

From Social Intelligence to Environmental Stewardship Rethinking Secondary Education for Sustainability

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Abstract—Growing environmental problems such as climate change, pollution, and biodiversity loss highlight the need to prepare students for a more sustainable future. Education should therefore focus not only on environmental knowledge but also on developing the skills, values, and attitudes that encourage responsible action. Social intelligence, including empathy, communication, cooperation, and ethical behaviour, can play an important role in promoting environmental responsibility.

This thematic paper explores the link between social intelligence and environmental stewardship among secondary school students. It explains how schools can promote these qualities through curriculum, teaching, student activities, and community engagement. The paper concludes that developing social intelligence can strengthen environmental stewardship and help shape responsible, environmentally conscious citizens.

Index Terms—Social Intelligence, Environmental Stewardship, Secondary Education, Sustainability, Education for Sustainable Development, Environmental Citizenship

I. INTRODUCTION

We are living in a time when environmental problems are becoming more serious and harder to ignore. Issues like climate change, loss of biodiversity, pollution, and the overuse of natural resources are affecting both nature and human life. Solving these challenges is not only about science and technology; it also depends on how people think, behave, and respond to the environment around them.

Education has an important role in shaping this response. In particular, secondary school education is a key stage because it is during adolescence that students begin to form their core values, habits, and

social attitudes. Today, education for sustainability is not just about giving students information about the environment, but also about helping them develop the skills and attitudes needed to take responsible action.

In this context, social intelligence becomes very important. It refers to the ability to understand others, communicate well, cooperate, and maintain healthy relationships. Students who develop strong social intelligence are usually more empathetic, open to different viewpoints, and willing to work with others to solve problems. These qualities naturally connect with environmental stewardship, which is about caring for nature, sharing responsibility, and working together to protect the environment.

This paper explores how social intelligence and environmental stewardship are connected and explains how strengthening social intelligence in secondary education can help develop students who are more responsible toward both society and the environment.

II. OBJECTIVES

1. To explore the meaning and important dimensions of social intelligence.
2. To understand the role and relevance of environmental stewardship in secondary education.
3. To examine how social intelligence can contribute to developing environmental responsibility among students.
4. To identify teaching and learning approaches that encourage both social skills and sustainable practices.

5. To highlight possible directions for curriculum improvement, teacher development, and further research.

III. METHODOLOGY

This paper adopts a thematic and conceptual review approach. It synthesises scholarly literature on social intelligence, environmental stewardship, environmental education, and education for sustainable development. Rather than presenting empirical findings, it develops an integrated framework by analysing existing theories, research findings, and educational perspectives. The discussion aims to identify conceptual relationships and practical implications for secondary education.

IV. CONCEPTUAL FOUNDATIONS OF SOCIAL INTELLIGENCE

4.1 Understanding Social Intelligence

Social intelligence refers to the ability to understand others, communicate effectively, build relationships, and respond appropriately in social situations. It includes empathy, cooperation, interpersonal skills, and ethical behaviour. Introduced by Edward L. Thorndike, the concept was later expanded by scholars such as Howard Gardner and Daniel Goleman. Today, social intelligence is viewed as a combination of cognitive, emotional, and social skills that help individuals interact positively and contribute to society.

4.2 Dimensions of Social Intelligence

Social intelligence includes several interconnected skills that help individuals understand and interact positively with others. The major dimensions are:

Social Awareness: The ability to understand others' feelings, viewpoints, and needs. It helps students recognise how their actions influence people and the community.

Empathy: The ability to understand and respect the experiences of others. It encourages compassion, inclusion, and care for both people and the environment.

Effective Communication: The ability to express ideas clearly, listen actively, and share opinions respectfully. It supports teamwork and collective problem-solving.

Cooperation and Teamwork: The ability to work with others towards common goals. This is important for group activities, environmental projects, and community initiatives.

Conflict Resolution: The ability to handle differences of opinion peacefully and find solutions through discussion and mutual understanding.

