Examining the Environmental Education Themes Presented in Grade 8 Social Studies Sindh Textbook Board Jamshoro, Sindh

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Abstract: Environmental education is instrumental in enhancing awareness of ecological challenges, cultivating eco-literacy, encouraging environmental stewardship, and empowering youth to act. Its relevance extends globally, and numerous research studies have been conducted internationally to illuminate the consequences associated with environmental issues. For this purpose, the study examined the environmental education themes presented in social studies in the Grade 8th Sindh Textbook Board Jamshoro. The research methodology employed in this study was qualitative, utilizing content analysis as the primary method. Data collection was conducted through document analysis and Criterion Sampling, with a specific focus on a social studies textbook for eighth-grade students in Sindh, which served as the sample for this investigation. Thematic analysis was employed to systematically investigate the coded data, facilitating an exploration of the recurring themes, topics, patterns, and issues related to environmental education discourses found within the textbook. The results revealed that the textbook discusses the effects of environmental pollution on human health, migration trends, and economic activities. Population growth is a burden on resources. There exists a significant imperative to implement effective environmental initiatives and case studies aimed at motivating students. It is advisable for the state to undertake prompt actions to safeguard the environment from various forms of pollution and practices that have direct or indirect repercussions on ecological health. Furthermore, it is essential to incorporate projects and activities within social studies curricula that promote experiential learning and problem-solving competencies, thereby equipping students to effectively respond to natural disasters.

Key Words: Environmental Education, Themes, Social Studies, Textbook

Introduction

Environmental education has emerged as a critical component of modern syllabi, aiming to cultivate students' understanding of environmental issues, foster a sense of environmental protection, and equip them with the knowledge and skills to address sustainability challenges in recent years has been increasing recognition of the importance integrative environmental education across various subject areas, including social studies (Salmani et al., 2015). EE aims to develop understanding and appreciation of the learners about the natural environment through hands-on and hands-on experiences (Bonnett, 2007).

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Most of the countries of the world are highly emphasizing environmental education awareness through textbooks and extracurricular activities. Santone et al. (2014) propose a novel concept termed 'Education for Sustainability' (EfS), aimed at equipping future educators with collective problem-solving skills necessary for addressing pressing environmental, social, and economic challenges. This approach emphasizes the importance of imparting EfS competencies to students through the integration of content knowledge, skills, and behaviors. In Canada, educators and policymakers emphasize integrating environmental education into general education (Kohlstedt, 1997). China has activated its educational institutions regarding sustainability since the 1970s. America has been working since the 1890s for the preservation of the environment (Sherren, 2006). In Russia, most of the universities are concerned about sustainability education development, providing many courses related to the environment. The government of South Africa has introduced many concepts of environmental education within textbooks (Wolfe, 2001).

Iran has introduced Article 50 in the country's constitution to ban activities that are directly or indirectly damaging the environment, and it has declared that protecting the environment should be a public requirement. Pakistan's National Climate Change Policy (NCCP) 2012 is dedicated to working hard to introduce climate change and the environment into the policies (GoP 2012). Farooqi and Fatimah (2010) noted that the Pakistani government, along with environmental agencies, implemented the Coordinated Environmental Education Project (CEEP) from 1989 to 1992. This project aimed to train teachers and develop educational materials for environmental education. Since then, the government and NGOs have continued to introduce environmental concepts into the education system. This includes incorporating environmental topics into textbooks, offering environmental-related courses at various educational levels, and implementing the Environmental Education Promotion project. Social studies, in particular, can play a crucial role in helping students understand environmental issues and their connections to human society and sustainable development.

Statement of the Problem

Environmental problems like floods, rising temperatures, and biodiversity loss have significantly impacted the world. Jannah (2023) noted that increased global production has worsened these issues. Pakistan is particularly vulnerable due to low environmental awareness, pollution, and limited green spaces. The country suffered major losses in the 2010, 2022, and 2024 floods, particularly in Upper Sindh, Gwadar, and KPK. It's crucial to examine environmental education in textbooks to understand how we're teaching future generations about environmental issues.

