



## IDENTIFICATION OF INFLUENTIAL FACTORS IN ENVIRONMENTAL EDUCATION OF ELEMENTARY SCHOOL STUDENTS TOWARDS SUSTAINABLE DEVELOPMENT

Neda POURAVAZ GOUKE<sup>1\*</sup>, Ali YOUSEFI<sup>1</sup>, Morteza HAZRATI<sup>1</sup>

<sup>1\*</sup>Department of Management, Bandar Anzali Branch, Islamic Azad University, Bandar anzali, Iran.

**\*Corresponding Author**

**Email:** nedapouravaz12@gmail.com

### ABSTRACT

*Education and training, as the primary responsibility in general education, must also take action to preserve the environment. One way education and training can play a role in environmental protection is by incorporating environmental concepts into the curricula of various educational levels. This research aims to present a model for the environmental education of elementary school students towards sustainable development. This study is applied in terms of objectives and qualitative in terms of methodology, utilizing the content analysis method. Given that the research strategy is qualitative, an inductive approach was adopted. Participants in this research were selected from senior education managers and experienced teachers in Gilan province. Theoretical sampling was used in the initial stage of the research. Data collection tools in this phase included face-to-face and in-depth interviews. Fifteen individuals were interviewed in this phase, and there was no need to refer to new participants. The results indicated that the main phenomenon is environmental education. The causal conditions include the foundations of the environmental education curriculum, strategies such as educational assessment, learning activity design, problem-solving education, and feedback. The governing context involves attention to innovative educational approaches, and intervening conditions include social responsibility. Finally, the outcomes encompass sustainable development's economic, social, cultural, and environmental dimensions.*

**Keywords:** *Environmental education, Elementary school students, Sustainable development, Grounded theory.*

### INTRODUCTION

Education and training, as the primary stakeholders in the field of universal education, must also take action in the field of environmental conservation. One of the methods through which education and training can play a role in environmental protection is by incorporating environmental concepts into the curricula of various educational levels. As future citizens, students should learn about environmental protection from the beginning and internalize it. Although some efforts have been made to include environmental topics in certain formal textbooks, such as science, geography, chemistry, and biology, these limited efforts are not considered effective (Shiri & Okhrati, 2019). Research in this area has shown that in elementary school, the number of pages dedicated to the environment is approximately 1% compared to the total volume of textbooks for this level, and in middle school, it's around 31 pages (Dehzad-Rostami *et al.*, 2020). However, many experts believe that the elementary and preschool years are the best time for environmental education because children are more mentally prepared for learning due to curiosity. Additionally, schools can educate many students, making them the

ideal place for environmental education and promoting environmental culture (Kargozar *et al.*, 2020).

Furthermore, environmental issues have become increasingly essential for all segments of society, consumers and producers. The dynamic nature, intense competition, growing environmental concerns, and government regulations have compelled various organizations to consider not only profitability and sales but also consumers' health. Failure to do so can jeopardize their existence (Azar *et al.*, 2016). In "green articles" focusing on sustainable production policies, the European Commission defines green actions as using fewer resources, having lower risks and minimal environmental impacts, and preventing waste generation (Das *et al.*, 2018). Therefore, eco-friendly actions involve recycling and reuse, using non-toxic and chemical-free materials, eco-friendly packaging, and having minimal and least environmental impact throughout the product life cycle (Nabi Khan & Mohsin, 2017).

Environmental crises have long been a concern for authorities and environmental enthusiasts in our country. Therefore, some of the country's development programs also consider environmental issues. Asadzadeh and his colleagues (2020) conducted a study titled "Designing an Active Curriculum Model for Extracurricular Activities for Elementary School Students with an Emphasis on Environmental Education." The research results showed that more than 90% of curriculum specialists and elementary school teachers approved of the objectives, content, teaching-learning strategies, and assessment in the mentioned model.

