

Islamic Community-Based Disaster Mitigation Curriculum: An Implementation Case Study at Sembalun Quran House Sembalun Bumbung

M. Ahleyani¹, Irma Widi Astuti², Ranjiv A.A Sihombing³, Tazkiyyah Izza Dhiyya Ulhaq⁴, Fahdia Nuril Afiah⁵

¹Department of Electrical Engineering, Faculty of Engineering, University of Mataram, Indonesia

²Department of Animal Husbandry, Faculty of Animal Husbandry, University of Brawijaya, Indonesia

^{3,4,5}Department of Agribusiness, Faculty of Agriculture, University of Brawijaya, Indonesia

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ABSTRACT

This study explores the development of a community-based disaster mitigation curriculum implemented at Rumah Quran Sembalun, a faith-based educational institution in Sembalun Bumbung, East Lombok, Indonesia, a region frequently exposed to natural hazards such as earthquakes and landslides. Using a qualitative case study approach, the research employed interviews, focus group discussions, participatory workshops, and direct observation to document the collaborative process of designing and piloting a disaster education program grounded in Islamic values and local knowledge. The curriculum integrates disaster science with Qur'anic teachings to promote awareness, preparedness, and resilience among children, youth, and families. Key findings reveal that contextualizing disaster education within religious narratives enhanced student engagement, increased knowledge retention, and fostered intergenerational learning. The study also underscores the importance of participatory curriculum development, gender-inclusive approaches, and community ownership in sustaining educational initiatives. The success of this program provides valuable insights for scaling similar efforts in rural, disaster-prone, and faith-based communities across Indonesia and beyond. This research contributes to the broader discourse on disaster risk reduction, education for sustainable development, and the transformative role of informal religious institutions in building community resilience.

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Corresponding Author:

M. Ahleyani
Department of Electrical Engineering, Faculty of Engineering, University of Mataram, Indonesia
Email: ahleyani.ft@gmail.com

1. INTRODUCTION

Sembalun Sembalun Bumbung, located in East Lombok, West Nusa Tenggara, is a rural area exposed to frequent natural disasters such as earthquakes, landslides, and flash floods due to its proximity to Mount Rinjani, an active volcano. Despite recurring hazards, disaster preparedness levels in the community remain inadequately documented and likely low, as evidenced by limited access to formal disaster education and a lack of integration of indigenous knowledge into risk mitigation efforts.

This study addresses a critical research gap in the integration of non-formal religious education institutions into disaster risk reduction (DRR) efforts in rural Muslim communities. While several national programs have focused on formal school-based disaster education, little attention has been given to the potential of faith-based community institutions in enhancing grassroots disaster awareness and resilience, particularly in rural Indonesia. The Rumah Quran Sembalun (RQS), a local religious learning center, provides a unique case to explore this potential. Unlike formal schools, RQS evolved organically from a religious hub into a center for youth development, women's empowerment, and, more recently, community-based disaster education.

The central research question guiding this study is: How can a community-based disaster mitigation curriculum be designed and implemented within a rural Islamic educational institution to enhance disaster preparedness and local resilience? The study specifically investigates the process, outcomes, and challenges of embedding disaster education within the activities and teachings of RQS in Sembalun Bumbung.

This research is informed by the growing body of literature on community-based disaster risk reduction (CBDRR), which emphasizes local ownership, participatory methods, and the inclusion of local values [15];[7]. Moreover, Islamic pedagogies and religious moral teachings are increasingly recognized as culturally relevant tools for behavioral change in disaster contexts [9];[4]. However, there remains limited empirical evidence on how these frameworks are operationalized in rural Islamic settings.

By exploring how RQS adapts DRR curricula through local religious practices, such as Qur'anic storytelling, intergenerational learning, and moral reflection, this study aims to provide empirical insights into the opportunities and constraints of faith-based DRR education. It also investigates how such integration influences knowledge uptake, behavioral shifts, and trust-building within disaster-prone communities.

This introduction sets the stage for a detailed analysis of how localized, bottom-up disaster education can evolve outside formal systems by leveraging community trust, religious authority, and participatory curriculum development. The findings contribute to scholarly conversations on DRR, religious studies, and education in vulnerable, hazard-prone rural contexts.