Research Objective

To examine the environmental education points such as natural resources, pollution, and population in the S. St. Sindh Textbook Board, Jamshoro for Grade 8th.

Research Question

What are the ways that the social studies textbook for grade 8th presents environmental education points such as pollution, population, and natural resources?

Literature Review

Environmental Education

Environmental education is increasingly recognized as essential for preparing students to understand, engage with, and address pressing environmental issues and challenges. To cultivate students' self-belief and decision-making skills, they require hands-on experience taking ownership of their learning in a challenging yet supportive educational environment (Glaser et al., 2001).

Feinstein, et al., (2006) suggested that environmental education is the process of learning in formal settings like schools and colleges, it encompasses both the experiences and outcomes of this learning. To cultivate students' self-belief and decision-making skills, they require hands-on experience taking ownership of their learning in a challenging yet supportive educational environment (Glaser et al., 2001).

According to the Environmental Protection Agency USA, environmental education allows people to research environmental topics, solve problems, and enhance the environment. Consequently, individuals develop a more comprehensive understanding of environmental challenges, enabling them to make informed and responsible choices. According to the World Bank, the global population was estimated to be around 8 billion in 2022 and has continued to increase since that period. This population increase is a significant contributor to various global environmental challenges (Yalmanci & Gozum, 2019). Key environmental issues on a global scale encompass water quality, air pollution, noise pollution, solid waste management, and sewage disposal (Negev et al., 2009). Prominent concerns such as climate change, environmental degradation, natural disasters, drought, and pollution are recognized at both the educational policy level and within school curricula (Yashlam, 2014).

Environmental education represents a comprehensive and multifaceted framework that is vital for a wide range of stakeholders, including students, scholars, researchers, policymakers, and professionals in various industries. According to Swaminathan (2016), environmental education equips students with an in-depth understanding of ecological systems, the intricate relationships between causes and effects, biodiversity, and the numerous threats confronting various species. It promotes awareness of both natural and human-induced disasters, such as floods, earthquakes, landslides, droughts, and cyclones, as well as strategies for mitigating their impacts. Additionally, it empowers individuals to evaluate alternative responses to environmental challenges before making decisions. The scope of environmental education can be delineated into three dimensions: education from the environment, education about the environment, and education for the environment (Packover, 2012).

Formal and Informal Environmental Education

Formal environmental education includes curricular activities, courses, and programs designed to teach students about environmental issues like the conservation of biodiversity, climate change, solid waste management, and environmental pollution. Varela et al. (2016) posited that, from an educational standpoint, institutions of learning have a critical role in fostering the development of sustainable lifestyles in partnership with communities, thereby promoting greater equity, responsibility, and environmental respect. Nonetheless, formal education, particularly within schools, is instrumental in influencing behavioral changes in learners beyond the home environment. Achieving sustainability necessitates alterations in the existential policies of nations, as well as the establishment of international agreements (Jackson, 2009; Klein, 2014). It is imperative for governments to initiate reforms in educational curricula and policies to enhance the integration of environmental education, thereby advancing sustainable development on a global scale. Formal education is characterized by a systematic and organized approach to learning.

Informal Education is a lifelong learning process. It's different from a traditional classroom setting. According to the European Youth Foundation, individuals acquire knowledge from their family, neighbors, marketplace, workplace, libraries, art exhibitions, and through activities like playing, reading, and sports. The mass media, including plays, music, films, songs, televised debates, and documentaries, plays a significant role in informal education. This type of learning is always unplanned and unstructured. Slattery (2000, 86) argued that adults, compared to children, are more likely to be influential for members of the communities, groups, and locations. Adults can inspire and organize others, and they possess the necessary understanding to engage in political action and influence the education of others.

For example, UNESCO emphasizes in its report that focusing on adult education for sustainable development is crucial. This is because relying on future generations to implement sustainable practices is risky. Today's adults, as voters, consumers, parents, scientists, and workers, hold the primary responsibility of driving sustainable change (Guevara, et al., 2009).