Ahmadi-Dehghotbaldini and his colleagues (2021) conducted a study titled "Fit of Environmental Awareness Behavior of Middle School Students Based on Gender: The Mediating Role of Experience, Values, and Environmental Identity." The results showed a positive direct effect of environmental identity on environmental awareness behavior, a positive effect of gender and self-transcendence values on positive environmental identity, a negative effect of environmental experience on negative environmental identity, a negative effect of gender on negative self-transcendence values, and a positive and meaningful effect of environmental experience on positive self-transcendence values.

Asgari and his colleagues (2021) conducted a study titled "The Necessity of Paying Attention to Future Studies-Based Environmental Education in Elementary School." The Delphi results showed that the content of elementary school textbooks in terms of environmental education needs revision and adjustment, with a focus on waste and air due to the crises they will create in the future.

Unfortunately, in the first and second development plans, the environment did not receive the attention and importance it should have had in development programs. However, various environmental issues have been addressed in the framework of the "Comprehensive Program of Environmental Protection" in Articles 104 and 105 of the Fifth Development Plan. These include protecting natural resources, pollution prevention, especially in major cities, incorporating environmental considerations into national decision-making, public participation in environmental conservation, and strengthening environmental protection organizations and environmental assessment of large projects. One important point in the Fifth Development Plan is the establishment of the "Non-Governmental Organizations Supporting the Environment and



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Natural Resources," which will play a significant role in environmental education (Ahmadi-Dehghotbaldini *et al.*, 2021).

In recent years, environmental education has become a growing priority at the local, national, and international levels. It is believed that environmental problems cannot be solved unless environmental education is successfully implemented (Kargozar *et al.*, 2020). Environmental education encompasses decision-making and self-imposed behavioral laws related to environmental quality (Aliabadi *et al.*, 2020).

The development of the Fundamental Transformation Document of Education in December 2011, which the Ministry of Education announced, initially promised that authorities might include environmental issues and environmental education in their educational policies. Lack of awareness and environmental responsibility among teachers and educators is one of the challenges facing the country. Even with the necessary facilities and the determination of planners and officials to promote environmental awareness, if teachers have low environmental literacy and awareness, there may not be much hope for achieving environmental goals. Adequate teacher training is a prerequisite because it involves the instructor's mastery of the subject (Asgari *et al.*, 2021). It is somewhat natural as there hasn't been an effective effort to educate this group.

Environmental NGOs have the appropriate capacity for environmental education. They contribute to raising awareness and promoting environmental culture, enhancing public participation in environmental issues, monitoring development projects and activities, and more in other societies. It's worth mentioning that Chapter 21 of Agenda 21 also emphasizes the importance of these organizations in environmental education (Asgari *et al.*, 2021). Therefore, this research aims to identify the influential factors in students' environmental education in elementary schools towards sustainable development.

### *Sustainable Development*

Sustainable development emerged in the 1980s as an important concept for environmental protection in urban planning activities (Cobbinah *et al.*, 2015). It represents a human-centered approach that, alongside environmental concerns, was the first interpretation of the principles and foundations of development in its sustainable perspective (Zhu, 2012). Social justice and justice in resource allocation for development without compromising other development areas are precise inferences that sustainability has brought to urban development. Today, it has pushed itself from urban planning to design in cities and created a specific theoretical literature for having cities as living frameworks (Varol *et al.*, 2011).

Sustainable development is a three-dimensional concept consisting of energy, environment, and economics, with none being superior. While renewable energy is crucial for sustainability and longevity, sustainable development cannot be achieved without environmental protection and consideration of economic indicators (Ozturk & Yuksel, 2016). Sustainable development is a development model that aims to achieve a long-term balance between economic growth, quality of life, and environmental protection without exceeding the capacity of the Earth's resources (Duran *et al.*, 2015).



Sustainable development is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs. This simple and commonly used definition of sustainable development emphasizes that it is only one path for society to reduce environmental impacts while balancing resource depletion, growth, and environmental protection (Krajacic *et al.*, 2015).

