JOURNAL OF HEALTH PROMOTION
Volume 13, 2025, **pp:** 65-80
ISSN: 2631-2441 (Print)
ISSN: 2822-1591 (Online)

Review Paper

Integrating the Ecohealth Approach into Nepali School Education Curricula: Prospects and Challenges

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Abstract

Nepal faces critical environmental challenges, including deforestation, escalating air and water pollution, landslides, soil erosion, biodiversity loss, climate change, and the encroachment of natural habitats. These issues result in several public health problems, which warrant effective pedagogical interventions to equip future generations with the knowledge to create sustainable and healthy communities through school education. This study aimed to explore the prospects and challenges of incorporating Ecohealth education into Nepali school education curricula. We employed a qualitative argumentative approach through the review of both grey and peer-reviewed literature. We reviewed nine grey and 31 peer reviewed studies to discuss the prospects and challenges of integrating Ecohealth approach to education particularly into the Nepal's school education curricula. Findings of this study show that he National Curriculum Framework-2019 incorporates health and environmental content abundantly across the basic and secondary school education but it does not explicitly connect health and environmental content from Ecohealth perspective. Thus, this study, discusses multiple rationales for embedding the Ecohealth approach to education and its integration in the school curriculum under three themes: environmental sustainability; social equity and community engagement; and pedagogical innovation and health outcomes. Moreover, the study indicates the possible pathways and anticipated challenges for embedding Ecohealth education into the school curriculum. The study concludes with the need to integrate health and environmental content as an interdisciplinary subject, like Ecohealth education, into the school curriculum to empower school-going students as proactive change agents to address the interconnected challenges of human health and environmental sustainability. For this, policymakers, educators, and stakeholders should work collaboratively to overcome the existing barriers and prioritize the Ecohealth approach to education in the school education system.

Article History

OPEN ACCESS

Received: 25 July 2025
Accepted: 05 November 2025
Published: December 2025
DOI:
https://doi.org/10.3126/jhp.v13i1.87164

Keywords

Climate change; Ecohealth; Health education; School education; Education for sustainable development (ESD); Environmental conservation

Introduction

Nepal has experienced significant environmental degradation and ecosystem decline for decades due to the unplanned urbanization and developmental activities (Rimal et al., 2020) resulting in environmental degradation, environmental pollution, and climate change (Poudel & Paudel, 2024; Rimal et al., 2020). These environmental issues have significantly diminished biodiversity and disrupted ecosystems (National Planning Commission, 2024). The trend of growing urbanization and developmental activities has resulted in inadequate waste management, leading to poor sanitation and the contamination of water sources, as well as increased water demand for drinking, sanitation, and agriculture (Jha, 2002; Regmi & Rehman, 2021). Studies have reported that the environmental pollution in urban areas of Nepal often exceeds safe limits and poses serious public health issues (Gautam & Herat, 2000; Giri et al., 2023; Jha, 2002; Saud & Paudel, 2018). The combined impact of these factors poses a threat to both environmental sustainability and health outcomes, making it crucial for Nepal to adopt sustainable urban planning and conservation strategies (Bastola et al., 2020). Furthermore, it has been reported that economic growth has led to rapid modernization and urbanization. These rapid developmental activities have led to the over-exploitation of natural resources and destruction of the ecosystem (National Planning Commission, 2024; Rawal & Adhikary, 2025). Among various health threats, climate change is the greatest challenge for people in the twenty-first-century. Evidence shows that climate change poses significant threats to human health (Jha, 2002; National Planning Commission, 2024; Rocque et al., 2021), such as the rise of eco-anxiety and eco-grief among young people including school students (Khazem & Reiss, 2025; Watts et al., 2015). It also harms the global biome by degrading environments (WHO, 2021). Therefore, integrating Ecohealth approach to education in the school curricula could be represented as an opportunity for younger people of the twenty-first century.

The Ecohealth approach to education aims to help learners understand the interconnectedness among socioeconomic development, ecosystem sustainability, lifestyle choices, and human health. Emphasizing the need for harmonious relationships among these factors, it encourages learners to recognize how human actions impact both the environment and well-being (Khazem & Reiss, 2025). It equips students to make informed decisions that promote not only personal health habits but also the balance of the ecosystems, fostering a sustainable future where human progress and environmental preservation go hand in hand (Tomokawa et al., 2021). The Ecohealth approach to education enhances the understanding and skills to mitigate environmental problems and improves the public health outcomes. In this backdrop, the present study explores the possibility of integrating Ecohealth approach to education, which could be a potential area of further research in Nepal, and it could help to achieve the target of Education for Sustainable Development [ESD] (Agbedahin, 2019). This study highlights the basic principles of Ecohealth, a review of Ecohealth-related contents in the school curricula, the rationale for incorporating the Ecohealth approach to education, challenges and pathways of incorporating the Ecohealth approach to education in the school curricula.