Environmental Education in Pakistan

Environmental Education (EE) is one of the most debated and intriguing topics today due to environmental changes Alam, 2017. Fink (2003) contended that educators ought to advocate for environmental education to enhance student learning, as conventional, traditional classroom strategies are inadequate for fostering students' comprehension, retention of information, self-directed learning, and the development of skills necessary for knowledge transfer and

problem-solving. In this context, Pakistan is confronted with a multitude of environmental challenges, including accelerated climate change, a shortage of potable water, loss of biodiversity, overpopulation, deforestation, and various forms of pollution—namely air, land, water, and noise—according to the 2005 report from the Environmental Protection Authority (EPA) of Pakistan.

Current Sindh Environment and Government Policies

Drought conditions lead to a significant reduction in soil moisture, resulting in the development of saline and sodic soils, which pose a serious threat to food security and socioeconomic stability, including losses in cattle and economy, ultimately contributing to food crises that can result in starvation and famine until appropriate mitigation strategies are implemented. The majority of Pakistan, particularly the provinces of Sindh and Baluchistan, is categorized as arid to semi-arid, rendering it vulnerable to drought conditions (Siddiqui, 2017). The province of Sindh has experienced recurrent droughts, which have been intensified by factors such as pollution and climate change (Atif & Mahboob, 2016; Bilal et al., 2017). The region receives a mere 20% of its annual monsoon precipitation during June to September, with total annual rainfall recorded at less than 300 mm and minimal winter precipitation (Hanif & Ramey, 2014). The drought that influenced the district Tharparkar in the year of 2014 resulted in the causalities of 182 children under the age of five and 149 adults (comprising 91 males and 58 females) due to diseases, dehydration, starvation, and fever/malaria. Furthermore, 4,446 children and 3,910 adults suffered from abdominal issues, diarrhea, and fever/malaria, with the underlying causes remaining unclear. This calamity in Tharparkar District also led to the loss of 37,101 livestock, including sheep, goats, and cows. In response to the water scarcity, local inhabitants resorted to digging wells and utilizing brackish water (Jaggarta Organization, 2014). The Sindh Relief Department officially designated Tharparkar as a disaster-affected area in February 2014. The drought was primarily attributed to inadequate rainfall in 2013 and 2014; however, administrative negligence in delivering essential services and disaster forecasting significantly contributed to the crisis (Hassan & Murtaza, 2012). The districts of Thatta and Sijawal are particularly susceptible to seawater intrusion, which has resulted in the degradation of fertile land into barren areas, with the Arabian Sea encroaching upon hundreds of thousands of acres of arable land over the past decade.

The Sindh Environmental Protection Act (2014) mandates that no individual shall discharge waste, pollutants, or emit noise, or any other substances that may lead to pollution or adverse environmental impacts, as defined in Section 2, at levels exceeding those established in the Sindh Environmental Quality Standards. Additionally, the importation of hazardous waste into Sindh province or its coastal, internal, territorial, or historical waters is prohibited without prior authorization from the relevant agency. These regulations are intended to foster environmental conservation within the province.

According to Sabir and Ghouse (2021), the metropolitan area of Karachi generates over 12,000 tons of waste daily. In light of this pressing issue, the Sindh government has established the Sindh Solid Waste Management Board (SSWMB) to facilitate the collection of solid waste and its conversion into a source of income and energy.

The Importance of Environmental Education for Learners

As of early 2020, Pakistan has been identified as the fifth most populous nation globally, having exceeded Brazil in population, with a total exceeding 204 million individuals (World Population Review, 2020). The country encompasses over 88,000 square kilometers of territory in South Asia, characterized by a variety of topographical features, ecosystems, socioeconomic conditions, and climatic zones. Having the most populated and largest country by area is also a challenge for Pakistan to balance the climate, environmental practices, and conservation from global warming and the loss of many natural resources. With that, it is very important to aware our generations to adopt sustainable practices to save our planet.

It is very important to consider the environment in our education system. The youth or students play a vital role in the change of traditional mindset. Today's learners are tomorrow's leading figures of the country. Furthermore, teaching them the importance of education will ultimately help us to save the future from multidimensional crises. Hungerford (1990) suggested that environmental education promotes responsible citizenship behavior of learners. With that, it

helps to inculcate societal and moral values among learners through kindness with animals, and plants and promoting cleanliness, etc.

