

**ADVANCE SOCIAL SCIENCE ARCHIVE JOURNAL**

Available Online: <https://assajournal.com>
 Vol. 03 No. 02. Apr-Jun 2025. Page#.1179-1193
 Print ISSN: [3006-2497](https://doi.org/10.55966/assaj.2025.3.2.020) Online ISSN: [3006-2500](https://doi.org/10.55966/assaj.2025.3.2.020)
<https://doi.org/10.55966/assaj.2025.3.2.020>
 Platform & Workflow by: [Open Journal Systems](https://openjournal.org/)

**SDGs Embeddedness in SNC: A Critical Analysis General Knowledge Textbooks****Sarah Rasul Mirza**

MPhil Scholar, University of Education, Lahore

sarahrasul980@gmail.com**Dr. Samra Bashir** (Corresponding Author)

Assistant Professor (Education) University of Education, Lahore

samrabashir.ue@gmail.com**Asya Mushtaq**

Bank Road Campus, University of Education, Lahore, Pakistan

asyamushtaq@gmail.com**Abstract**

Lifelong learning is critical for fostering sustainable practices that address global challenges. Early education plays a pivotal role in instilling sustainability principles. In Pakistan, the General Knowledge textbooks under the Single National Curriculum (SNC) for grades 1-3 aim to develop foundational knowledge and skills related to sustainable development. This study reviews these textbooks to evaluate their potential in nurturing lifelong sustainability practices among young learners. Using a qualitative content analysis framework, the study assessed General Knowledge textbooks for grade 1-3. The analysis focused on three sustainability dimensions; social, economic, and environmental and evaluated the SDG goals for each dimension in the content. Data was coded and validated through peer review. The analysis reveals that while the textbooks incorporate themes such as environmental conservation, hygiene, and community responsibility, the coverage of economic and social sustainability is limited. Activities promoting critical thinking and problem-solving are sporadic and often lack depth. The study identifies significant opportunities to enhance the role of General Knowledge textbooks in cultivating sustainability competencies. Recommendations include integrating experiential learning activities, emphasizing interdisciplinary connections, and adopting participatory pedagogies. These improvements can transform early education into a robust foundation for lifelong learning, equipping students with the skills and mindset to navigate and address sustainability challenges effectively.

Keywords: Single National Curriculum (SNC), General Knowledge Textbooks, Grade 1-3, SDG.

Introduction

Textbooks emerge as crucial instruments in this educational transformation. They are among the most frequently used educational tools, representing and reflecting curriculum content. UNESCO (2017) underscores their significance in building knowledge, shaping attitudes, and developing students' understanding of sustainability principles. (Michelsen & Wells, 2017). They are important learning resources as they provide structure and organized learning systems for teachers' and learners' engagement with the concepts and themes of sustainability (Kalsoom & Khanam, 2017). Hence, analyzing the content of textbooks can clarify the current situation of sustainability education in a given context (Khushik & Diemer, 2018).

Sustainability education has emerged as a critical approach to addressing complex global challenges UNESCO (2017) emphasizes that Education for Sustainable Development (ESD) must meet the social, economic, and environmental needs of the present generation while

securing opportunities for future generations. This holistic approach encompasses three fundamental dimensions: environmental, social, and economic sustainability. (Fischer, Brettel, & Mauer, 2020). The purpose of the economic facet is to provide the learner with the knowledge, skills, and attitudes necessary to create a new kind of economy; one that is both sustainable and resilient (UNESCO, 2017). The environmental dimension focuses on resource management and ecological preservation. Rockstrom et al. (2017) define environmental sustainability as a process of ensuring resource usage, greenhouse gas management, and waste decomposition without compromising natural ecosystems. The social dimension emphasizes equity, fairness, and justice, addressing critical human needs such as education, healthcare, and poverty alleviation (Sachs, 2015).

Pakistan, as a signatory to the Sustainable Development Goals (SDGs), has committed to integrating sustainability into its education system (Abid et al., 2021). The recent introduction of the Single National Curriculum (SNC) in 2022 represents a significant reform aimed at curriculum alignment and standardization across provinces and territories, with an emphasis on integrating sustainability literacy and values. The global commitment to sustainable development is increasingly evident. Many countries have begun integrating sustainability principles into educational programs and materials. For instance, Kalsoom and Khanam (2017) examined Pakistan's national curriculum, revealing the incorporation of environmental themes, albeit with limitations in comprehensive subject integration. In another study, the concept of sustainability has been described in the Pakistani context. It is proposed to focus on sustainable development (Jamil, Mehmood & Aslam, 2024; Khan, 2021)

However, the integration of sustainability concepts into primary education curricula remains challenging. Existing research suggests that many educational systems struggle to move beyond superficial representations of environmental and social issues, failing to provide students with the critical thinking skills necessary for comprehensive understanding (Vare & Scott, 2007; Wals, 2009). Scholars have consistently highlighted the gap between curriculum intentions and actual implementation of sustainability education, noting that most approaches remain fragmented and decontextualized (Læssøe, 2010).

This research seeks to critically examine the extent to which sustainability concepts are integrated into the General Knowledge curriculum for Grades 1-3 within Pakistan's Single National Curriculum. By analyzing the depth, breadth, and approach of sustainability education at this foundational level, the study aims to provide insights into the potential for developing a more holistic and transformative educational approach.

Objective of the Study

This research paper will focus on analyzing the Single National Curriculum (SNC) of General knowledge Grade 1-3 to explore the Sustainable Development Goals (SDG). The sustainable development goals will be explored under three main areas i.e., social sustainability, economic sustainability and environmental sustainability.