Methods and Materials

We employed a qualitative argumentative approach through the documentary review of the archived documents (Mwita, 2025). We reviewed nine grey and 31 peer-reviewed literature to support our arguments and discuss the prospects and challenges of integrating Ecohealth approach to education into Nepali school's curricula. Under the grey literature, we reviewed school education curricula, i.e., National Curriculum Framework (NCF)-2019 published by the Curriculum Development Center (CDC), Ministry of Education, Science and Technology (Ministry of Education, 2019). We also reviewed Ecohealth-related contents in both basic (Grades 1-8) and secondary (Grades 9-12) school curricula. Similarly, we reviewed the status of Nepal's Sustainable Development Goals Achievements (National Planning Commission, 2017), Nepal's Sixteenth Periodic Plan on environmental conservation (National Planning Commission, 2024), the Education Sector Plan with a focus on climate change and its impact on human health (Government of Nepal, 2022), and the National Health Policy of Nepal (Ministry of Health and Population, 2019), which address environmental degradation, climate change, biodiversity loss, and their impacts on human health. Additionally, UNESCO's Education for Sustainable Development Framework (United Nations Educational, Scientific and Cultural Organization, 2017) and WHO's literature on climate change and health (WHO, 2021) were reviewed to explore Nepal's environmental status and its implications for education interventions.

The peer-reviewed literature search was guided by the relevance to the Ecohealth approach to education, focusing on the studies published in the past decades from 2000 to 2025 that highlight the connection between the environment and human health. Keywords such as "Ecohealth", "Ecohealth approach to education", "environmental health", and "health education" were used to locate pertinent research (peer-reviewed) papers in three databases and repositories: Google Scholar, PubMed, and Research Gate, which are freely accessible to all. We also employed the 'backward citation tracking', known as the 'snowballing search method' (Badampudi et al., 2015). For example, by using the backward citation tracking method, we searched the literature of Charron (2011), Basuno et al. (2013), and Asakura et al. (2015) from the published article of Tomokawa et al. (2021), which are related to Ecohealth.

Results and Discussion

Principles of Ecohealth

Ecohealth connects ideas of environmental and social dimensions and their influence on human health (Charron, 2011) and it focuses on ecology and human health. Charron (2011) defines Ecohealth as the ecosystem approaches to health, which considers the interconnectedness among health determinants, and between those determinants and human health consequences. Similarly, Basuno et al. (2013) define Ecohealth as a unified approach that focuses on viewing health as a system of interactions between social and environmental factors that influence health outcomes. Tomokawa et al. (2021) also discuss that Ecohealth is an interdisciplinary field that examines the complex relationships between human health, environmental sustainability, and the ecosystem. It integrates knowledge from ecology, public health, social sciences, and environmental sciences to understand how environmental changes, such as pollution, climate change, and biodiversity loss, can gradually impact human health and

wellness (Charron, 2011). We explain basic principles of Ecohealth under the six sub-thematic areas.

Ecosystem Thinking

Ecohealth promotes ecosystem-thinking by integrating diverse subject areas to illustrate the interconnectedness of human health and environment. Through hands-on projects, interdisciplinary lessons, and community involvement, Ecohealth explores interplay between human health and environmental factors and vice versa. Furthermore, understanding balance within ecosystems is crucial, as it prepares individuals to be informed and proactive agents of ecosystem conservation (Asakura et al., 2015).

Transdisciplinary Learning

Ecosystem-thinking promotes transdisciplinary learning by integrating knowledge from ecology, health sciences, social sciences, and environmental studies to address complex health and environmental issues. This transdisciplinary framework not only deepens educational experiences but also inspires innovative thinking and problem-solving skills, ultimately preparing students to contribute to sustainable development (Charron, 2011).

