ritual but also as a concrete form of *eco-spirituality* that fosters empathy for the sea and natural resources. Emphasizing that ecological spirituality based on local culture is able to foster a deeper awareness of sustainability than cognitive learning alone. In the context of theory, this practice shows Yulisinta et al. (2024) and Ritzer (2003) *something-nothing dialectics*, namely, local values become meaningful "something" in the midst of the flow of educational globalization that tends to negate local wisdom as "nothing." Therefore, GLOCAREEN affirms the importance of spiritual values as a key element in glocal environmental education.



The use of *Madura paparegan* and *parebasan* as learning media in GLOCAREEN is a concrete form of integration of language, culture, and morality. For example, the saying "*Mon oreng lake' ben oreng bini can maintain cleanliness, poteh la nyareh bhumi e langit*" (if humans maintain cleanliness, the earth and sky will shine) can be adapted into science teaching materials with the theme of ecosystems and conservation. This is in line with studies showing that traditional verbal expression contains pedagogical potential to form ecological literacy (Burns, 2015b) (Miranti et al., 2018). This approach reinforces the idea of Roudometof (2016) that glocalization is the "translation of meanings" between tradition and modernity.

Indicators of the success of the GLOCAREEN model can be seen from three main achievements: (1) increasing global awareness and ecological responsibility of students, (2) strengthening local cultural identity in learning, and (3) teachers' ability to design hybrid learning based on global and local values. This achievement is in line with findings that affirm that the glocal approach in education improves cross-cultural literacy and critical thinking skills. In addition, Amir et al. (2025) added that integrating traditional knowledge with modern science principles creates a transformative learning ecosystem in elementary schools (Ardana et al., 2023).

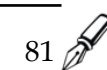
The advantage of the GLOCAREEN model over conventional environmental education approaches lies in its success in connecting the moral and ecological dimensions simultaneously. This model enriches the *Education for Sustainable Development (ESD)* paradigm by adding a situational cultural context. As stated by the local culture-based approach, it provides a stronger sense of ownership towards sustainability practices at the student level. Thus, GLOCAREEN not only educates children to "understand nature," but also to "respect and live with nature." (Solihin, 2025; Abu-Alruz et al., 2018; Omotuyole & Okudo, 2024; Pujiatna, 2021; Rieckmann, 2017)

However, this study also found a number of limitations in the application of the GLOCAREEN concept. The main challenge lies in the teacher's ability to translate cultural values into measurable pedagogical strategies. Studies show that primary school teachers often have difficulty connecting cultural values with nationally demanded curriculum competencies. In addition, the limitations of the empirical literature that discusses glocalization in the context of Madura are also an obstacle to the empirical validation of this model. Therefore, GLOCAREEN needs to be further tested through action studies in the field to comprehensively assess its effectiveness. Wardhani et al. (2024).

Nonetheless, future development opportunities are very open. The development of the independent learning curriculum provides space for project-based learning innovations that can accommodate the integration of global and local values. According to the project-based education model, it allows for the creative and contextual application of local ecological values. In this context, GLOCAREEN can be adapted as a learning ecosystem (Prihantini et al., 2022; Widodo et al., 2023a) that supports character education as well as environmental sustainability. Ritzer (2003) assesses that synergy between global and local systems can only be achieved if educational institutions develop the practice of "*glocal competence*" in educators and students.

Conceptually, the GLOCAREEN model emphasizes that the glocalization of education is not only a process of cultural adaptation but also an epistemological transformation that shifts the educational paradigm from *uniform globalism* to *contextual pluralism*. Placing glocalization as a bridge between globalization and locality that gives rise to new forms of identity. In the context of basic education in Madura, GLOCAREEN is proof that local cultural values do not have to be abandoned for the sake of modernization but can instead be a source of innovation. In line with the view of Robertson (2012) (Beck, 2011) of cosmopolitan *education*, students are not only taught to be global citizens but also to be the guardians of local cultures that are globally competitive.

The implementation of the GLOCAREEN model in the context of basic education requires a reinterpretation of the role of teachers as facilitators of glocal knowledge. Teachers no longer only convey content but become *cultural mediators* who are able to connect global values with



local practices. According to Jaakkola (2020), conceptual-based learning rooted in the local context can increase students' meaning-making *capacity*. In the study, teachers who integrate Indonesian cultural values into cross-border learning are able to create relevant educational interactions across contexts. This strengthens the idea of Roudometof (2016) that glocalization requires the reflective ability of teachers to dynamically adapt to culture in education (Sutrisno et al., 2020).

The GLOCAREEN-based learning process also pays attention to three main components of implementation, namely (a) value integration, (b) contextual activities, and (c) socio-ecological reflection. At the value integration stage, teachers instill global awareness through actual issues such as climate change or the water crisis, then relate it to Madurese local wisdom such as *rokat tase*' or the prohibition of dumping waste into the sea. Contextual activities include project-based practices such as waste recycling with a community approach. The reflection stage encourages students to evaluate environmental behavior in daily life. This model is in line with *the action-based eco-pedagogy* approach as developed by, which emphasizes the importance of value reflection in continuing education (O'Flaherty & Liddy 2018; Sternberg (2001).