Ethical Decision-Making: The ability to make responsible choices by considering the impact of actions on society and the environment.

4.3 Social Intelligence in Secondary Education

Adolescence is an important stage when students develop their identity, relationships, values, and social skills. Secondary schools provide a suitable environment for nurturing social intelligence through group learning, peer interactions, leadership opportunities, community activities, and extracurricular programmes. Activities such as discussions, cooperative learning, service projects, environmental clubs, and student councils help students develop communication, empathy, teamwork, and responsible decision-making skills.

In today's world, academic knowledge alone is not enough to face complex social and environmental challenges. Social intelligence enables students to work with others, participate responsibly in society, and contribute to sustainable development.

V. TRANSITION TO ENVIRONMENTAL STEWARDSHIP

The skills developed through social intelligence also shape how students care for the environment. Qualities such as empathy, cooperation, effective communication, and a sense of responsibility encourage students to adopt environmentally friendly behaviours and take part in conservation activities. Therefore, understanding environmental stewardship is essential for exploring how secondary education can prepare students for a more sustainable future.

5.1 Understanding Environmental Stewardship

Environmental stewardship is the responsibility of individuals and communities to protect and use natural resources wisely so that they are preserved for both present and future generations. It goes beyond simply being aware of environmental issues by encouraging people to take active steps to protect nature and promote sustainable living.

In education, environmental stewardship helps students develop the knowledge, values, attitudes, and behaviours needed to care for the environment. It encourages them to understand the close relationship between people and nature and to make responsible decisions that support environmental sustainability.

5.2 Evolution of Environmental Stewardship in Education

The idea of environmental stewardship has grown along with environmental awareness and changes in education. Initially, environmental education mainly focused on teaching students about nature and conservation. Over time, educators realised that knowledge alone was not enough to encourage responsible environmental behaviour. As a result, greater importance was given to environmental ethics, community participation, and sustainable living.

With the introduction of Education for Sustainable Development (ESD), environmental education expanded to include social, economic, and environmental dimensions of sustainability. Today, it aims to develop skills such as critical thinking, collaboration, ethical decision-making, and responsible action, enabling students to apply their environmental knowledge in everyday life.

5.3 Principles of Environmental Stewardship

Environmental stewardship is guided by a few key principles:

- **Responsibility:** Taking personal and shared responsibility for protecting the environment.
- **Sustainability:** Using natural resources wisely to meet present needs without affecting future generations.
- **Participation:** Working together with schools, families, and communities in environmental activities.
- **Respect for Nature:** Conserving biodiversity and protecting ecosystems.
- **Ethical Values:** Showing care, fairness, and respect for all forms of life.

These principles encourage students to become responsible and environmentally conscious citizens.

5.4 Role of Secondary Education

Secondary school is an important stage for developing environmental responsibility, as students begin to form lasting values and behaviours during

adolescence. Schools can promote environmental stewardship through classroom learning, projects, eco-clubs, school gardens, conservation activities, and community programmes. These experiences help students develop responsibility, teamwork, leadership, and a lifelong commitment to protecting the environment.

5.5 Environmental Citizenship:

Environmental stewardship leads to environmental citizenship, where students make informed decisions and actively participate in protecting the environment. It involves responsibility, ethical values, cooperation, and active participation in solving environmental problems. By encouraging critical thinking, collaboration, and community involvement, schools can prepare students to become responsible citizens who contribute to a sustainable future.

5.6 Global Perspectives on Environmental Stewardship

Around the world, sustainability has become an important goal of education. International initiatives encourage schools to help students develop the knowledge, skills, values, and attitudes needed to protect the environment and contribute to sustainable development through active participation and responsible action.

5.7 Challenges in Promoting Environmental Stewardship

Promoting environmental stewardship in schools faces several challenges, including overloaded curricula, limited teacher preparation, lack of resources, and insufficient opportunities for practical environmental learning. Addressing these challenges requires supportive policies, teacher training, and active collaboration between schools and communities.