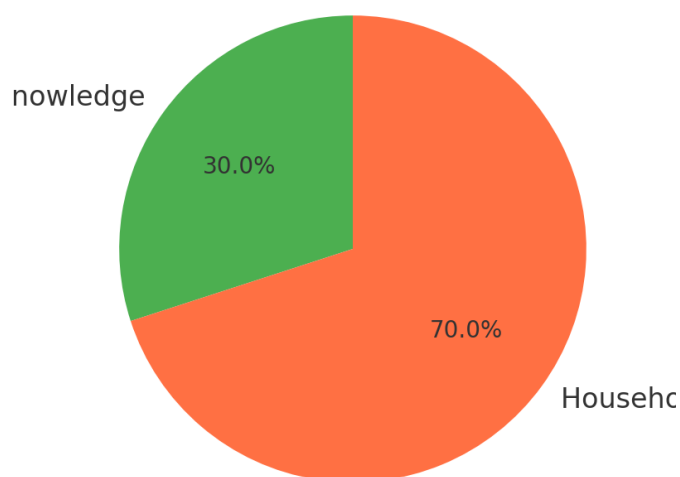


Figure 1. The baseline of disaster preparedness shows limited DRR knowledge among households in Sembalun Bumbung.

2. METHOD

This research uses a qualitative case study approach to explore the development of a community-based disaster mitigation curriculum at Rumah Quran Sembalun. The case study method was chosen to provide an in-depth understanding of contextual dynamics, community participation, and pedagogical processes in curriculum development. The research was conducted in Sembalun Bumbung Village, East Lombok Regency, a disaster-prone area affected by various disaster threats, including earthquakes, landslides, and volcanic activity. Data collection was conducted over six months from October 2024 to March 2025 and included field visits, interviews, focus group discussions, and participatory workshops. The main unit of analysis was Rumah Quran Sembalun, a community religious institution that serves as a learning center and local organizing hub.

Purposive sampling was used to ensure involvement and select participants directly involved in the curriculum development process, including educators, students, parents, community leaders, and local disaster management officers. Observations were active with the researcher taking part in discussions, recording interactions, and documenting the process. In total, 25 participants were interviewed individually, and three focus group discussions (FGDs) were conducted, each involving 8-10 participants. The reason for this selection was to represent a range of strategic roles with numbers based on the principle of role representation and achieving data saturation. The information obtained started out repetitive and did not indicate new meanings. The approach was to explore in depth the perceptions, experiences, and contributions of those who developed the community-based curriculum. A semi-structured interview guide was developed to explore participants' perspectives on disaster education, community risk, cultural values, and learning methods. All interviews and FGDs were audio-recorded with written consent and transcribed verbatim for thematic analysis. In addition to the interviews, the researcher conducted four participatory observation sessions during the curriculum design meetings and pilot classes at Rumah Quran.