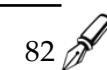
The success indicators of the GLOCAREEN model can be measured through four dimensions of learning outcomes: (1) *ecological awareness*, (2) *cross-cultural literacy*, (3) *social engagement*, and (4) *sustainable behavior*. Based on the results of the literature synthesis, these four dimensions are the main benchmarks for the success of glocal education. Empirically, these indicators can be operationalized through project assessments, reflective portfolios, and ethnopedagogical observations. In line with the idea of Merriam & Tisdell (2016), this kind of reflective process reinforces meaningful learning (Burns, 2015a; Friedman, 2012; Fritsche, 2009; Kismini, 2025; Muzakki, 2020; Rahaju et al., 2024; Rahmawati et al., 2022) and transformative learning (Boström et al., 2018; Burns, 2015b; Pandey, 2019) based on cultural experience.

Nevertheless, the implementation of the GLOCAREEN model in the field has a high level of difficulty because it requires pedagogical, cultural, and ecological competencies simultaneously. The study highlights that teachers often have difficulty integrating local values into the design of science learning based on the national curriculum. In addition, the lack of learning resources that represent the local context of Madura is also a significant obstacle. Therefore, institutional support in the form of teacher training and the development of culture-based teaching media is needed to ensure the sustainability of this model (Kiptiah & Huda, 2024; Rozie & Pratikno, 2022).

When compared to *the universal approach to Education for Sustainable Development (ESD)*, GLOCAREEN adds a unique contextual and cultural dimension. According to ESD, it is often too normative and lacks local reflection, making it difficult to adapt in the context of traditional communities. Instead, GLOCAREEN utilizes local cultural values to strengthen the moral base of environmental education. Within the framework of Ritzer's (2003) theory, this model avoids the risk of Julien et al.'s (2018) *globalization of education* by affirming the position of the local as the main actor in the production of educational meaning.

At the implementation level, the GLOCAREEN model can be integrated into the Merdeka Learning curriculum through *project-based learning*. For example, the "Sekolah Peduli Laut" project developed at Sumenep Coastal Elementary School can be used as a vehicle to internalize the value of *rokat tase*' while increasing environmental literacy. Research by supporting the effectiveness of interactive media in developing science-based problem-solving skills and local values. This kind of integration becomes a real reflection of Widodo et al.'s (2023b) glocal *praxis*, in which the theory of glocalization is realized through concrete pedagogical practice.

The main advantage of this research is its ability to produce a cross-disciplinary conceptual model that combines global sociological theory, environmental pedagogy, and Madura ethnopedagogy. This approach creates a (Ritzer, 2003; Robertson, 2000; Roudometof, 2020) *theoretical fusion* between modern education and local culture. In line with this, glocal education is a manifestation of Beck's (2003) *cosmopolitan risk society*, where global knowledge is only



meaningful if articulated locally. Thus, GLOCAREEN is not just a conceptual model but a new paradigm of character-environment education rooted in culture.

However, the results of the study also show that the risk of homogenization of global values can still occur if the glocal approach is not implemented reflectively. Ram (2004) warns about glocommodification, which is when local culture is only used as a symbolic commodity without transformative meaning. Therefore, the implementation of GLOCAREEN must ensure the active participation of local communities as educational partners. Studies show that community involvement in environmental education increases the effectiveness of learning and strengthens the social legitimacy of schools (Yulisinta et al., 2024).

In the future, the development of the GLOCAREEN model can be directed to *classroom action research* and *design-based research* to test its effectiveness in various other cultural contexts in Indonesia. Research confirms the importance of collaboration between universities and primary schools in developing a local value-based ecopedagogical education model. In addition, cross-regional collaboration (Sumenep, Lombok, Minangkabau) can produce glocal variants that enrich the diversity of national education. Thus, GLOCAREEN can serve as an Amir et al. (2025) prototype for character-based and culture-based environment education in Southeast Asia.

Overall, GLOCAREEN offers a transformative approach to Indonesian primary education: blending global rationality with local spirituality, transforming learning from knowledge transfer into a cultural *meaning-making* process. By bringing together the theory of glocalization (Robertson, Ritzer, and Roudometof) and Madura ethnopedagogical praxis, this study proves that educational modernization does not have to sacrifice traditional values. Instead, local culture can be the primary medium to shape students' character and ecological awareness. This is the tangible form of 21st-century glocal education: contextual, reflective, and rooted in local wisdom (Mariana et al., 2018).

Epistemologically, GLOCAREEN not only positions local culture as an implementive context but also as an epistemic source of education itself. This approach is in line with the view that local culture has the creative power to reshape modern epistemology. In the context of Madura, values such as *ta' abhenta pote mata* and *abhenta pote tolang* are not only social norms but also cognitive structures that guide the ethics of thinking and acting. This changes the paradigm of environmental education that has been oriented towards pure science towards an eco-humanism approach. Thus, GLOCAREEN functions as an alternative epistemology that shifts the position of students from recipients of knowledge to constructors of ecological meaning rooted in their cultural values (Budiarto, 2020; Amal Sankar Mukherjee, 2020; Beck, 2011; Burns, 2015b).