5.8 Linking Environmental Stewardship with Social Intelligence

Environmental stewardship depends not only on environmental knowledge but also on social skills. Qualities such as empathy, communication, cooperation, and ethical responsibility help students work together to solve environmental problems. Therefore, developing social intelligence can strengthen environmental stewardship and encourage

students to become active and responsible citizens committed to sustainability.

VI. THEORETICAL PERSPECTIVES LINKING SOCIAL INTELLIGENCE AND ENVIRONMENTAL STEWARDSHIP

The link between social intelligence and environmental stewardship can be explained through several educational and psychological theories. Together, these theories show that social skills, ethical values, and collaborative learning help students develop responsible environmental behaviour.

6.1 Thorndike's Theory of Social Intelligence: Edward L. Thorndike described social intelligence as the ability to understand and interact effectively with others. Since environmental protection requires teamwork and community participation, students with strong social intelligence are more likely to communicate, cooperate, and contribute to environmental conservation.

6.2 Gardner's Theory of Multiple Intelligences: Howard Gardner identified interpersonal intelligence as the ability to understand and work well with others. Students with this ability often show empathy, leadership, and teamwork, making them more active in environmental projects and sustainability programmes.

6.3 Bandura's Social Cognitive Theory: Albert Bandura explained that people learn by observing others. In schools, teachers, parents, and peers act as role models. When students see positive environmental behaviours, they are more likely to adopt similar practices. Social intelligence strengthens this learning through interaction and cooperation.

6.4 Vygotsky's Sociocultural Theory: Lev Vygotsky believed that learning happens through social interaction. Group discussions, environmental projects, and community activities help students learn from one another while developing teamwork and environmental responsibility.

6.5 Theory of Planned Behaviour: According to the Theory of Planned Behaviour, people's actions are influenced by their attitudes, social expectations, and confidence in their ability to act. Students with strong

social intelligence are better able to encourage others, follow positive social norms, and participate in environmentally responsible behaviour.

6.6 Implications of the Theoretical Framework: The theories discussed suggest that environmental stewardship is both a social and environmental responsibility. Therefore, schools should go beyond teaching environmental facts and focus on developing empathy, communication, teamwork, ethical values, and a sense of responsibility. Integrating these skills into classroom activities and community programmes can help students become active and environmentally responsible citizens.

VII. SOCIAL INTELLIGENCE AS A DRIVER OF ENVIRONMENTAL STEWARDSHIP: EVIDENCE FROM CONTEMPORARY LITERATURE

Recent studies show that environmental knowledge alone is not enough to encourage responsible environmental behaviour. Social skills, emotional understanding, and ethical values also play an important role. This highlights social intelligence as a key factor in promoting environmental stewardship among secondary school students.

7.1 Social Intelligence and Pro-environmental Behaviour: Students with strong social intelligence communicate well, work cooperatively, solve problems, and make responsible decisions. These qualities encourage participation in environmental activities such as waste management, conservation, recycling, and climate action. Research suggests that socially competent students are more likely to adopt and promote environmentally responsible behaviour.

7.2 Empathy and Environmental Stewardship: Empathy helps students understand the needs of others and develop concern for nature. Students who care about the impact of environmental problems are more likely to make responsible choices and support environmental protection. It also strengthens ethical responsibility towards people, wildlife, and future generations.

7.3 Communication and Collaborative Action: Environmental problems are best addressed through teamwork. Good communication enables students to

share ideas, work together, and participate in environmental projects. Activities such as group discussions, project-based learning, and community campaigns help develop both communication skills and environmental responsibility.

7.4 Ethical Decision-Making and Environmental Responsibility: Environmental stewardship involves making responsible and ethical choices. Students with strong social intelligence can understand how their actions affect society and the environment. Ethical thinking encourages them to use resources wisely and contribute to sustainable living.

7.5 Social Learning in Schools: Schools provide many opportunities for students to learn environmental responsibility through observation and participation. Teachers, peers, and activities such as eco-clubs, school gardens, recycling programmes, and conservation projects help students develop leadership, teamwork, and a lasting commitment to protecting the environment.