Research Design

This study employed a qualitative research methodology, which is crucial for obtaining insights into intricate phenomena, monitoring unique or unforeseen events, and clarifying the experiences and interpretations of individuals with varied interests and roles. Additionally, qualitative methods serve to amplify marginalized perspectives, support preliminary investigations for theory development, and facilitate the generation and testing of hypotheses, thereby enhancing the understanding of causal mechanisms (Sofaer, 1999).

The Content Analysis method was specifically applied in this research, concentrating on the analysis of the written material within a social studies textbook designed for eighth-grade students. The primary aim of content analysis is to categorize and derive meaning from the collected data, ultimately leading to the formulation of valid conclusions (Bengtsson, 2016). The population for this study consisted of the eighth-grade social studies textbook utilized in Sindh.

For this study, criterion sampling was used, resulting in the selection of a specific social studies textbook as the sample for this investigation. Data collection was conducted through document analysis of the selected textbook. In this research, data analysis was conducted using thematic analysis, which involved the development of themes, sub-themes, and codes from the raw data gathered. This process, known as the splitting procedure of data analysis, entails the identification of patterns or themes within qualitative data (Braun & Clarke, 2006). The initial phase of data examination was executed with precision to classify similarities and differences in concepts, a process that was performed manually. This methodological approach enables the researcher to systematically organize the analysis and make informed decisions at each level of analysis (Charmaz, 2008). Thematic analysis was applied to the coded data, facilitating the identification of recurring themes, topics, patterns, and relevant points concerning environmental education discourses present within the textbook.

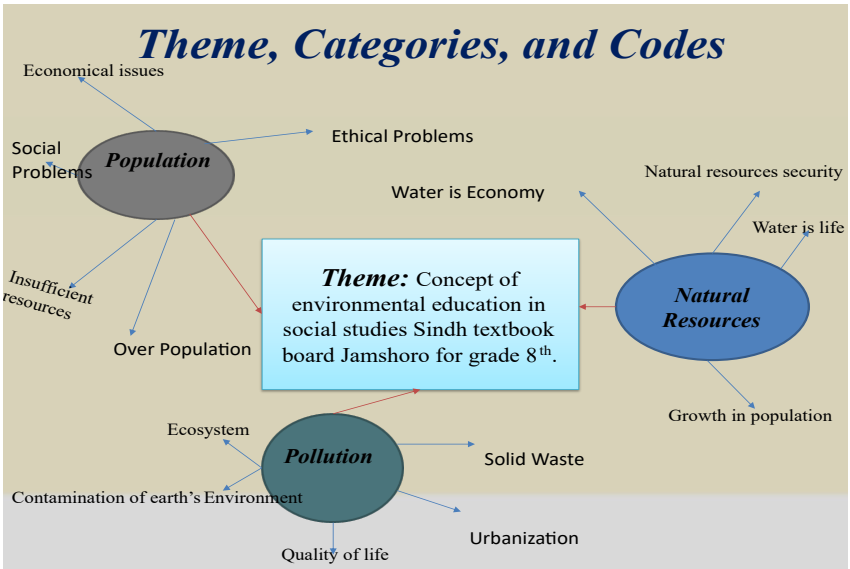
Document Analysis of Social Studies for Grade 8th Sindh Textbook Board

An analysis was conducted on all chapters of the eighth-grade social studies textbook. From the objectives, overarching themes were identified, and a comprehensive discussion of these themes is presented below.

Theme One: Concept of Environmental Education in Social Studies Textbook

Figure 1

Codes, Categories, and Theme from Documents Analysis.



Source: Self-design

Figure 1 refers to the methodology employed in the extraction of codes, categories, and themes through the analysis of documents.

Natural Resources

Overuse and overconsumption of natural resources lead to increased pollution and waste, damaging the environment, especially in ecological footprints (Azimi et al., 2023). Natural resources are essential in the economic growth of the state however, there is a serious concern related to the adverse impact on environmental pollution (Li et al., 2021).