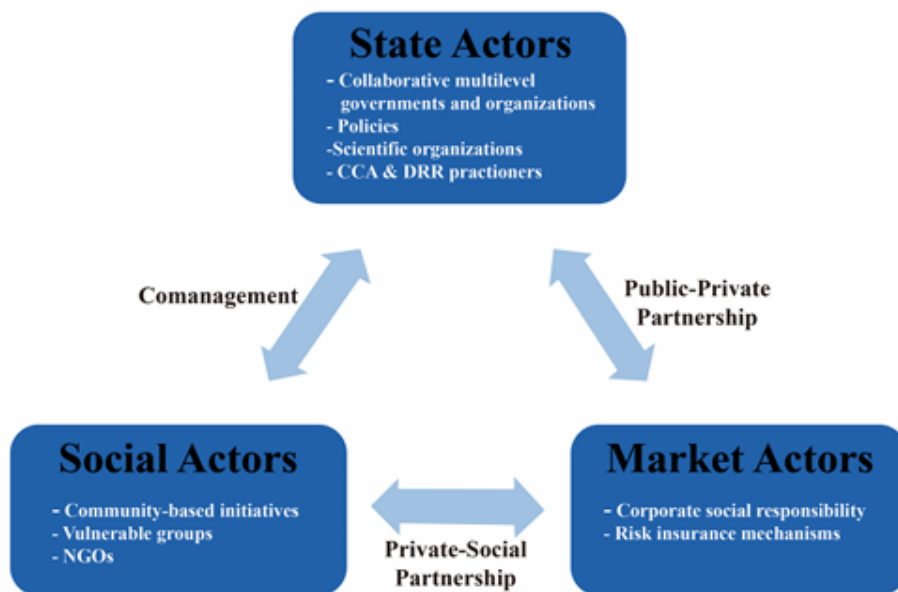


Figure 2. Conceptual governance framework for DRR and CCA integration

Participatory Rural Appraisal (PRA) tools such as hazard mapping, seasonal calendars, and problem trees were used in the workshop to co-create content with the community. The implementation of using PRA, for example, with hazard mapping to draw and mark landslide-prone locations as well as evacuation routes. It was found that most residents do not have clear evacuation routes and lack information on early signs of disaster. The findings from the PRA will be the basis for designing a curriculum that suits the field conditions. The research also includes a document review of local disaster reports, curriculum drafts, training modules, and teaching materials used at Quran House. Data triangulation is done by cross-verifying information from different sources and the role of participants to increase validity. Data validity was ensured by triangulating sources, audio tape methods, field notes, and researcher-independent coding. Reliability was achieved by comparing and discussing until agreement was reached between the coders. Information obtained from teacher interviews was compared with classroom observations and student reflection results. FGD data was also used to verify students' narratives regarding attitude change.

Data were analyzed using thematic coding, following Braun and Clarke's (2006) six-stage method: introduction, coding, theme search, theme review, theme definition, and writing up [2]. As an example of implementation, the interview and FGD transcripts were re-read thoroughly to understand the overall context. Initial codes, such as children's curiosity and parents' concern about disasters, will be marked manually through NVivo 12. Next, codes are grouped into initial themes and readjusted based on the relationship between codes and their consistency across sources. Finally, the main themes were explained and supported with direct quotes from participants as evidence of interpretation. NVivo 12 software was used to manage and organize the qualitative data to make coding and searching for emerging patterns more efficient. The NVivo 12 verification method was carried out by the researcher coding separately, and then the results were compared with intercoder agreement and differences in interpretation were discussed together until the final agreed themes were found.

The curriculum development process follows an iterative cycle consisting of four main stages: (1) community needs assessment, (2) curriculum co-design, (3) pilot testing, and (4) evaluation and revision. The needs assessment is informed by local disaster history, vulnerabilities, and existing knowledge gaps as identified by the community. The co-design process involved collaborative workshops where local religious teachers, youth facilitators, and DRR experts developed lesson plans that integrated Islamic values with disaster science. A pilot class was implemented with a group of 30 students aged 10-16 years and observed by the facilitators for engagement, understanding, and feedback. Feedback was collected using pre- and post-training reflections, short quizzes, and informal feedback forms completed by students and parents.

Special attention was paid to gender inclusiveness, ensuring the participation of female students and incorporating local women's perspectives on disaster preparedness. Ethical approval was obtained from the local education office and religious office. Participants signed a participation consent form and a confidentiality form before the study began. All participants were informed of the purpose of the study, and their confidentiality was strictly maintained. The research followed participatory ethics, which emphasized respect, co-creation, and mutual benefits for the communities involved. Limitations of this study include its small-scale and non-generalizable scope and its

reliance on self-reported data, which may be affected by social desirability bias. Nevertheless, the depth of contextual engagement and the collaborative nature of the process offer valuable insights into bottom-up curriculum innovation in disaster-prone faith-based communities. The findings from this methodological process provide a rich foundation for analyzing the effectiveness, relevance, and sustainability of the disaster mitigation curriculum at Rumah Quran Sembalun.

3. RESULTS AND DISCUSSION

3.1 Sembalun Qur'an House, East Lombok

The development of the disaster mitigation curriculum at Rumah Quran Sembalun produced outcomes across four key areas: curriculum structure, pedagogical methods, community participation, and behavioral change. Although significant outcomes were observed across these areas, disaggregated data per module (e.g., knowledge retention for emergency response versus environmental ethics) were not independently assessed and thus remain an area for future validation. The curriculum was designed into five thematic modules: (1) Introduction to Disasters, (2) Types of Local Hazards, (3) Islamic Teachings and Environmental Responsibility, (4) Emergency Response Skills, and (5) Community Resilience. Each module integrated Qur'anic reflections, local disaster narratives, scientific concepts, and hands-on activities. Notably, Qur'anic verses such as Surah Al-Zalzalah and Surah Al-Baqarah: 155–157 were used to foster emotional and cognitive resonance among students. The curriculum also employed parables from Islamic history, such as the story of Prophet Nuh, to convey early warning, preparedness, and the balance of divine trust and human responsibility.