7.6 Research Gaps:

Although studies highlight the importance of social and emotional skills in sustainability education, several gaps remain. Few studies have directly examined the relationship between social intelligence and environmental stewardship among secondary school students. Most research is based on cross-sectional designs, making it difficult to understand long-term effects. There is also limited evidence from developing countries, particularly South Asia. Future research should focus on longitudinal and intervention-based studies to better understand how social intelligence influences environmental responsibility.

7.7 Synthesis:

The reviewed literature suggests that social intelligence supports environmental stewardship by promoting empathy, communication, cooperation, ethical thinking, and teamwork. These qualities encourage students to participate in environmental conservation and sustainable practices. Therefore, secondary education should combine environmental knowledge with social and ethical skills to prepare students as responsible citizens committed to sustainable development.

VIII. INTEGRATING SOCIAL INTELLIGENCE INTO SECONDARY EDUCATION FOR SUSTAINABILITY

Secondary schools play an important role in preparing students to face environmental challenges. Along with environmental knowledge, students need social skills such as empathy, cooperation, communication, and ethical responsibility. Integrating social intelligence with sustainability education helps develop responsible and environmentally conscious citizens.

8.1 Curriculum Integration: Environmental stewardship and social intelligence should be integrated across different subjects rather than taught separately. Classroom discussions, teamwork, and problem-solving activities help students connect environmental knowledge with responsible action.

8.2 Learner-centred Teaching: Student-centred approaches such as cooperative learning, project-based learning, inquiry, service-learning, and outdoor activities encourage students to work together and solve real environmental problems. These experiences develop both social intelligence and environmental responsibility.

8.3 Role of Teachers: Teachers play a key role by creating supportive learning environments and modelling positive values. Through group activities, environmental projects, eco-clubs, and community programmes, teachers can promote empathy, teamwork, leadership, and environmental responsibility. Regular professional development can help teachers adopt these approaches effectively.

8.4 School Leadership: School leaders can strengthen sustainability by promoting green school practices, supporting eco-clubs, encouraging student leadership, and building partnerships with local communities. A positive school environment motivates students to take responsibility for the environment.

8.5 Community Engagement: Environmental stewardship becomes more meaningful when students participate in community activities such as tree planting, waste management, conservation projects, and environmental awareness campaigns. These experiences help students understand that protecting the environment is a shared responsibility.

8.6 Assessment: Assessment should focus not only on environmental knowledge but also on students' attitudes, participation, teamwork, and responsible behaviour. Portfolios, project work, observation, self-assessment, and reflective journals can provide a more holistic evaluation.

8.7 Policy Implications: Educational policies should encourage the integration of social intelligence and sustainability into school curricula, teacher education, and school practices. Strong policy support can help schools prepare students for environmental and social challenges.

8.8 Towards Sustainable Citizenship: The ultimate goal is to develop students who are knowledgeable, socially responsible, and committed to protecting the environment. By nurturing social intelligence alongside environmental education, secondary schools can prepare young people to contribute to a more sustainable future.

IX. CHALLENGES AND FUTURE DIRECTIONS

Integrating social intelligence with environmental stewardship can strengthen sustainability education. However, schools face several challenges that need to be addressed through the combined efforts of educators, policymakers, researchers, and communities.

9.1 Challenges

Some of the major challenges include:

- Curriculum overload, which leaves little room for interdisciplinary learning.
- Examination-focused education, where greater importance is given to academic scores than to values and life skills.
- Limited teacher preparation in sustainability education and social-emotional learning.
- Lack of resources for environmental projects and experiential learning.
- Differences in cultural and social contexts, which influence students' attitudes and participation.
- Digital challenges, such as excessive screen time and reduced face-to-face interaction, which may affect the development of social skills.