Significance of the Study

This analysis will contribute to add in the literature by reporting the existing state of sustainable education in General Knowledge textbooks of grade 1, 2 and 3. The findings of the study will be helpful for teachers, policy makers, and other educational experts, so that they can work to make curriculum sensitive for contemporary needs of Pakistan. This study will set the guidelines for curriculum developers to add sustainable education into the curriculum. Sustainability-integrated curricula improve students' experiences in identifying and designing solutions for a complex array of global issues (Ahmad & Khan, 2022). Schooling systems across the globe are awakening to the realities of global challenges and it is impressing on the need to incorporate sustainability-oriented learning (UNESCO, 2020).

Review of Literature

The integration of Sustainable Development Goals (SDGs) in primary school curricula has emerged as a critical area of research, particularly in developing countries like Pakistan.

International studies consistently emphasize the pivotal role of early education in fostering awareness of the SDGs and shaping sustainable development attitudes among young learners. Research highlights that early exposure to SDG-related concepts can significantly influence children's understanding of global challenges and future decision-making processes (Radha & Arumugam, 2023).

However, implementation of SDG-focused education faces substantial challenges in the Pakistani educational context. Studies have revealed significant gaps in curriculum design and pedagogical approaches concerning SDG integration. The existing educational framework demonstrates an inconsistent and fragmented approach to SDG education, with limited comprehensive integration of the 17 goals across different educational contexts (Sayed, Ahmed, & Mogliacci, 2018; Jamil, Mehmood & Aslam, 2024).

Ireland's National Strategy on Education for Sustainable Development provides a valuable framework, aiming to equip "learners with the relevant knowledge, key dispositions and skills and the values that will motivate and empower them throughout their lives... for a more sustainable future" (Conway, 2023). This approach aligns closely with the United Nations' vision for SDG 4.7, which emphasizes education for sustainable development and global citizenship (UNESCO, 2017).

The implementation of the Single National Curriculum (SNC) in Pakistan represents a significant attempt to address educational disparities and standardize curriculum content. However, Hanif (2023) indicates that while the curriculum shows promise in introducing SDG concepts, considerable gaps remain in comprehensive coverage, particularly in addressing interconnections between different SDGs in lower primary grades.

Comparative studies by international organizations have consistently emphasized the role of primary education in achieving the SDGs. These studies underscore the critical window of opportunity presented by early education in shaping attitudes and behaviors aligned with sustainable development principles (Ahmed, 2023). The research suggests that countries like Pakistan can significantly benefit from a more intentional and comprehensive approach to integrating SDGs in primary school curricula.

Recent research has begun to explore the psychological and social dimensions of SDG education in primary schools. Studies indicate that early exposure to SDG concepts can positively impact children's understanding of global challenges, social responsibility, and future decision-making processes (Ansari et al., 2023). This body of work suggests that curriculum design should not merely focus on knowledge transmission but also on developing emotional intelligence and social awareness related to SDG challenges. In the Pakistani context, recent studies have analyzed the integration of SDGs in educational materials, particularly through analysis of English textbooks in grades IX and X using Tavanti's (2023) framework for sustainable development (Jamil, Anwar, & Sohail, 2024; Jamil, Nosheen, et al., 2024).

Research Methodology

The approach employed in this study was a qualitative content analysis. This approach is chosen because it fits the study's aim, which identify the latent meanings and themes in the textual data (Hsieh & Shannon, 2005). Qualitative researchers analyzed data with all of its richness to form a picture as clear as possible (Bogdan & Biklen, 2007). Written results of analysis in a qualitative research may include quotations from the data to exemplify and validate the presentation. (Bogdan & Biklen, 2007; Flick, 2009). The General Knowledge curriculum for grades 1-3 was selected purposefully as this subject is compulsory and also it aims to develop national identity, refine responsible citizenship, and in general it instills with holistic knowledge.

Framework for Analysis of the Single National Curriculum

A framework serves as a construct of concepts derived from fundamental ideas, providing a foundation for analysis. (Levander & Mikkola, 2009; Bashir & Akbar, 2019). The analysis was conducted in two stages:

1. Concept Mapping Framework (CMF)
2. Dimensional Description Framework (DDF)

1. Concept Mapping Framework (CMF)

In the first stage, three themes related to the SDGs were derived from literature. (DiVito & Bohnsack, 2017; Bashir & Akbar, 2019). The framework categorized SDGs into three categories/pillars/themes:

- Social Sustainability (SS)
- Environmental Sustainability (ENS)
- Economic Sustainability (ES)

Each pillar included specific SDGs relevant to social, environmental, or economic development. This division of the SDG goals under a specific dimension is done accordingly as was already done by USA 2022, as follows.

Social	Economics	Environmental
<ul style="list-style-type: none"> • 1) Poverty, 2) Zero Hunger, 3) Good Health and Wellbeing, 4) Quality Education, 5) Gender Equality, 6) Clean water and sanitation, 7) Affordable and Clean energy, 11) Sustainable cities and communities, 16) Peace and justice 	<ul style="list-style-type: none"> • 8) Economic growth, Industry, 9) innovation and infrastructure, 10) Reduced inequalities 	<ul style="list-style-type: none"> • 12) Responsible consumption and production, 13) Climate action, 14) Life below water, 15) Life on land, 17) Partnership for the Goals.

Figure 1: Sustainable Development Goals Index Dashboard for the USA

In this stage of CMF content related to SDGs under these three headings will be enlisted after reading the textbooks of general knowledge. The CMF provided a systematic structure to identify SDG-related concepts in SNC content, objectives, and activities. The coding process was validated through expert peer review to ensure reliability.