Chapter One shows that "*Water is vital not only for the biosphere but also for the geologic processes of erosion, transport, and deposition that shape the earth's surface" (p.7)* which means water has a significant role in transportation, geological processes, and biosphere.

Similarly, it is discussed in Chapter Two *"In Asia flow some important rivers of the world like Amu, Huang, and the Indus, Ganges and Yang se Kiang" (p.12)* this statement shows that rivers are key natural resources that help countries to uplift their economies by utilizing the water of rivers (agriculture, industry, farming, hydropower plant etcetera).

Chapter Six indicates that *"Rivers, Canals, and seas are the most important water highways of the world. Like, Suez Canal, Mediterranean and Red Sea, pacific and Atlantic Ocean" (p.74) this* means water is helpful for transportation of goods from one place to another in a cheaper way.

It is discussed in Chapter Nine *"The fear of scarcity of the food is being felt as a result of speedy population growth. Therefore, it is necessary to increase food products. This organization suggests several nations ways and means to increase their food, forests and other resources" (p.113)* thus this point refers to the growth of population increases the pressure on the overutilization of natural resources. As a result, it creates crises like food, water, and so on. To overcome the issue of food crises, it is necessary to increase forests and related products.

Pollution

Pollution can take many forms including air pollution from harmful particles, ozone, Sulphur, and nitrogen oxides; water pollution in rivers and lakes; ocean pollution from mercury; and land pollution from lead, industrial wastes, e-wastes, and radioactive waste (Fuller, et al.2022).

Polluted drinking water can lead to various health problems, including waterborne diseases like Giardiasis, Amoebiasis, and Typhoid. It can also cause serious conditions like liver and kidney damage, Alzheimer's disease, cancer, and heart disease. Additionally, polluted beach water can result in illnesses such as stomach aches, encephalitis, and respiratory infections. Overall, contaminated water poses significant risks to human health. (Water Pollution Effects, 2006).

According to Chapter Two *"Pollution is the contamination of the earth's environment with materials that are dangerous for human health, the quality of life, or the natural functioning of Ecosystem" (p.27).* This means pollution is the key factor that contributes to the earth's contamination with some harmful substances that are affecting the natural functioning of the ecosystem and human life.

Chapter Five highlights that "*Large numbers of factories are polluting the environment and causing complicated diseases. The rapid increase in motor vehicles and the emission of smoke makes the air Poisonous. Similarly, the rubbish is thrown all around and the filth oozing out of the gutters is also polluting the environment" (p.65).* This statement shows that the smoke and waste generated by factories cause serious illnesses. With that, air is going to be more polluted due to the immediate increase in motor vehicles. Overing of gutters due to less management of solid waste has polluted the environment.

Population

According to Bokhari, A (2024) Pakistan's population is continuing to grow rapidly, which could have negative effects on the country's security, economic stability (including shortage of resources, high inflation, and associated crime), social stability (including inequality, lack of education and healthcare, and increased crime), and political instability (due to government inability to meet public needs, leading to dissatisfaction and distrust).

It is mentioned in Chapter Two *"South and Central Asia together form another 40% population of Asia" (p.13).* Which means 2/5 of the population of Asia is living in this region. The demands of the utilization of resources are high due to population growth.

Chapter Five highlights that "*The rapid population growth is resulting in unethical behavior and crime. Theft, hoarding of goods, bribery, and drug addiction and moral degeneration is rising because the available resources are insufficient to meet the requirements of the growing population" (p.58).* This statement indicates that overpopulation in Pakistan is leading to unethical behavior and crimes. All kinds of social evils including corruption, drug addiction, moral degradation, and theft are arising due to insufficient resources which are not fulfilling the basic needs of people.

Discussion

The research was conducted to analyze the environmental education discourses in the social studies Sindh textbook for grade 8th. The purpose of conducting this study was to develop understanding and appreciation among students about nature and environmental issues through textbooks. Developed countries including America, British, Canada, and China have taken various steps to introduce environmental education in the curriculum, policy, and the whole system. However, climate change has affected the whole world including Pakistan in the form of floods, resource scarcity, etc. Keeping in mind, this study was conducted on environmental education. With that, this study is justified due to its potential to aware policymakers, researchers, and curriculum developers. It is contributing to the promotion of environmental education and sustainability efforts in the domain of academia.