Pedagogically, the program transitioned from lecture-based instruction to participatory methods including simulation drills, roleplay, hazard mapping, and student-led projects. Pilot class observations demonstrated increased engagement and knowledge retention when students actively participated. A key highlight was the student-organized "Disaster Awareness Day," featuring games, posters, and a community simulation. Community involvement was essential: parents, local leaders, and disaster responders co-developed content, shared local experiences, and joined training sessions. This participatory strategy fostered ownership and pride, supporting the initiative's sustainability. One female parent noted during a focus group, "I now understand what to do if an earthquake happens, and my children teach me too. We learn together." Although women participated actively in focus groups and community simulations, the documentation did not capture detailed narratives or roles assumed by female participants. Testimonials or structured observations of women's contributions would be essential in future iterations to ensure gender inclusivity moves beyond tokenism.



Figure 3. Documentation with the children of the Sembalun Quran House

Evaluation data indicated an average knowledge increase of 41% from pre-test to post-test, although results were reported in aggregate rather than by module. Moreover, anecdotal evidence during a minor landslide in early 2025 suggested that some students effectively assisted with evacuation and neighbor alerts. While this is an encouraging indication of impact, it remains anecdotal and should be triangulated with systematic post-intervention evaluation tools. Importantly, students reported a conceptual shift—disasters were no longer viewed solely as divine fate, but as risks manageable through preparedness. This shift reflected the successful integration of Islamic teachings and DRR principles, reinforcing stewardship (khilafah) and responsibility (amanah) as core obligations. Additionally, intergenerational learning was promoted as children brought disaster-related stories and practices into household conversations, enhancing family-level preparedness.

Balancing scientific content with religious interpretation presented challenges. Technical language was avoided in favor of metaphors and relatable examples. Some conservative community members initially questioned the introduction of scientific material in a religious learning setting, voicing theological concerns about the balance between human action and divine will (takdir). These concerns were addressed through facilitated discussions that emphasized scriptural interpretations supporting preparedness as part of religious duty. The process underscored the importance of relational trust and sustained dialogue with community gatekeepers.

While the program included gender-sensitive facilitation, the analysis lacks deeper exploration of gendered power dynamics. Further research should consider how cultural and religious norms shape gender roles in disaster education contexts. In terms of theoretical grounding, the findings would benefit from deeper engagement with existing literature. Unlike pesantren-based DRR models in Aceh, which integrated disaster awareness into formal Islamic boarding education [14], the Rumah Quran Sembalun approach represents an informal, community-rooted model. A comparative analysis would enrich understanding of context-driven religious education strategies in disaster-prone areas. The experience in Sembalun supports literature advocating for locally embedded and culturally relevant DRR education. It also aligns with the Sendai Framework, especially Priority 1 (Understanding Disaster Risk) and Priority 3 (Investing in DRR for Resilience). The Rumah Quran Sembalun has expressed interest in expanding the program and supporting other Quranic schools in neighboring villages. In conclusion, this initiative illustrates how informal religious education can be leveraged for community resilience when curriculum design is grounded in local context, participatory approaches, and spiritual relevance.

Community participation played a central role in the program's implementation. Parents, local leaders, and disaster management practitioners contributed to the curriculum through storytelling, training, and feedback mechanisms. This participatory approach cultivated a sense of ownership among stakeholders. Qualitative data from focus group discussions revealed that participants, particularly parents, began to internalize and practice disaster preparedness concepts at home. One mother noted that both she and her child had begun applying earthquake safety practices learned from the program. Although anecdotal, such observations underscore the potential for intergenerational knowledge transfer.

In terms of gender inclusivity, the program made deliberate efforts to engage women and girls through gender-sensitive facilitation techniques. These included separate discussion groups, female-led simulation roles, and inclusive storytelling. While initial feedback suggests this was effective in encouraging participation, the analysis remains surface-level and lacks deeper exploration of gendered power dynamics or barriers faced by women in disaster contexts. Future research should incorporate gender-disaggregated data and explore intersectionality more systematically.