2. Dimensional Description Framework (DDF)

The second stage focused on the depth and clarity of SDG-related concepts within the SNC. (Bashir, Amin & Amin, 2020). Content was classified into three levels of alignment based on the comprehensiveness of SDG integration:

- **Weak Alignment:** Brief mentions of SDG concepts (≤ 15 words), indicating superficial coverage.
- **Moderate Alignment:** Clear but limited descriptions (a few lines to a paragraph), addressing SDGs adequately but lacking depth.
- **Strong Alignment:** Detailed and thorough explanations spanning lessons or objectives, demonstrating full integration of SDG concepts.

The criteria for alignment were based on established methodologies and expert validation. Through CMF and DDF, this study systematically analyzed the SNC's content for its alignment with sustainability dimensions, emphasizing its potential to promote the SDGs in primary education. (Bashir, Amin & Amin, 2020).

Analysis of General Knowledge Textbook

Analysis of Text Book of General Knowledge (Grade 1st) on the Basis of CMF

Analysis of text book of G.K. for 1st grade was done to outline the aspects of SDG for first stage of analysis named as concept map framework. Text description with page no. related to the aspects of SDG are described below along with the page number of textbook:

- **CMF analysis of General Knowledge text book (Grade 1) for SDG theme of social sustainability:** A picture was found that represents a kid eating a balanced healthy food (nutrition). (p.10). A few sentences explain about healthy and nutritious food. It states, "*Fruits, vegetables, pulses, eggs and meat etc. are the part of healthy diet. This diet makes our body and mind healthy.*" (p.40) A sentence was found related to personal hygiene and disease prevention alongside i.e.; "I keep my hands clean. Washing my hands before and after eating food helps me safe from the germs. I take bath regularly to stay benign from ailments." (p.7). Few sentences were written on personal hygiene and disease prevention alongside in the book. (p.7, 9, 10 40). The lesson "Games and Rules" is about different games played and includes the basic rules to be followed while playing certain games. One of the sentences in it (p.19), describes the importance of games and its potential impact on our health.

The goal of gender equality was highlighted in a way that 'everyone either male or female both should take part in household chores. (p.2) Personal hygiene and disease prevention was described in two sentences i.e.; "I keep my hands clean. Washing my hands before and after eating food helps me to be safe from the germs. I take bath regularly to stay benign from ailments." (p.7) It is related to the SDG Good Health and wellbeing. A paragraph related to the SDG 'sustainable cities and communities' was added; 'of how a city is organized; and of how one can move from one city to another city or country. (p.33). Lesson 11, "Traffic Rules", explains about the different rules of traffic and crossing the road, such as walking by foot on road; using zebra crossing, travelling on a vehicle, etc. (p.35-36). These points were related to SDG Sustainable cities and communities and Peace and justice and reflect on the wellbeing of citizen.

- **CMF analysis of General Knowledge text book (Grade 1) for SDG theme of Economic Sustainability:** Different professions were introduced in the lesson "My School" e.g. teachers, gardener, scavenger, school staff, headmaster, etc. (p.30) A paragraph depicts a story told by the parents about the awareness of basic technologies and how they are different from the present era technologies. (p.17) Lesson 10, Means of transportation; tells and makes students aware about the basic technologies (vehicles). (p.32). Another paragraph highlights the basic infrastructure (i.e. importance of roads and buildings). (p.21) these concepts are near to SDG innovation and infrastructure.

Lesson No. 7 titled as "Holy places" focuses on diversity and inclusion. It explains the various religions under one country roof and about specific religious places of people. (p.23). There are also pictures in this lesson depicting different worship places of different sect's people. Such as Christians go to Church for worship, Hindus called their worship place 'Temple' and Sikh's worship place is called 'Gurduwara'. (p.24). A paragraph highlights the diversity and inclusion; teach students about various cultures so that they can live together with others, and help everyone and treat them fairly. (p.31) These concepts related to the SDG reduced inequalities.

- **CMF analysis of General Knowledge text book (Grade 1) for SDG theme of Environment Sustainability:** The concept of responsible consumption and not wasting of the resources is illustrated. It is stated that; "Food should neither be wasted nor be thrown down." (p.40). A characteristic feature of waste management, i.e. to dispose of the trash in dustbins, was also mentioned. (p.2) It is directly related to the SDG 'responsible consumption and production. A pictorial activity was found that distinguishes life (animals) on land and under water. Lesson 13, Plants and Animals, gives a general introduction of various plants and animals and their habitats. (p.41). Some sentences explained the biodiversity of animals, that includes their habitat. Next, there was an activity to be asked from students about the habit (ecosystem) of

different animals. (p.43, 44, 45, 46,47) This content is related to the SDG climate action and life below water.

Analysis of Text Book of General Knowledge (Grade 2nd) on the Basis of CMF

Analysis of text book of G.K. for 2nd grade was done to outline the aspects of Sustainability for first stage of analysis named as concept map framework. Text description and suggested activities related to the aspects of SDG are described below along with the page number of textbook:

CMF analysis of General Knowledge text book (Grade 2) for SDG theme of Social Sustainability

The whole lesson is about helping the poor Muslims by giving them Sadka-e-Fitrana on Eid to make them feel to be included in our happiness, which shows that we should help and support our community. (p.22) It is emphasized that meat of the slaughtered animal should be distributed among the relatives and the poor people. (p.23) The importance of plants in human life is highlighted. Following it, on the next page an activity is mentioned where students will do the gardening themselves with the help of their teachers. Further, the text gives us the idea about basic elements of gardening starting from getting to know the plant's parts, like flower, stem, roots, leaves. (p.43) Few lines further depict how the plants are the source of food to us. (p.44, 45, 46). In chapter 9, there was a concept related to different crops; how we get them and what we do further with it; i.e., of the wheat, cotton, sugarcane, cattle. (p.56, 57, 58, 59) These all highlighted the SDG of 'Zero Hunger'.