Participatory Learning

Ecohealth fosters participatory learning approaches by engaging students in context-responsive pedagogy, emphasizing their active involvement in building up knowledge in the learning process. Through these approaches, students actively engage with local environmental issues, investigating and problematizing them within their own real-world situation (Upreti et al., 2024). These approaches not only deepen their understanding but also encourage them to get involved in meaningful actions to improve their local environment and address community health issues (Tomokawa et al., 2021).

Knowledge to Action

Ecohealth can be designed to enhance human capabilities, empowering individuals to contribute to the development of healthy communities. By fostering a deep understanding of how environmental issues impact human health and well-being, the Ecohealth approach motivates students to take action against environmental and health-related challenges. It encourages them to develop and implement sustainable practices, which not only benefit their personal well-being but also improve their health outcomes (Asakura et al., 2015).

Gender and Social Equity

In developing countries, including Nepal, women, ethnic minorities, individuals with different types of disabilities, and underprivileged communities often have limited access to health resources and opportunities (Panday et al., 2019). For this, Ecohealth could be vital for addressing gender and social equity by targeting the needy groups. This has led to increased exposure to environmental and health risks (Leal Filho et al., 2023). By promoting inclusive practices and equitable access to education and resources, the Ecohealth approach empowers these groups and involves them in sustainable development practices (Charron, 2011).

Glocalized Perspective for Sustainability

Ecohealth plays a crucial role in advancing both local and global sustainable practices by elucidating the links between global environmental challenges and their impacts on local communities. The approach integrates ecosystem and health outcomes, enabling a comprehensive understanding of how global phenomena such as climate change and pollution

influence health outcomes (Rocque et al., 2021). By fostering evidence-based practices and policies, Ecohealth supports to the creation of sustainable solutions that benefit local communities and aligns with the global efforts to mitigate environmental degradation (Asakura et al., 2015).

Review of Ecohealth Contents in School Curricula

"Ecohealth approach to education", also called 'Ecohealth education,' is a newly introduced discipline, which has not been acknowledged and introduced in Nepal's education system. Following the seminal literature on Ecohealth (Asakura et al., 2015; Charron, 2011; Khazem & Reiss, 2025; Tomokawa et al., 2021), we employed three analytical frameworks to evaluate the existing school education curriculum. The framework includes: i) impacts of human lifestyle on the environment and ecosystem, ii) effects of environmental changes, and iii) impacts of environmental changes on humans.

Table 1 shows that in Grades 1–3, there is a content or topic called 'Our Surrounding' which integrates some basic contents of environment and health subjects, such as environmental health and cleanliness, ecosystems and biodiversity, and environmental pollution. These contents align with the two themes of the framework: 'impacts of human lifestyle on the environment and ecosystem' and 'impacts of environmental changes on humans'. The curriculum also offers an opportunity to foster deeper connections between theoretical knowledge and real-world actions, which would help students better engage with and apply Ecohealth principles in their daily lives (Tomokawa et al., 2021). The science curricula from Grades 4–10 include the contents of both health and environment, which is connected to one of the themes of the frameworks i.e. 'impacts of human lifestyle on the environment and ecosystem' and 'effects of environmental changes'. However, there is a gap in showing interdependence between environmental and human health. The Health Education curriculum of Grades 4–8 also encompasses the key contents of both health and environment, such as the relationship between health, sanitation, and environmental conservation. Social Studies curricula of Grades 4–12 also include environment and health-related contents. The curricula incorporate the contents like climate change, disaster management, resource utilization, biodiversity conservation, the relationship between human beings and the environment, and disasters in Nepal. However, the curricula do not specify how these contents could be presented showing interconnectedness between ecosystems, human health, and sustainable development.

Table 1. *Review of Ecohealth-related Contents in Compulsory Subjects of School Curriculum*