The program's real-world applicability was notably observed during a minor landslide event in early 2025. Several students applied their knowledge by assisting evacuation efforts and alerting neighbors. While this is an encouraging indication of impact, it remains anecdotal and should be triangulated with systematic post-intervention evaluation tools. Challenges in implementation included reconciling scientific content with religious worldviews. This was mitigated through the use of metaphors and simplified language to avoid alienating conservative stakeholders. Initial resistance from some community members, who questioned the relevance of science in a religious setting, gradually diminished following parent engagement sessions. This highlights the importance of relationship-building and ongoing dialogue in curriculum innovation within faith-based institutions.

Theoretically, the curriculum aligns with the concept of culturally responsive education, which emphasizes local context, belief systems, and learner backgrounds as foundations for effective pedagogy. The program also reflects principles outlined in the Sendai Framework for Disaster Risk Reduction, particularly Priority 1 (Understanding Disaster Risk) and Priority 3 (Investing in DRR for Resilience). This connection underscores the curriculum's contribution not only to individual behavior change but also to broader community resilience.

Nonetheless, several limitations warrant consideration. The reliance on thematic narrative reporting without robust linkage to coded qualitative data limits the transferability of findings. Moreover, while the curriculum is framed as scalable, no comparative analysis with similar interventions in other religious or rural settings was conducted. Integration with broader disaster education literature, including case studies from pesantren or Islamic boarding schools, would strengthen the generalizability and theoretical contribution of the findings. Moreover, the Rumah Quran Sembalun experience illustrates that disaster education grounded in a religious context can be both pedagogically sound and socially impactful. When informed by participatory methods and adapted to local epistemologies, religious learning environments can serve as valuable platforms for disaster risk reduction. However, future studies should emphasize stronger methodological rigor, gender-responsive analysis, and comparative frameworks to validate and expand on these initial outcomes.

3.2 Disaster Resilient Village, Yogyakarta

Comparatively, similar community-based DRR programs in Yogyakarta (e.g., the "Desa Tangguh Bencana" initiative) and Central Sulawesi (post-Palu earthquake) have utilized local cultural practices such as wayang storytelling or adat ceremonies to disseminate risk awareness. However, few have systematically integrated religious learning spaces into curriculum delivery. The RQS model thus presents a hybridized framework—merging Islamic

moral teachings with evidence-based disaster risk knowledge—which may be more trusted and retained in faith-oriented rural settings. Moreover, the involvement of women and youth in the co-design and delivery of the curriculum ensured that the modules were not only gender-responsive but also fostered intergenerational transmission of knowledge. This contrasts with many DRR curricula that are expert-driven and do not sufficiently empower community members to become educators and agents of change themselves.

The curriculum's flexible structure also allowed adaptation based on feedback from pilot sessions, a feature that sets it apart from more rigid, one-size-fits-all models. Activities such as Qur'anic reflection circles, community simulations, and hazard storytelling were rated as more engaging and retained than conventional lecture-based content. This responsiveness helped increase both participation and retention rates, especially among non-literate and elderly community members.

In sum, the adoption of a modular, participatory DRR curriculum grounded in Islamic teachings offers several advantages:

- It enhances trust and moral legitimacy, facilitating community uptake.
- It accommodates cultural and spiritual dimensions of risk perception.
- It bridges the gap between informal and formal education systems.
- It provides a replicable model for other rural Muslim communities facing similar challenges.

However, challenges remain. The reliance on volunteer facilitators and limited funding may affect sustainability. Additionally, mainstreaming this approach into district-level policy frameworks requires further advocacy and validation. The Rumah Quran Sembalun case thus contributes to a broader understanding of how faith-based institutions can serve as culturally anchored platforms for disaster education. The model illustrates that disaster resilience is not solely a technical endeavor but one deeply rooted in community values, religious ethics, and shared experiences.