In chapter 2, "Village and City", there is a concept regarding the health and how the health facilities are far much better in cities than in village. (p.11) it is related to SDG 'Sustainable Cities and Communities'. The concept of women rights is highlighted in a sentence. (p.81) That is depicting on 'Gender Equality'. In chapter 6, "Water", few pictures and texts depicts a general idea about different water bodies like rain, river, sea, glacier, ponds etc. The chapter also give us an idea about how the water can be conserved, how water is used for drinking purpose, how they are cleaned, and how al the water bodies are not drinkable. (p.35, 36, 37, 38, 39). In chapter 10, text was found related to the importance of land resources for mankind, and about not wasting them. (p.62) This indicates the importance of water. Next, in the chapter, few points related to different kinds of water wastage was found. This can give an insight to the students as to what not to do in their lives to stop this wastage." (p.63).The SDG 'Clean Water and Sanitation' is described comprehensively.

There are other sources of heat and light also mentioned in the chapter such as wood, candle, gas, electricity, and from stones as in early ages. (p.68). Few sentences were found which relates to the idea about the importance of heat and light in our daily lives. (p.69, 70) This text is related to SDG 'Affordable and Clean Energy'. Few sentences were found which strongly highlight the element of equality. "We all are equal in terms of rights. Regardless of each other's cultural and religious differences, we should respect each other." (p.81). Chapter 16 gives us a message about fairness, equality and justice through a story of animals; where a lion as a king showed the principle of justice by being unbiased with his friendship with elephant. (p.91). "It is the duty of the Government to protect its citizens and to give the right to every citizen to live with freedom. Their religious monuments and traditions should be regarded.", this can be an insight that will resolve conflicts and will contribute to a peaceful society where everyone, irrespective of their religion is included. (p.19) Similarly, following it, there is a table in which the rights and duties of a person are included that also includes elements of various other SDGs, and that will wholly lead to a sustainable and productive society. It includes, the key concepts of climate (SDG 13), education (SDG 4), health (SDG 3), clean water (SDG 6), electricity and gas consumption (SDG 7), professions (SDG 8), helping the needy (SDG 1), respecting elders (SDG 16), following the rules (SDG 16), and responsible use of resources (SDG 12); these all collectively empowers various dimensions of sustainability. (p.19). Other sentences that indicate a few of the factors for conflict resolutions and peaceful

society were also found. (p.81). Chapter 15 goes with a story of two girls where one was bullied; and another girl showed an act of kindness that followed the friendship of both. (p.85) This act illustrates how a simple action can turn a conflicting environment into a peaceful society. SDG 16 (of helping each other in a community). There are few other points mentioned that we need conflict-free and peaceful-sustainable society. It is important to follow the rules and regulations. (p.82, 86) In chapter 12, there were found two short stories of Amna and Maryam; Ahmed and Ali, who helped each other in times; like in homework and during playtime, respectively, and the problems of them were solved. (p.72, 73).

CMF analysis of General Knowledge text book (Grade 1) for SDG theme of economic sustainability

Different kinds of jobs or professions are introduced through pictures in terms of villagers and city dwellers, such as Doctor, Tailor, Barber, Lumberman, Motor mechanic, and Cobbler. (p.14). In Chapter 13, "Professions", we found text related to different jobs. (p. 76, 77) this text highlighted the SDGs 'Economic Growth, Industry'. The text, in villages, there are usually wide open and mud houses. In cities, the buildings are high and concrete' shows the basic infrastructural difference between cities and villages. (p.11, 12, 13). There is an introduction (through pictures) about various buildings and their specifications, such as, hospital for the treatment, school for education, police Station for stopping crimes, Court for justice, and Roads for travelling. (p.18) This text highlighted the SDG 'Innovation and Infrastructure'

The text: "The green color in the flag represents Muslims and the white color represents the people from other religions.", shows the inclusion and diversification element of sustainability that how people from all other religions are also included in a Muslim country with their own rights and freedom. (p.3) In Chapter 4, "Religious Festivals", texts related to different festivals, people celebrating their festivals and being a part of others happiness was found; specifically talking about Muslims celebrating their Eid twice a year. Along with text related to the diverse kind of people or religions dwelling in one nation, yet being a part of the nation was also found. (SDG Reduced Inequalities) (p.21, 22, 23, 24)

CMF analysis of General Knowledge text book (Grade 1) for SDG theme of environment sustainability

In chapter "Village and City", highlights very basic difference in the climate/ weather. It is stated that in villages, the environment is cleaner than in cities due to the industries and traffic hustle-bustle. (p.11). Few sentences related to the climate being affected positively due to the plants and trees were found, and how it can be disturbed due to different factors. (p.47) This is directly related to SDGs 'Life on land, & Climate action'. In chapter 8, "animals", an introduction to the basic marine life animals was found, i.e., "There are few animals who live in the water." (p.49) There were also pictures found of few marine animals such as of fish, starfish, octopus. (p.50) (SDG; Life below Water)

A concept related to the presence of living and non-living things on land was found, that gives us a basic introduction of the things who habitat on land such as human beings, plants, animals, along with that mountain, crops, etc., as well. (p.26, 49, 50, 51 52). In chapter 8, "animals", an introduction to the basic animals who live on dry area was found. The text related to the concept about the importance of trees and how deforestation can affect so much. (p.46). Few points related to the concept of deforestation was found, as, "to grow more and more trees, to keep the jungles protected from the fire, to take care of trees and plants, to not cut the trees without any cause". (p.47) An activity was also found related to it where the students will grow a plant and water them often and protect them well. Further there was a paragraph which described the importance of wood and trees, and deforestation, side by side. (p. 64, 65) (SDG; Life on Land)