Subjects	Themes/Units	Course Contents	Grades	Connection with Ecohealth Frameworks
Our Surrounding	Environmental Health and Cleanliness	• Types and impacts of environmental pollution on human health and practical actions to mitigate pollution in the community	1-3	• Impacts of human lifestyle on the environment and ecosystem • Impacts of environmental changes on humans
	Ecosystems and Biodiversity	• Understanding food chains and their ecological importance • Safety measures and preparedness against disasters		
Science and Technology	Organism and Environment	• Importance of environmental balance • Human activities and their adverse effects on ecosystems • Sustainable practices for environmental conservation	4-5	• Impacts of human lifestyle on the environment and ecosystem
	Environment and Biodiversity	• Conservation of local biodiversity • Causes and effects of environmental degradation • Efforts toward achieving biodiversity conservation-related sustainable development goals in Nepal	6-8	• Impacts of human lifestyle on the environment and ecosystem, • Effects of environmental changes
	Nature and Environment	• Food chain and food web system • Interaction of living organisms in their ecosystem • Introduction, causes, impacts, and mitigating measures of climate change	9-10	• Impacts of human lifestyle on the environment and ecosystem, • Effects of environmental changes
Health and Physical Education	Environmental Sanitation	• Preventive measures, mitigating measures of environmental pollution • Human waste-related issues and effective management solutions • Use and maintenance of latrines for cleanliness and health	4-5	• Impacts of human lifestyle on the environment and ecosystem
	Community Health	• Impacts of environmental pollution on human health • Introduction and components of total sanitation • Use of Ecosan toilet	6-8	• Impacts of environmental changes on humans
Social Studies	Our Earth	• Sustaining ecosystems and human life • Connection between forest conservation and sustainable development • Safety measures against local disasters	4-5	• Impacts of human lifestyle on the environment and ecosystem,
		• Relationship of weather, water resources, and vegetation with human life. • Role of school and community in disaster management • Relationship between land topography, weather, and human life • Climate change, its impacts on human life, and mitigating measure	6-8	• Impacts of human lifestyle on the environment and ecosystem, • Impacts of environmental changes on humans
		• Weather found in Nepal and its relationship with human life • Involvement of citizens in disaster preparedness and management • Land topography, weathers, and human life	9-10	• Impacts of human lifestyle on the environment and ecosystem, • Impacts of environmental changes on humans
	Geography and Social Life	• Relationship between human being and environment	11-12	• Impacts of human lifestyle on the environment and ecosystem

Table 2. *Review of Ecohealth-related Contents in Optional Subjects of School Curriculum*

Subjects	Themes/Units	Course Contents	Grades	Connection with Ecohealth Frameworks
Environmental Science	Ecological System	• Ecosystems (terrestrial and aquatic), food cycle, and food chain	9-10	• Impacts of human lifestyle on the environment and ecosystem, • Effects of environmental changes • Impacts of environmental changes on humans
	Natural Resources and Biodiversity	• Natural resources conservation (Water, Land, Forest, and Minerals) • Biodiversity (Causes, effects, and protective measures)		
	Environmental Pollution	• Environmental pollution • Radiation pollution and E-waste		
	Climate Change	• Weather and climate change • Impacts of global warming		
	Environment and Sustainable Development	• Sustainable development, forest and industry • Initiatives for sustainable development in Nepal		
	Environment Health	• Environmental pollution and human health • Environment friendly workplaces		
	Environmental Management	• Role of individual, family, and local organizations in environmental conservation • Environment-friendly lifestyle		
	Ecosystem Dynamics	• Food chain, food web, and trophic level • Nutrient cycle and role of micro-organism and energy flow in ecosystem	11-12	• Impacts of human lifestyle on the environment and ecosystem, • Effects of environmental changes
	Biodiversity and Climate	• Green house effects, climate change and global warming impacts		
	Environmental Degradation, Pollution and Hazards	• Environmental degradation and pollution • Disaster risk reduction management • Effects of toxic chemicals on environment		
	Solid Waste Management	• Types, sources, effects, and management of solid waste		
Health and Physical Education	Environmental Health	• Solid waste management • Environmental pollution and its impact • Conservation and cleanliness of public places and school cleanliness	9-10	• Effects of environmental changes • Impacts of environmental changes on humans
	Healthy Environment and Living	• Total sanitation, ecological sanitation, and ecosan toilet • Effects and prevention of water and air pollution • Effects of pesticides used in agriculture • Effects of global warming and climate change	11-12	• Effects of environmental changes • Impacts of environmental changes on humans

As indicated in Table 2, Environmental Science, an optional subject for Grades 9-12, incorporates the contents of ecological systems, resource conservation, and sustainability, tailored to foster an understanding of environmental challenges and solutions. In Grades 9-10, students learn about ecological systems (food chains, terrestrial and aquatic ecosystems, and Nepal's seashore sites), natural resource conservation (water, land, forest, minerals), biodiversity protection, environmental pollution (including radiation and e-waste), climate change, sustainable development, public health connections, and environmental management through the initiatives like IEE and EIA. Grades 11 and12curriculum includes ecosystem dynamics (food chain, food waive, nutrient cycle, energy flow), environmental resources (ecosystem services), biodiversity and climate issues (hotspots, threats, greenhouse effects), environmental degradation, pollution, hazards, and solid waste management. These contents align with Ecohealth principles, including ecosystem thinking, knowledge to action, and glocalized sustainability. The curriculum emphasizes practical applications and Nepal-specific contexts, preparing students to address local and global environmental challenges. The contents also align with Ecohealth frameworks: impacts of human lifestyle on the environment and ecosystem, and effects of environmental changes.