A review of related literature brought a major focus on environmental education and its challenges, and national and provincial government initiatives to consider environmental education as a need of the time. According to the environmental realism theory, the environment is reality so it cannot be ignored in this postmodern era. Environmental problems such as floods, climate change, loss of biodiversity, and pollution are the major subjects or research topics all over the world. Immense research has been published throughout the world to create awareness and find solutions to environmental issues.

This study employed a qualitative methodology, specifically utilizing content analysis as its primary method. The population for this research consisted of the Social Studies textbook for eighth grade in Sindh. The sampling technique applied was criterion sampling, focusing on a single textbook as the sample size for the investigation. Data collection was conducted through document analysis, and the subsequent analysis was performed using thematic analysis. All chapters of the eighth-grade Social Studies textbook were examined, leading to the identification of a central theme derived from the objectives, which was subsequently discussed in detail.

The comprehensive categories were prepared to make the codes from the text of the textbook. Thus, the data was collected while reading the book which consisted of ten chapters. For analysis, the data was analyzed and arranged according to already specified themes (climate change, natural resources, deforestation, pollution, and population).

Findings

Theme: Concept of Environmental Education

- **Natural Resources:** The significance of water and other natural resources is discussed, with a focus on their role in economic development. However, the concept of sustainable resource management is absent.
- **Pollution:** This textbook considers pollution as a major environmental problem caused by industrial processes and waste management issues. It is a big hindrance to the natural functioning of the ecosystem and the life of humans. Further, it lacks specific information about pollution types, solid waste or e-waste, sources, solutions, and health consequences.
- **Population:** Highlights the relationship between population growth and environmental issues, including resource crises and social problems like crimes & law and order situations. However, it does not provide solutions or strategies to address population growth.

Conclusion

Numerous chapters effectively highlight that deforestation and population growth present significant challenges to both the quality of life and the proper functioning of ecosystems. Additionally, various factors contribute to the extinction of biodiversity, including urbanization, pesticide usage, and pollution in its various forms—namely, water, soil, air, and noise. The Social Studies textbook for eighth-grade students in Sindh incorporates discussions on the concept of environmental education.

The fundamental elements of environmental education include the cultivation of skills essential for identifying solutions to environmental issues, the promotion of positive attitudes towards the environment, and the enhancement of knowledge and comprehension of environmental matters. The primary objective of environmental education is to elevate public awareness, investigate potential solutions to environmental challenges, and establish a foundation for informed and engaged citizens dedicated to environmental stewardship.

In the context of Pakistan, it is crucial to incorporate education on climate change, biodiversity, environmental pollution, ecosystems, deforestation, and the conservation of natural resources across all levels of education to ensure the protection of the planet. Environmental education encourages the involvement of all students, regardless of any form of discrimination, in sustainability initiatives and environmentally friendly practices. The effective implementation of environmental education requires its evolution into a comprehensive framework, a transformation of societal values, integration with other academic disciplines, and the formation of strong partnerships among governmental bodies, environmental organizations, and industry stakeholders. To effectively tackle the ongoing climate-related crises, the education system must prioritize sustainability education through the lens of environmental education.

Recommendations

- It is imperative to integrate and interconnect fundamental concepts of environmental education across various chapters and academic disciplines.
- The state must undertake immediate measures to protect the environment from all forms of pollution and practices that have detrimental effects, whether directly or indirectly.
- It is recommended to incorporate relevant real-life examples related to environmental education within the social studies curriculum to enhance awareness among future generations regarding the consequences of environmental degradation.
- Environmental education requires ongoing efforts, which should be evident in the curriculum, theoretical frameworks, and practices of both governmental and non-governmental organizations.
- There is a considerable necessity to introduce case studies that highlight successful environmental initiatives to motivate and inspire students.
- The curriculum should encompass projects and activities that foster hands-on experiences and problem-solving skills, thereby preparing students to effectively respond to natural disasters.

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