Analysis of Text Book of General Knowledge (Grade 3rd) on the Basis of CMF

Analysis of text book of G.K. for 3rd grade was done to outline the aspects of Sustainability for first stage of analysis named as concept map framework. Text description and suggested

activities related to the aspects of sustainability are described below along with the page number of textbook:

CMF analysis of General Knowledge text book (Grade 1) for SDG theme of social sustainability

The students will get the information about different varieties of food and their specific significance for balanced nutrition. (p. 50, 51) In chapter 8, along with food and nutrition different factors for healthy living were also mentioned; that includes cleanliness, proper sleep, and exercise. (p.52) In chapter 9 it is stated that there is lack of health facilities. (p.59) Another point was found next related to this. "Do not play near to the water, electricity lines and wirings." (p. 106). (SDG; Good Health and Wellbeing) In chapter 9th it is also stated that standard education is the basic right of every citizen. This facility is provided to the citizens of developed countries. Only that country develops whose people are educated. (SDG; Quality Education) (p.59) Shortage of clean water and the reasons for this are also highlighted. Students are further guided with the idea about saving and effective usage of water. (p. 58, 59) (SDG; Clean Water and Sanitation)

In Chapter 4, few sentences were found that gives us the idea about how Quaid-e-Azam, our great leader wanted Pakistan to be strong, and peaceful nation. (p.20). In Chapter 10, the text related to the introduction about common disagreements, the causes of disagreements and resolving those disagreements and conflicts were found. (p.64-68). The SDG goals call for the strategies that can be implemented in order to resolve those disagreements or conflicts. (see the spider map on page.67). (SDG; Peace and Justice) While living in a community, we help each other. That means we are quite dependent on each other as well. (p.9). Also, this can be improvised in a way to tell students how this interdependence can increase our economy, and even help the poor farmers. (SDG Sustainable Cities and Communities, SDG; Poverty).

CMF analysis of General Knowledge text book (Grade 1) for SDG theme of economic sustainability

Few professions were introduced under the section of human resources in chapter 2, such as of farmer, carpenter, police and doctor. (p.7). We can get an idea about how we manage the money by spending and saving that can also yield country's economy, through the general concept of buyer and seller. (p.8) This also helps in regulation from money from top to bottom. (SDG; Economic Growth) In chapter 15, the text related to the basic introduction of different inventions man has made by his creativity and problem solving technique for his betterment and ease. Further different types of simple machines were also discussed, including lever, wheel and axle. inclined plane, pulley, wedge, and screw. (p.96, 98, 99) (SDG; Innovation and Infrastructure)

CMF analysis of General Knowledge text book (Grade 1) for SDG theme of Environmental Sustainability

Chapter 2 outlines different types of resources that are essential for living; that includes natural resources such as; water, air, land, forests, mountains etc., human resources such as; farmers, carpenter, police, doctors etc., and capital resources such as; dam, cars, industries, machinery etc. (p. 6,7). A small activity in a yellow box is mentioned where students are asked to make a chart followed by how they can save electricity, water and gas at their homes. (p.13). Text was found related to the sustainable use of natural resources and how we can conserve it. (p.14) A text that illustrates the idea of human beings deteriorating the natural environment through their direct or indirect actions, was found. (p.12). A very basic introduction about pollution was provided. (p.13). (SDG; Responsible Consumption and Production, Climate Action).

The concept related to the ecosystem and adaptation of living beings was found. It illustrates how different plants, animals and other living things live together making an ecosystem; and how due to the certain factors, changes occur in the ecosystem and the animals and plants with time they get adapted to it. (p.38) This concept was further explained through different

examples of animals and plants. (see p.39, 40, 41). An example of the Amazon forest was highlighted in the box which was declined by 17% due to the human activities in the last 50 years. (p.42). A paragraph was found related to conserving the natural environment. (p.14). Few sentences were found in the last chapter about the natural and human causes of disasters. This will give students the idea how man is contributing in climate change and how climate generally takes up some action. (p.107) (SDG; Life on land, Climate Action). A text related to the different types of water habitats was found that includes Fresh water, marine water, coastal habitat and polar habitat. (p. 34, 35, 36). Two factors were listed regarding human activities affecting the water habitat. (p.43) (SDG; Life below Water)

A paragraph related to the endangered animals and extinct animals, steps to protect endangered animals, and their habitat was found. (p. 15, 16). In chapter 6, we found the text related to the changes in living things from birth to onwards, that also includes plants, birds etc. in further pages. This gives students an idea about their cycle, development or the changes they go through specifically. (p.27, 28, 29). A concept related to the nourishment of plants through sunlight was found. (p.31). In chapter 7, a paragraph related to the habitat and different types of habitats was found. (p.32, 33, 34). In chapter 8, a description related to the different groups of animals was found. (p.48). A brief description related to the importance of trees or plants was found (p. 33); in continuation with the statement that plants make food by getting energy from the sun. "All other living beings are dependent on plants for their survival." (p.31). A sentence related to the effects of human activity on land habitat was found. (p. 42). "The use of Chemical fertilizers and pesticides medicines has not only effected plants and animals but also humans." (p.42) (SDG; Life on Land)

Analysis of Curriculum of General knowledge on the Basis of Dimensional Description Framework (DDF)

This section will determine the quality and depth of description according to the three dimensions i.e. "strong, moderate and weak" alignment, in the textbooks of General Knowledge for grade 1st, 2nd and 3rd.

1. Social Sustainability

Grade I: Moderate Alignment: Personal hygiene and healthy nutrition are explicitly covered with examples and pictorial representations. Gender equality is mentioned briefly, and physical activity is discussed through games promoting health and harmony.