The Health and Physical Education curriculum from Grades 9-12 integrates environment and health content aimed at promoting sustainable living and community well-being. In Grades 9-10, it covers environmental health topics such as solid waste management, pollution impacts, community cleanliness, and school sanitation, alongside healthy living practices like total sanitation, ecological sanitation (Ecosan toilets), water purification, and prevention of pollution, pesticide effects, and climate change impacts. For Grades 11-12, the curriculum continues to emphasize healthy environments and living, reinforcing sanitation, water purification, and pollution prevention. These contents are partly aligned with the Ecohealth principles, including ecosystem interconnectedness, practical application of knowledge, and localized sustainability. These contents are also connected to the two themes of the Ecohealth frameworks: 'impacts of human lifestyle on the environment and ecosystem' and 'effects of environmental changes'.

Rationale for Incorporating the Ecohealth Approach to Education in School Curriculum

Ecohealth approach to education, also called Ecohealth education, is a newly introduced interdisciplinary approach to education in the curriculum and it has been included in the Teacher Training in Lao PDR (Tomokawa et al., 2021). The Ecohealth approach to education aims to educate school-going children and adolescents about developing positive health outcomes by promoting the environment and the ecological system. Khazem and Reiss (2025) define Ecohealth education as the intersectional approach that links environment, health, and education. Ecohealth education upholds the importance of harmonious relationships among socioeconomic development, ecosystem sustainability, human health, and their respective living conditions (Charron, 2011).

We argue that integrating Ecohealth into the school curriculum is both an educational necessity and it is a strategic approach for fostering a balance between human health and a sustainable environment. It is because integration equips school students with essential knowledge and skills to tackle both local and global environmental health challenges, promoting sustainable development, environmental conservation, and public health promotion mindsets. By incorporating Ecohealth in school education, students gain a deeper understanding of the linkage between environmental sustainability and human health (Bastola et al., 2020; Khazem &

Reiss, 2025). Thus, it prepares them to address environmental challenges and encourages them for sustainable development education in Nepal (Bastola et al., 2020).

The Ecohealth approach to education integrates environment and health sciences to provide students with a comprehensive understanding of the interconnectedness between environment and human health (Tomokawa et al., 2021). This interdisciplinary approach engages students in exploring how factors such as pollution, climate change, and biodiversity impact both ecosystems and health. The rationale for incorporating the Ecohealth education in Nepal stems from various national education and health policies and programs that emphasize the interconnectedness of education, human health, environmental sustainability, and socioeconomic development (Government of Nepal, 2022; Ministry of Education, 2019; Ministry of Health and Population, 2019; National Planning Commission, 2024). For instance, the National Curriculum Framework (NCF) 2019 envisions healthy and competent human resources through competency-based school education (Ministry of Education, 2019). Likewise, the National Health Policy-2076 BS has adopted strategic objectives to address environmental degradation, climate change, biodiversity loss, and their impacts on human health (Ministry of Health and Population, 2019). The Education Sector Plan also calls for action from school stakeholders to address climate change and its impact on human health (Government of Nepal, 2022). Thus, the rationale for incorporating Ecohealth education into school curricula is justified through the following themes.

Environmental Sustainability

Addressing Environmental Challenges. Nepal faces significant environmental challenges, including deforestation, air and water pollution, climate change, and biodiversity loss. These issues directly affect human health through increased disease burden, reduced access to clean resources, and disrupted ecosystems (WHO, 2021). Teaching Ecohealth in schools is expected to equip students with the knowledge and tools to understand these challenges and take proactive action in their real-world situations.

Promoting a Glocalized Perspective for Sustainable Development. Ecohealth education integrates ecosystem and health outcomes, allowing for a comprehensive understanding of how global phenomena such as climate change and pollution influence health outcomes. By nurturing evidence-based policies and practices that address both environmental protection and health, it supports to the creation of sustainable solutions that benefit local communities and align with global efforts to mitigate environmental challenges (National Planning Commission, 2017).