Sustainable development is a new set of values for individuals and the environment, guiding and directing future progress and social and economic development. Its primary focus is on human needs and values, current and future natural environments, environmental protection and preservation, and the elimination of real damage to ecosystems (Duran *et al.*, 2015). Sustainability and longevity are currently prevalent concerns at both the national and international levels. Sustainable development requires organizations and government entities lawmakers to consider and account for environmental and social consequences in their daily operations and activities. It indicates that, first of all, pollution is reduced, which, in turn, leads to happiness, social well-being, and improved social conditions. The necessity and importance of sustainable development create social and environmental conditions for a desirable earth system, making it beneficial and useful for humans (Ivascu *et al.*, 2015).

#### *Environmental Education in Education and Training*

Since many undesirable natural changes result from human behaviors, the best way to address these changes is to raise awareness and sensitivity among people about environmental issues to change their destructive behaviors. Perhaps changing the behavior of adults is challenging, but it is easier and, at the same time, more important for adolescents whose personalities are still forming, as they can be the most influential agents of change due to their impact on today's society and their role in shaping the future (Yar-Ahmadi, 2003). Serious efforts have not been made in the field of formal education for children under the age of 7 (preschool and preparatory level) in environmental education in the country. At the same time, "scientific research results indicate that the socialization process aimed at changing behavior begins in childhood" (Davari, 2006:8).

Considering that the environment is facing serious threats globally and nationally, one of the initiatives to address this problem is to enhance the general culture of individuals. Among these, environmental education for children holds special importance because children not only inherit the responsibility of guarding the Earth but are also more vulnerable to environmental degradation in many developing and industrialized countries (Jafarzadeh & Yazdanpanah, 2004).

Environmental education at the elementary level involves students' participation in personal experiential learning of environmental issues through direct exploration, using all their senses. In this stage, emphasis should be placed on developing and expanding concepts, and children should be made aware of accepted environmental principles and rules. Introducing a specific subject in environmental education in elementary schools is not recommended. It is believed that attention should be given to the fact that in this educational stage, concepts are acquired gradually and through prior experiences, making it essential (National Environmental Education Association UK, 2008). Taylor (2010) also believes that the most important step to improve the



status of environmental education in schools is to include it in educational policies and develop mechanisms to facilitate the implementation of these policies.

Introducing the concept of environmental education into school curricula creates awareness and understanding of the environment and enables students to acquire both information about relevant concepts and facts and the ability to critically evaluate environmental issues and situations. Moreover, through experiences, research, and problem-solving related to the environment, students can reflect and develop critical awareness of the environment (Negra, 2004).

When students are encouraged to examine their reactions to the environment and understand the relationship between themselves and environmental issues, they find they can adopt personal ethics toward the world and the environment. Therefore, environmental learning has a problem-based, problem-solving, and action-oriented nature. This type of learning, along with the development of tendencies and values, including elements and ideas related to human perception and the necessary behavior to create sustainable lifestyles and simultaneously exploit and care for this planet's resources, is essential (Palmer, 2003, as cited in Khorshiddoust, 2003).

## **MATERIALS AND METHODS**

The current research is characterized by its applied objective and qualitative methodology, utilizing the coding method. Given that the research strategy is qualitative, the research approach is inductive. The data and information in this research have been obtained from two different sources. Secondary data in this research have been collected from books, articles, documents, and records. Primary data have been derived from interviews. From this perspective, the current research falls into the field and library research category. It is considered field research in which the researcher collected primary data through interviews. Semi-structured interviews were used in this study.

Participants in this research were selected from senior education managers and experienced teachers in the Gilan province. Theoretical sampling was used in the initial stage of the research. The data collection tool in this phase was face-to-face and in-depth interviews, lasting between 60 to 90 minutes. Sometimes, interviews were repeated to share preliminary findings, completion, modification, criticism, and data adjustment. Supplementary questions were asked to guide the discussion and address topics related to the phenomenon under study. Interviews were recorded to facilitate a more precise analysis and examination of participants' perspectives through a review of the conversations. A sample of the primary interview protocol is provided in the appendix. Theoretical sampling continued until theoretical saturation of the concepts was reached. During the data collection, coding was also carried out. In this stage, 15 individuals were interviewed, and there was no need to refer to new participants.