Grade II: Strong Alignment: The content emphasizes helping the community through examples like distributing food on Eid, Milad-ul-Nabi, and other occasions. Gardening is introduced with an activity where students engage with plant care. Concepts of fairness, equality, and respect are highlighted through stories and examples, including respecting different religions and their worship places. Health and hygiene practices like safe drinking water and disease prevention are addressed in detail.

Grade III: Strong Alignment: The content provides extensive coverage of balanced diets, healthy living, and hygiene practices with detailed examples of food groups and their nutritional value. Personal hygiene is reinforced through practical steps (e.g., washing hands, brushing teeth). Equality, fairness, and conflict resolution strategies are highlighted through stories and moral lessons. The role of interdependence in community building and professions is explained. **Environmental Sustainability**

Grade I: Weak Alignment: Basic mentions of biodiversity, conservation, and waste management are included but lack depth and practical engagement. The focus on plants, animals, and their habitats is introductory. (p.10, p.49).

Grade II: Moderate Alignment: Conservation practices are promoted through examples of sustainable use of water and natural resources. Activities like planting trees and protecting forests are mentioned, but deeper exploration is limited. Basic concepts of biodiversity and ecosystems, including animals' habitats and the role of plants in the environment, are moderately developed.

Grade III: Strong Alignment: Environmental concepts, such as conservation, biodiversity, and sustainable resource use, are discussed extensively. Pollution (air, water, and land), deforestation, and climate change are explained with causes and solutions. The role of forests, plants, and animals in ecosystems is detailed, with activities like planting trees and observing plant growth cycles. Endangered species are also introduced with steps for their protection.

Economic Sustainability

Grade I: Weak Alignment: Professions like teachers and gardeners and basic infrastructure concepts are briefly mentioned. Economic roles and community interdependence are introduced but not developed further.

Grade II: Moderate Alignment: Professions and their importance to society are described in detail, highlighting how crops are converted into usable products. Basic infrastructure like roads, markets, and villages versus cities are explained, introducing students to economic interdependence. However, the content lacks deeper discussion on sustainable economic practices.

Grade III: Moderate Alignment: The curriculum introduces professions and the concept of economic interdependence (buyer-seller relationships). Human resource contributions and the importance of alternative resource use during scarcity are moderately addressed. The role of sustainable practices in preventing resource depletion is introduced but not explored in depth.

Table 1 Alignment of SDG with General Knowledge text books at 1-3 grade

Grade	Social Sustainability	Environmental Sustainability	Economic Sustainability
I	Moderate Alignment	Weak Alignment	Weak Alignment
II	Strong Alignment	Strong Alignment	Moderate Alignment
III	Strong Alignment	Strong Alignment	Moderate Alignment

Findings

Through analysis, it was found that the curriculum for General Knowledge shows a progressive improvement in the depth of SDG-related content from Grade 1 to Grade 3.

Grade I General Knowledge Textbook

1. Social Sustainability

The Grade 1 textbook highlights personal hygiene and nutrition with examples and pictorial representations. Concepts such as healthy eating (e.g., balanced diets), cleanliness practices (e.g., handwashing), and teamwork through games are emphasized. Gender equality is mentioned briefly through examples of shared responsibilities in household chores. Physical activity and harmony through sports are subtly integrated. These elements contribute to the development of responsible citizenship.

2. Environmental Sustainability

Environmental awareness is introduced through lessons on plants, animals, and their habitats, but coverage is basic. Waste management is briefly mentioned (e.g., disposing of trash properly). Conservation is encouraged through care for plants and a general mention of civic sense, though practical engagement is limited.

3. Economic Sustainability

Professions, such as teaching and gardening, are introduced to emphasize community interdependence. Infrastructure concepts like roads and markets are briefly mentioned, but sustainable economic practices are not explored in detail.

Grade II General Knowledge Textbook

1. Social Sustainability

The Grade 2 textbook emphasizes community support through acts like distributing food on Eid and Milad-ul-Nabi. Concepts of fairness, equality, and respect for different religions and their worship places are highlighted. Health and hygiene practices, including safe drinking water and disease prevention, are addressed in detail. Activities such as gardening engage students in understanding the importance of plants for the community.

2. Environmental Sustainability

Conservation practices are promoted, including sustainable water use and protecting forests. Biodiversity and ecosystems are introduced through lessons on habitats and the roles of plants and animals. Activities like planting trees reinforce environmental awareness, though deeper exploration is still limited.

3. Economic Sustainability

Professions and their importance to society, such as farming and teaching, are described with examples of economic interdependence. Infrastructure like roads and urban planning is explained in detail. The role of resources in creating products (e.g., crops to flour) is introduced but lacks a focus on sustainable practices.

Grade III General Knowledge Textbook

1. Social Sustainability

The Grade 3 textbook extensively covers balanced diets, healthy living, and hygiene practices. It introduces conflict resolution strategies and the principles of community interdependence through stories and examples. The curriculum also emphasizes equality and fairness, preparing students to engage in a cohesive society.

2. Environmental Sustainability

Detailed discussions include conservation, biodiversity, and pollution (air, water, and land). The textbook explains the causes and solutions for deforestation and climate change. Activities like observing plant growth cycles and learning about endangered species enhance practical engagement with environmental sustainability.

3. Economic Sustainability

Professions and economic roles are well-integrated, highlighting community interdependence. Concepts of resource scarcity and alternative use (e.g., switching to cycles when petrol is expensive) are introduced. The curriculum also connects sustainability to resource conservation and its role in preventing economic crises, such as energy shortages.

Conclusion

This paper did a critical lens analysis of the incorporation of sustainable development goals (SDGs) in the General Knowledge curriculum for Grades 1-3 in SNC in Pakistan. The study shows that there is an increase in the content of SDG from the Lower grade level up to the Upper grade level, more focused on the domain of social, environmental, and economic. However, while the curriculum demonstrates commendable strides in promoting sustainability education, significant gaps remain in achieving comprehensive coverage and depth.