Preparing Future Leaders for Environmental Conservation. Nepal's future depends on leaders who understand the importance of sustainable practices for ecosystem conservation and public health promotion. By introducing Ecohealth education from early classes, schools can nurture responsible citizens to make informed decisions that promote both environmental and public health outcomes. Integrating Ecohealth education empowers future generations to understand how to balance developmental activities with environmental conservation, thereby contributing to a healthier and more resilient society (Bastola et al., 2020).

Mitigating Climate Change Effects and Supporting Global Health Initiatives. Nepal is highly vulnerable to climate change, with increased threats of glacial melting, floods, and unpredictable weather patterns (Karki et al., 2020). Ecohealth education helps students understand the effects of climate change on human and environmental health, encouraging them to become critically aware of climate action and resilience-building in their communities (Ramadani et al., 2023). Nepal, as part of the global community, has undersigned global health and environmental initiatives such as the SDG-6 ‘water and sanitation’, SDG-13 ‘climate

action', SDG-14 'life below water', and SDG-15 'life on land' (National Planning Commission, 2017). Ecohealth approach to education supports these goals, particularly those related to health, environmental sustainability, and quality education, by preparing students to contribute (United Nations Educational, 2017).

Social Equity and Community Engagement

Fostering Community and Cultural Relevance. The Ecohealth approach to education can have a significant impact on the local environment, economy, culture, and society. Nepal's cultural and spiritual connection to nature makes Ecohealth education highly relevant. Teaching students about the importance of maintaining a healthy relationship with the environment resonates with traditional values, reinforcing the need for conservation and respect for nature in the context of emerging and unprecedented challenges (K C et al., 2020).

Promotes Gender Equality and Social Inclusion. Ecohealth education is a key to addressing gender equality and social inclusion by targeting the disparities faced by disadvantaged groups. In countries like Nepal, women, ethnic minorities, disabled individuals, and underprivileged communities often have limited access to health resources and opportunities (Panday et al., 2019). This has resulted in increasing exposure to environmental and health risks behaviors of vulnerable groups. By promoting inclusive practices and equitable access to education and resources, Ecohealth education empowers these groups and fosters their involvement in sustainable development.

Pedagogical Innovation and Health Outcomes

Fostering Critical Thinking and Problem-Solving Skills. Ecohealth education encourages students to think critically about complex problems that transcend traditional subject boundaries. The existing NCF-2019 focuses on interdisciplinary learning, combining science, environmental science, health education, and social studies (Ministry of Education, 2019). We argue that students develop problem-solving skills by exploring how human actions affect the environment and vice versa, preparing them to address real-world challenges. By fostering critical thinking, deep learning, and problem-solving skills, students would proactively be involved in promoting sustainability and health within their communities, preparing them to address future environmental and health challenges with an informed and holistic perspective (Government of Nepal, 2022).

Promoting Transdisciplinary and Active Learning. Ecosystem-thinking promotes transdisciplinary learning by integrating knowledge from ecology, public health, health education, geography, social studies, and environmental sciences to address complex health and real-world challenges. Ecohealth education also fosters participatory learning practices by engaging students in context-responsive pedagogical activities that emphasizes active involvement in the learning process (Charron, 2011). This approach could utilize a variety of participatory learning strategies, including critical thinking, design thinking, project-based learning, problem-based learning, arts-based learning, and simulation learning. Through these learning approaches, students actively engage to tackle environmental challenges, investigating and problematizing them within their real-world situation (Upreti et al., 2024).

Improving Public Health Conditions. Stable ecosystems and sustainable resources are the fundamental determinants of population health and well-being. By teaching Ecohealth, students learn about the direct links between environmental degradation and public health issues, such as waterborne diseases, respiratory illnesses, and the rise of zoonotic diseases like COVID-19 (Government of Nepal, 2077 BS). Such education fosters an understanding of how environmental changes can lead to health crises, encouraging students to adopt improved lifestyles that protect both their own health and the environment. We do believe that through

Ecohealth education, learners are expected to consider and take actions to maintain a balance among the environment, ecosystems, social development, and human health and life.