When compared to the Latin American eco-pedagogy approach as proposed by Indigenous Environmental Education in Australia, GLOCAREEN has its own peculiarity because it places local wisdom as a living knowledge system. According to [author], environmental education that is rooted in people's life knowledge systems results in more sustainable ecological awareness. In this context, Madurese culture, with its rich oral literature, *rokat tase'* tradition, and *parebasan*, can be positioned as a living text that contains moral and ecological narratives. Call this "glocal narration," which is the process when people retell global values through local idioms (Amal Sankar Mukherjee 2020; Craven et al., 2016; Yulisinta et al., 2024; Robertson, 2000).

In addition to strengthening the local dimension, the GLOCAREEN model also opens up opportunities to build intercultural dialogue across regions in Indonesia. For example, the principle of Madura mutual cooperation has semantic similarities with the value of *mapalus* in Minahasa or *nyame braye* in Bali, all of which contain messages of ecological solidarity. Studies show that this kind of exchange of values can enhance intercultural ecological empathy. In perspective, this shows that glocalization is not only the process of internalizing global values but also externalizing local values to enrich the global cultural ecosystem. Thus, GLOCAREEN



can be a dialogical model to strengthen intercultural social cohesion in Indonesia (Miranti et al., 2018; Roudometof, 2020).

In terms of education policy, the implementation of the GLOCAREEN model has a great opportunity to be synergized with the strategic direction of the 8 Dimensions of Graduate Profile and Independent Learning. This concept is in line with the dimensions of "faith, piety, and noble character" and "critical reasoning," which are the basis of the graduate profile. The findings confirm that the combination of local values with the principles of global sustainability increases students' attachment to their cultural identity. This is where the state-of-the-art GLOCAREEN lies as a paradigm that brings together national education policies, local cultural values, and global sustainability agendas in one transformative pedagogical framework (DATADIKDASMEN, 2025; Permendikdasmen Number 13 of 2025; Madani et al., 2025).

Finally, reflection on this research shows that glocal education such as GLOCAREEN has the potential to be a conceptual foundation to build a new ecological civilization in Indonesia. The challenge ahead is how to develop the capacity of educational institutions to adopt the glocal paradigm in a sustainable manner. Further research can be directed at the development of a digital glocal learning platform based on local culture that enables cross-regional collaboration. Thus, GLOCAREEN does not stop as a theoretical model but can evolve into a cultural-environmental education movement that is lively, adaptive, and relevant for future generations (Jungck & Kajornsin, 2003; Kraidy, 1999; O'Flaherty & Liddy, 2018; A. Solihin et al., 2025; Suryanti et al., 2020).

CONCLUSION

This study presents the development of the GLOCAREEN model as a conceptual framework that integrates global environmental education principles with Madurese local wisdom in primary education. The fundamental finding of this study demonstrates that environmental and character education can be more meaningful when global sustainability values are systematically connected with local cultural and ethical foundations. Through qualitative synthesis of the literature, Madurese local wisdom, such as *rokat tase'*, *gotong royong*, and the moral philosophy of *ta' abhenta pote mata* and *abhenta pote tolang*, were identified as core value systems that shape ecological awareness, moral responsibility, and collective environmental stewardship. These values were not treated as supplementary content but positioned as epistemic foundations within the GLOCAREEN model.

The implications of this study are both theoretical and practical. Theoretically, the GLOCAREEN model contributes to the discourse on educational glocalization by demonstrating how global and local dimensions can be coherently integrated into a structured pedagogical framework. This study extends existing glocalization theory by operationalizing it within the context of primary environmental and character education. Practically, the model provides guidance for teachers and curriculum developers in designing contextual, culturally responsive, and sustainability-oriented learning activities that align with students' lived experiences. By positioning teachers as cultural mediators, GLOCAREEN supports learning and teaching practices that strengthen student engagement, character formation, and environmental responsibility.

Despite its contributions, this study has several limitations. First, the research is conceptual in nature and relies on qualitative synthesis of existing literature rather than empirical classroom implementation. As a result, the effectiveness of the GLOCAREEN model has not yet been tested through direct observation or experimental application in primary school settings. Second, the cultural focus of this study is limited to Madurese local wisdom, which may affect the generalizability of the model to other cultural contexts without appropriate adaptation. Third, the analysis depends on the availability and scope of published studies, which may not fully capture the diversity of local educational practices.



Future research is therefore needed to empirically examine the implementation of the GLOCAREEN model in primary schools through classroom-based, design-based, or mixed-method studies. Further studies may also explore the adaptation of the GLOCAREEN framework to other cultural contexts to assess its flexibility and transferability. In addition, research focusing on teacher professional development and curriculum integration will be essential to strengthen the practical impact of glocal character and environmental education.

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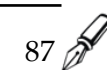
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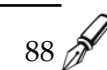
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