The fundamental ideas of social sustainability and its configuration like personal cleanliness, equity, and common welfare facilities are as well depicted at all grade levels. In Grade 3, students learn about pollution, deforestation, climate change, and actual solutions such as tree planting. Economical aspect is only moderately taken with key focus placed on professions, interdependence and scarcity resource but less emphasis is placed on sustainable economic practices. The results support the idea of the SNC as a progressive model for educational change yet they also suggest for further systemic, extensive, and applied study of focused primary education incorporating the SDGs.

Discussion

The incorporation of SDG principles into the SNC aligns with Pakistan's commitment to the global agenda for sustainable development. Early exposure to sustainability concepts fosters

critical awareness and equips students with skills to address complex global challenges, as noted in global literature (UNESCO, 2017; Radha & Arumugam, 2023). The SNC takes an important step toward embedding sustainability literacy by introducing foundational concepts of health, equality, conservation, and economic interdependence.

However, the study identifies key challenges. First, while social sustainability receives strong emphasis, environmental and economic sustainability content remains inconsistent and fragmented, as also observed in previous research (Hanif, 2023; Sayed et al., 2018). For example, environmental practices such as waste management and water conservation lack practical activities to deepen understanding. Similarly, economic sustainability concepts are insufficiently linked to real-world contexts, missing opportunities to develop critical economic thinking.

Moreover, the curriculum's alignment with SDG dimensions often prioritizes superficial coverage over comprehensive engagement. For instance, while pollution and deforestation are mentioned, their connections to students' immediate environments and actionable solutions are rarely explored in depth. This reflects a broader gap between curriculum intent and pedagogical practice, as noted by Vare & Scott (2007) and Laurie et al. (2016).

Recommendations

1. Introduce experiential learning activities in environmental education, such as waste segregation projects, recycling initiatives, and biodiversity observations to promote active engagement with sustainability concepts.
2. Enhance economic sustainability content by including age-appropriate lessons on sustainable consumption, financial literacy, and the use of alternative resources during scarcity.
3. Train teachers to adopt innovative pedagogical strategies, such as project-based learning and critical thinking exercises, for effectively teaching sustainability concepts.
4. Include interactive classroom activities like role-playing, storytelling, and group discussions to foster a deeper understanding of social sustainability themes, including equality, fairness, and community interdependence.
5. Foster collaboration between educators, environmental experts, and community leaders to integrate practical and localized sustainability content into the curriculum.
6. Partner with international organizations, such as UNESCO, to align the curriculum with global best practices for Education for Sustainable Development (ESD).

References

- Abid, N., Ikram, M., Wu, J., & Ferasso, M. (2021). Towards environmental sustainability: exploring the nexus among ISO 14001, governance indicators and green economy in Pakistan. *Sustainable Production and Consumption*, 27, 653-666.
- Ahmad, N., Troconis, M., Ibahrine, M., Armour, R., Tait, V., Reedy, K., Dale, V., Tasler, N., & Inzolia, Y. (2023). Codesigns education for sustainable development: A framework for embedding education for sustainable development in curriculum design. *Sustainability*, 15(23), 16460.
- Amin, S., Amin, H., & Jabeen, T. (2024). *Journal of Education and Social Studies*.
- Ansari, A., Mahmood, S., Khan, K. I., & Asghar, F. (2023). Fostering green creativity through environmental values: The role of intrinsic motivation, environmental identity and green HR practices. *Pakistan Journal of Commerce and Social Sciences (PJCSS)*, 17(2), 370-393.
- Arumugam, J., & Radha, L. (2023). Significant Factors of Job Satisfaction Among the Library Professionals in Tamilnadu: A Study.
- Bashir, S., & Akbar, R. A. (2019). Readiness of curriculum for peace education; Analysis of Urdu. *Journal of Elementary Education*, 29(1), 1-16.
- Bashir, S., Amin, M., & Amin, H. (2020). Tracing the standards of peace education: Reflections from English language curriculum. *sjesr*, 3(2), 360-369.
- Bogdan, R., & Biklen, S. K. (2007). *Pearson Qualitative Research for Education: An Introduction to Theories and Methods*. New York: Pearson.
- Conway, B. (2023). Education for sustainable development in design and technology education in Ireland: an exploration of teacher perception and practice to inform a framework for action (Doctoral dissertation, University of Limerick).
- Dhindsa, T. A. (2016). Education for sustainable development: challenges in Pakistan. In *Reorienting educational efforts for sustainable development: Experiences from South Asia* (pp. 165-178). Dordrecht: Springer Netherlands.
- DiVito, L., & Bohnsack, R. (2017). Entrepreneurial orientation and its effect on sustainability decision tradeoffs: The case of sustainable fashion firms. *Journal of Business Venturing*, 32(5), 569–587.
- Fischer, D., Brettel, M., & Mauer, R. (2020). The three dimensions of sustainability: A delicate balancing act for entrepreneurs made more complex by stakeholder expectations. *Journal of Business Ethics*, 163, 87-106.
- Flick, U. (2009). *An Introduction to Qualitative Research*. (4th ed.) India: Sage publication PvtLtd.
- Hanif, S. (2023). Single national curriculum: promise of inclusion, global citizenship education and the empirical reality. *Globalisation, Societies and Education*, 1-16.
- Hsieh, H. F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative health research*, 15(9), 1277-1288.
- <https://ncc.gov.pk/SiteImage/Downloads/%5BFinal%5D%20SNC%20LanguageExtended%20Range.pdf>
- [https://ncc.gov.pk/SiteImage/Misc/files/\(link\)%20SNC%20-%20General%20Knowledge%20-%20Required%20Standards%20and%20SLOs.pdf](https://ncc.gov.pk/SiteImage/Misc/files/(link)%20SNC%20-%20General%20Knowledge%20-%20Required%20Standards%20and%20SLOs.pdf)
- <https://pctb.punjab.gov.pk/E-Books>
- <https://www.mofept.gov.pk/SiteImage/Misc/files/SNC%20General%20Knowledge%201-3.pdf>
- <https://www.taleem360.com/class-1-general-knowledge-snc-text-book-by-pctb-vlw>
- Imperatives, S. (1987). Report of the World Commission on Environment and Development: Our common future. Accessed Feb, 10(42,427).
- Jamil, M., Anwar, F., & Sohail, H. (2024). Unlocking the sustainability: Evaluating the sustainability education in English textbook grade IX. *Journal of Social Sciences Development*, 3(2), 1-13.