Pathways of Incorporating the Ecohealth Approach to Education in Nepal

Although the Ecohealth approach to education has not yet been incorporated into Nepal's school education curriculum, its importance is rapidly gaining recognition due to the escalating global and local impacts of climate change and environmental degradation and their impact on human health. Drawing on our extensive experience in developing and implementing school curricula, as well as our engagement in the teacher education programs, we propose the following methods to effectively incorporate Ecohealth education into Nepal's school education.

Cross-Curricular/Integrated Teaching Strategies

Ecohealth-related content can be embedded across various subjects, including Science Education, Health Education, Environmental Science, and Social Studies (Khazem & Reiss, 2025; Tomokawa et al., 2021). For example, environmental conservation can be explored in Science Education, whilst it can be linked to sustainable development goals in Social Studies, and connected to sanitation practices in Health Education. Cross-curricular integration might foster a holistic understanding of Ecohealth by allowing students to perceive the interconnectedness among health, ecosystems, and socio-cultural practices. This alignment can enhance critical thinking and interdisciplinary collaboration, both essential for addressing complex environmental and public health challenges.

Promotion of Participatory Learning Approaches

Participatory approaches can be implemented to teach Ecohealth-related content. These approaches not only deepen conceptual understanding among the students but also empower them to translate knowledge into practice (Upreti, 2023). Experiential learning methods, such as fieldworks, transect walks, and ecological experiments, provide students with first-hand experiences that enhance their understanding of Ecohealth. Project-based learning enables students to investigate real-world problems, such as water conservation, waste management, and actionable solutions. Participatory action learning goes a step further, engaging students as active stakeholders in identifying and solving the problems (Upreti et al., 2024), such as Ecohealth challenges.

Integration with Teacher Education Program

Teacher training programs can focus on Ecohealth pedagogy, integrating active learning techniques and emphasizing community-driven activities (Tomokawa et al., 2021). In order to this, customized and refresher training can be organized to ensure that teachers remain updated on emerging Ecohealth issues. These trainings can inspire teachers to work with school stakeholders on local Ecohealth challenges, with a focus on bridging theory with practical application. Teacher training programs can also serve as platforms for teachers to share experiences, challenges, and best practices.

Bridge Conference/Workshop among Health Educators

Local, provincial, federal, and international level conferences and workshops among science, social studies, and health education teachers and educators can offer them to exchange knowledge and skills within and across the cross-curricular fields on Ecohealth education. These events can focus on integrating Ecohealth principles into curricula, developing innovative teaching methods, and addressing local and global Ecohealth challenges. Bridge workshops can also foster partnerships among educators, researchers, and policymakers, creating a supportive ecosystem for Ecohealth education initiatives (Upreti et al., 2024).

Linking Family, Community, and Local Government

Ecohealth education can be extended beyond the classroom by involving families, communities, and local government bodies (Asakura et al., 2015). Schools can collaborate with families and communities to implement Ecohealth projects, such as community gardens, waste segregation programs, and disaster preparedness activities. In doing so, local governments can support these efforts by providing resources, technical expertise, and policy backing. Such multi-stakeholder involvement can ensure students not only learn Ecohealth concepts but also practice them in their communities, reinforcing the real-world impact of their education (Acharya et al., 2020).

Advocacy with Policy Makers and Stakeholders

By incorporating the Ecohealth-related contents partially into school curricula, showcasing examples could be developed and demonstrate the results of such initiatives for policy advocacy. Such efforts can markedly influence education policies to ensure the systematic incorporation of Ecohealth education into school and teacher education programs. Engaging policymakers, education stakeholders, and community leaders in dialogue about the importance of Ecohealth education can drive stakeholders to reform the existing practices (Acharya et al., 2022). This strategy can support for the curriculum revision, teacher training, and resource allocation to institutionalize Ecohealth education in school and teacher education programs.

Challenges in Adopting the Ecohealth Approach to Education in School Curricula

Research-based Evidence

The evidence shows that there are no school-based studies that have used the term Ecohealth or suggested it as a curriculum aim (Charron, 2011; Khazem & Reiss, 2025; Tomokawa et al., 2021). The lack of extensive, context-based research on Ecohealth in Nepal poses a significant challenge to incorporating the Ecohealth approach to education in school curricula. Evidence-based studies are crucial to establishing the importance, feasibility, and impact of Ecohealth integration in the school curriculum.

Curriculum with Overloaded Content

Nepal's school curriculum is already dense with subject-centric contents, with limited flexibility to integrate additional content under the given themes (Sharma, 2025) (Regmi, 2024). Hence, there is a challenge of interweaving the contents of two or more subjects via an interdisciplinary approach, such as linking environmental science contents within the health education subject or vice versa.