9.2 Future Directions for Educational Practice

To strengthen sustainability education, schools should
 Integrate: social intelligence into the curriculum,
 Promote project-based and experiential learning,
 Strengthen school–community partnerships,
 Encourage student leadership in environmental activities,
 Use assessment methods that value both knowledge and responsible behaviour and
 Make effective use of digital technologies to support collaborative learning.

9.3 Future Research Directions

Future research should focus on:

Long-term studies on the development of social intelligence and environmental stewardship,
 evaluating school-based intervention programmes,
 Comparative studies across different cultures and educational systems,
 Mixed-methods research for a deeper understanding of students' experiences,
 developing reliable tools to measure social intelligence and environmental stewardship,
 Examining the role of educational policies in promoting sustainability and responsible citizenship.

9.4 Proposed Educational Model

Based on the literature reviewed, the following model explains how social intelligence can promote environmental stewardship:

Social Intelligence

(Empathy, communication, cooperation, social awareness, ethical decision-making)

↓ Teaching and Learning Experiences (Collaborative learning, environmental projects, service-learning, community engagement)

↓ Environmental Competencies (Environmental knowledge, values, critical thinking, responsibility, collective action)

↓ Environmental Stewardship (Conservation behaviour, sustainable practices, leadership, community participation)

↓ Sustainable Citizenship. This model shows that developing social intelligence through meaningful learning experiences can encourage students to become environmentally responsible and active citizens.

Building environmentally responsible citizens requires more than environmental knowledge. Students also need empathy, cooperation, communication, and ethical values to address

environmental challenges effectively. By integrating social intelligence into sustainability education, schools can help students become responsible individuals who contribute to a more sustainable future.

9.5 Recommendations

Based on the review of literature, the following recommendations are suggested:

- * Integrate social intelligence into environmental education and sustainability programmes.
- * Promote learner-centred approaches such as project-based, experiential, and community-based learning.
- * Encourage environmental activities such as eco-clubs, school gardens, conservation projects, and awareness campaigns.
- * Strengthen teacher education by including Education for Sustainable Development (ESD), social-emotional learning, and collaborative teaching strategies.
- * Adopt a whole-school approach that promotes green practices, student leadership, and community partnerships.
- * Use assessment methods that evaluate environmental responsibility, teamwork, participation, and ethical behaviour in addition to academic knowledge.
- * Support educational policies that encourage collaboration among schools, communities, and environmental organizations to promote sustainability.

9.6 Limitations

This paper is conceptual in nature and is based on existing literature rather than primary data. Therefore, the proposed relationship between social intelligence and environmental stewardship needs to be tested through empirical research. Although many studies have examined social intelligence and environmental behaviour separately, only a limited number have explored their direct relationship among secondary school students. In addition, the findings discussed in this paper may vary across different cultural, educational, and social contexts. Another limitation is that both social intelligence and environmental stewardship are complex concepts that are difficult to measure accurately. The paper also does not consider all the external factors, such as family, school environment, peer influence, and socioeconomic

conditions, that may affect students' environmental behaviour.

Despite these limitations, this work provides a useful conceptual framework for understanding how social intelligence can support environmental stewardship. It also offers a foundation for future research, curriculum development, and educational policies aimed at promoting sustainable and socially responsible citizenship.

X. CONCLUSION

Environmental sustainability requires more than environmental knowledge; it also depends on responsible attitudes and social skills. This paper highlights that social intelligence, with qualities such as empathy, communication, cooperation, and ethical decision-making, can play an important role in developing environmental stewardship among secondary school students.

The review suggests that integrating social intelligence into classroom teaching, school activities, and community engagement can encourage students to participate actively in environmental conservation and sustainable practices. Schools, teachers, and policymakers should therefore promote learning experiences that combine environmental education with social and ethical development.

Although this paper is conceptual and based on existing literature, it provides a useful framework for understanding the connection between social intelligence and environmental stewardship. Future empirical research can further validate this relationship in different educational contexts.

In conclusion, strengthening social intelligence in secondary education can help develop environmentally responsible citizens who are better prepared to contribute to a sustainable future.

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