- Jamil, M., Aslam, M., & Ali, S. (2024). Single national curriculum (SNC) for social studies (2020): Document analysis for development of critical thinking skills at the primary level. *Pakistan Journal of Law, Analysis and Wisdom*, 3(2), 67-74.
- Jamil, M., Khalil, F., & Noorani, Z. (2024). Education for sustainable development: An analysis of English textbook grade-V. *Journal of Social Research Development*, 5(2), 1-13.
- Jamil, M., Mehmood, W., & Aslam, A. (2024). Sustainability education in Pakistan: A qualitative content analysis of the 10th grade Pakistan Studies textbook. *Voyage Journal of Educational Studies*, 4(2), 80-95.
- Kagawa, F., & Selby, D. (Eds.). (2010). *Education and climate change: Living and learning in interesting times* (Vol. 30). Routledge.
- Kalsoom, Q., & Khanam, A. (2017). Inquiry into sustainability issues by preservice teachers: A pedagogy to enhance sustainability consciousness. *Journal of cleaner production*, 164, 1301-1311.
- Khan, K. (2021). *Leadership Challenges in Creating Inclusive and Equitable Quality Education for All: The Possibilities in Public Schools in Chitral, Pakistan* (Doctoral dissertation, Flinders University, College of Education, Psychology and Social Work.)
- Khushik, F., & Diemer, A. (2018). Critical analysis of education policies in Pakistan: A sustainable development perspective. *Social Science Learning Education Journal*, 3(09), 01-16.
- Læssøe, J. (2010). Education for sustainable development, participation and socio-cultural change. *Environmental Education Research*, 16(1), 39-57.
- Laurie, R., Nonoyama-Tarumi, Y., Mckeown, R., & Hopkins, C. (2016). Contributions of education for sustainable development (ESD) to quality education: A synthesis of research. *Journal of Education for Sustainable development*, 10(2), 226-242.
- Lee, B. X., Kjaerulf, F., Turner, S., Cohen, L., Donnelly, P. D., Muggah, R., ... & Gilligan, J. (2016). Transforming our world: implementing the 2030 agenda through sustainable development goal indicators. *Journal of public health policy*, 37, 13-31.
- Levander, L. M. & Mikkola, M. (2009). Core Curriculum Analysis: A Tool for Educational Design. *The Journal of Agricultural Education and Extension*. 15:3, 275-286,
- Lim, C. K., Haufiku, M. S., Tan, K. L., Farid Ahmed, M., & Ng, T. F. (2022). Systematic review of education sustainable development in higher education institutions. *Sustainability*, 14(20), 13241.
- Mian, S. H., Salah, B., Ameen, W., Moiduddin, K., & Alkhalefah, H. (2020). Adapting universities for sustainability education in industry 4.0: Channel of challenges and opportunities. *Sustainability*, 12(15), 6100.
- Michelsen, G., & Wells, P. J. (2017). *A Decade of progress on education for sustainable development: reflections from the UNESCO Chairs Programme*. UNESCO Publishing.
- Radha, L., & Arumugam, J. (2023). Integrating the Sustainable Development Goals (SDGs) in the Curriculum and Strengthening Teacher Training Programs to Align with NEP 2020. *Shanlax International Journal of Education*, 11(4), 63-68.
- Rieckmann, M. (2017). *Education for sustainable development goals: Learning objectives*. UNESCO publishing.
- Rieckmann, M. (2018). Learning to transform the world: Key competencies in Education for Sustainable Development. *Issues and trends in education for sustainable development*, 39(1), 39-59.
- Rockström, J., Williams, J., Daily, G., Noble, A., Matthews, N., Gordon, L., ... & Smith, J. (2017). Sustainable intensification of agriculture for human prosperity and global sustainability. *Ambio*, 46, 4-17.
- Sachs, J. D. (2015). Achieving the sustainable development goals. *Journal of International Business Ethics*, 8(2), 53-62.
- Sayed, Y., Ahmed, R., & Mogliacci, R. (2018). The 2030 global education agenda and teachers, teaching and teacher education.

- Tavanti, M. (2023). *Sustainability Ethics: Common Good Values for a Better World*. Ethics International Press.
- United Nations Educational, Scientific and Cultural Organization (2017). *Education for Sustainable Development Goals: Learning objectives*. Paris: UNESCO.
- Vare, P., & Scott, W. (2007). Learning for a change: Exploring the relationship between education and sustainable development. *Journal of Education for Sustainable Development*, 1(2), 191-198.
- Wals, A. E. (2009). Review of contexts and structures for education for sustainable development, 2009.
- Zaheer, Z. (2022). Global Citizenship in a National Curriculum: The Case of Pakistan's Single National Curriculum. In *Educational Response, Inclusion and Empowerment for SDGs in Emerging Economies: How do education systems contribute to raising global citizens?* (pp. 103-128). Cham: Springer International Publishing.