Training and Teaching Learning Materials

Engaging students in meaningful and participatory activities requires resources, training, and a supportive learning environment, which are often lacking in Nepalese schools (Khanal & Adhikari, 2020). A significant challenge of incorporating the Ecohealth approach to education in the Nepali context would be the unavailability of training programs and teaching-learning materials (Sharma, 2025) tailored to Ecohealth. Teachers often lack the expertise of active learning strategies and resources if needed to deliver Ecohealth content effectively, which impacts the quality and consistency of instruction (Tomokawa et al., 2021).

Professional Collaboration and Networking

Ecohealth approach to education requires interdisciplinary collaboration among educators, environmentalists, health professionals, and policymakers (Asakura et al., 2015). In Nepal, limited opportunities for professional networking and collaboration among teachers

might hinder the exchange of knowledge and best practices, slowing the progress of Ecohealth integration in education.

Policy Advocacy, Community Engagement and Monitoring Mechanism

The absence of policy advocacy and insufficient community engagement would be one of the obstacles for integrating a new approach to the school curriculum (Mpuangnan & Ntombela, 2024). Without the support of policymakers and curriculum stakeholders, the implementation of any initiative faces resistance and lacks the necessary resources and infrastructure (Ministry of Education, 2019). The absence of systematic monitoring and evaluation mechanisms and actionable feedback loops makes it difficult to measure progress or address the gaps effectively.

Strengths and Limitations

This study is the first of its kind to explore the prospects and challenges of integrating an Ecohealth approach to education into Nepal's school curricula. It is particularly important for analyzing the National Curriculum Framework of Nepal (2019) through the lens of the Ecohealth approach. Additionally, the study provides a clear rationale for incorporating this approach into school curricula, outlining potential pathways and associated challenges. Despite its contributions, this study has several limitations. First, it does not follow a systematic review methodology, which may limit the comprehensiveness and reproducibility of the analysis. Second, the review of the school-level curriculum was conducted using the three core theoretical frameworks of the Ecohealth approach: i) the impacts of human lifestyle on the environment and ecosystems, ii) the effects of environmental changes, and iii) the impacts of environmental changes on human health, which might potentially narrow down the scope of integration possibilities. Finally, as this study is a literature-based argumentative paper, the study may be influenced by social desirability bias, including the authors' subjective interpretations and reflections during the analysis.

Conclusion

This study explores the prospects and challenges of incorporating the Ecohealth approach to education in Nepal's school education. The study delineates six core principles of Ecohealth: ecosystem thinking, transdisciplinary learning, participatory learning, knowledge to action, gender and social equity, and a glocalized perspective for sustainability. The review of the existing National Curriculum Framework-2019 indicates that though the existing school curriculum incorporates health and environmental topics, they are separately presented with insufficient connection and interdependence. The study, further, identifies multiple rationales for embedding the Ecohealth approach to education in school curriculum, organized under three broad themes: environmental sustainability, social equity and community engagement, and pedagogical innovation and health outcomes. These themes, we hope, will contribute to the research on Ecohealth by elucidating how they intersect to shape transformative educational practices and policy orientations in Nepal. Based on the review and discussion, we propose some realistic pathways for integrating the Ecohealth approach to education, including cross-curricular and participatory approaches, embedding Ecohealth principles in teacher training programs, organizing professional development workshops for educators and teachers, fostering partnerships among families, communities, and local governments, and advocating for robust policy support. We are also aware that successful integration of the Ecohealth approach to education might face challenges such as limited research evidence, content-loaded curriculum,

insufficient training and educational resources, weak professional collaboration networks, inadequate advocacy for policy, and limited community engagement and monitoring mechanisms. However, we emphasize the need to integrate the Ecohealth approach to education by highlighting the harmonious interdependence between 'health and environment' to empower students as proactive change agents to address the interconnected challenges of human health, ecology, and environmental sustainability.

Acknowledgments

We owe our sincere thanks to all the peer reviewers and editors who put their efforts into making this paper publishable.

Authors' Contributions

YRU conceptualized and developed the manuscript. BD, ST, and DPB thoroughly edited the manuscript with critical comments. All authors have read and approved the final manuscript for publication.

Funding

None.

Conflict of Interest

The authors declare no conflict of interest for writing and publishing this paper.

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