The development of a community-based disaster mitigation curriculum at Rumah Quran Sembalun (RQS) emerges from the urgent need to localize disaster education in ways that are culturally embedded, religiously grounded, and contextually relevant to rural Muslim communities. Unlike top-down models that often rely on standardized modules with limited community adaptation, the RQS curriculum was designed through a participatory, iterative process that combined stakeholder consultations, field observations, and local narrative input. The decision to use a custom-developed curriculum stems from several considerations. First, national DRR education efforts—such as the Sekolah/Madrasah Aman Bencana (Safe School Program), while valuable, are often confined to formal school environments and focus heavily on structural and procedural preparedness (e.g., evacuation routes, mock drills). These approaches do not always engage emotional, spiritual, or communal dimensions of resilience, which are critical in tightly-knit rural communities. By contrast, the RQS curriculum integrates Qur'anic teachings, local oral histories, and collective memory of past disasters to foster both cognitive understanding and emotional resonance.

The process of developing the RQS curriculum involved mapping community experiences, collecting religious narratives related to nature and disasters, and aligning them with modern DRR concepts such as hazard mapping, early warning, and emergency response. This bottom-up methodology ensured that content was not only pedagogically sound but also socially acceptable and morally compelling. For instance, modules on environmental stewardship were taught through Qur'anic verses about the human role as *khalifah* (stewards) of the Earth, while stories of the Prophet's responses to crisis were adapted into disaster reflection exercises.

4. CONCLUSION

This study provides preliminary evidence that community-based disaster education can be integrated into informal religious institutions, such as Rumah Quran Sembalun, in ways that resonate with local culture, religious values, and contextual hazards. The participatory development process highlighted the importance of aligning scientific knowledge of disaster risk with Islamic concepts, particularly the concepts of *khilafah* (stewardship) and *amanah* (trust), to foster cognitive and emotional engagement among learners. By grounding disaster education in religious narratives and ethical obligations, the program encouraged both cognitive and emotional engagement from students.

Students were not merely passive recipients of information but active participants in co-creating learning experiences that were meaningful and relevant to their daily lives. The combination of storytelling, simulation, hazard mapping, and Qur'anic reflection proved highly effective in enhancing comprehension and retention by making abstract concepts of risk and preparedness concrete and communal. Community ownership emerged as a critical factor for the program's legitimacy and sustainability, facilitated through dialogue, workshops, and local leadership.

The involvement of parents, religious leaders, and local stakeholders reinforced trust and created a collective sense of responsibility for safety and resilience. Evidence from interviews and post-implementation feedback suggested that the curriculum fostered improved disaster response behavior, even in real-life hazard situations. Perhaps most significant was the shift in perception from fatalism to proactive action, empowering children and families to take disaster mitigation seriously. Gender-inclusive approaches were also important, providing space for women and girls to contribute actively and challenging traditional barriers within religious education. This inclusivity

strengthened the household preparedness level and allowed disaster knowledge to spread more broadly within the community. The intergenerational learning dynamic where children transferred their knowledge to adults was another notable outcome.

However, these encouraging findings should be interpreted cautiously. The program faced limitations such as initial skepticism, limited resources, short duration, and small sample size, which constrain the generalizability of results and the ability to assess long-term behavioral change. These challenges were mitigated to some extent through patience, transparency, and community feedback, but further evaluation and follow-up studies are needed to confirm the sustainability and broader applicability of the outcomes. While the participatory model adopted in this study offers useful insights for religious educators and disaster practitioners seeking to bridge faith and science, it should not yet be considered a definitive “blueprint” or fully scalable model without additional testing in diverse contexts.

The curriculum framework developed at Rumah Quran Sembakun illustrates a hybrid approach to education where spiritual, environmental, and civic responsibilities are taught holistically, contributing to the principle of the Sendai Framework. As climate-related disasters become more frequent, such grassroots, localized education efforts will be important to build national and global resilience. The findings of this study reaffirm the core principles of the Sendai Framework: understanding risk, strengthening governance, and investing in community-based solutions. They also support the Sustainable Development Goals (SDGs), particularly SDG 4 (Quality Education), SDG 11 (Sustainable Cities and Communities), and SDG 13 (Climate Action). The case of Sembakun Quran House demonstrates that informal education can be an engine of transformation when it is rooted in empathy, relevance, and cooperation.

This study calls on policymakers, disaster educators, and religious leaders to recognize the untapped potential of informal faith-based institutions in disaster risk reduction, while remaining mindful of the need for evidence-based adaptation and ongoing evaluation. Ultimately, this initiative is not only about saving lives but also about shaping a generation of spiritually grounded, environmentally aware, and socially responsible individuals.

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