To ensure research validity, i.e., the accuracy of findings from the researcher's perspective, participants reviewed and instrumented the coding paradigm and provided their viewpoints on the coding paradigm. Four management professors examined the findings and commented on the coding paradigm.

## **RESULTS AND DISCUSSION**



In the initial stage, qualitative data were collected through in-depth interviews with research participants. During the open coding process, numerous themes emerged, gradually reduced to fewer key qualitative data through iterative data analysis. In the open coding section, the method of key-point coding was used. An example of a table for open coding of interviews is presented in Table 1.

**Table 1.** Analysis of Key Points in Interviews with the First Interviewee

Interviewee	Interview text (key points)	Open coding
PA1	At present, making plans for the next few years in the country is impossible.	Lack of futuristic perspective
PA2	Educational facilities and technologies are not readily available to teachers and students.	Lack of educational facilities
PA3	Our country is at a lower level than other countries regarding educational issues.	Low educational quality
PA4	Our students do not receive equal education facilities.	Lack of educational justice
PA5	Teachers need to receive the necessary training before entering the teaching profession.	Professional training
PA6	Economic issues have greatly affected teachers' performance.	Economics of education organization
PA7	Our schools do not have an atmosphere of teacher collaboration, and teachers rarely exchange views on educational issues.	Lack of exchange of opinions and collaboration
PA8	Our parents focus on the lowest educational goals, economy, and employment, which goes through the university entrance exam.	Reliance on low-level goals in the education system

Following the model of Strauss and Corbin (2012), axial coding was carried out.

#### *Causal Conditions*

Conditions refer to events and incidents that create the situations, issues, and matters related to the phenomenon. The interviews discussed each of the factors/elements of the curriculum, the philosophical foundations of environmental education, and educational approaches separately. An example of an interview text related to psychological foundations in education is provided in Table 2.

**Table 2.** Interview Text Related to Psychological Foundations in Education

Interviewee Code	key points from the interview texts
PA1	We cannot currently plan for the next few years in the country, let alone ten years from now.
PF11	The education system needs a futuristic, research-oriented perspective that sees everything.
PF17	Many issues related to education planning belong to the Ministry of Education, and experience has shown that this planning has not yielded good results.
PH12	The advantage of a research-oriented futuristic perspective on the teaching profession is that we can prevent teachers from losing their status compared to before.
PI5	Our student teachers' perspective as future teachers is not professional.
PM5	Change in the education system is partly due to curriculum planning that needs future experts in this field who are fully competent in educational issues.

*Core Category*

The main event or incident around which actions/interactions are directed at managing, handling, or responding to it ( **Table 3**).

**Table 3.** Interview text related to the core phenomenon

Interviewee Code	key points from the interview texts
PC2	If we want to plan for the future, we must examine present conditions.
PC6	Teachers will have different needs in the future, so human resources must be trained to have the necessary capabilities for future planning.
PC10	Teachers should be trained based on the future needs of students.
PD1	In the next ten years, society will be very different regarding social and technological changes, and students' perspectives on education will also differ.
PD3	We must consider social needs and technological developments.
PD4	Teachers of the new era must adapt themselves to future needs.
PD12	We must monitor daily developments in economic, social, and cultural dimensions.



PE7	All student-related matters should be included in educational content based on future needs.
PF2	We should monitor the next 10 or 20 years according to macro documents.
PF16	To see the future, we must identify threats and opportunities in the education system.
PH9	We should prioritize and categorize future student needs.
PH13	If we don't keep up with developments, we may find teachers unable to meet student needs.
PI1	We must accept the changing situation and update ourselves (teachers) accordingly.
PJ8	Teachers must be familiar with daily needs and upgrade themselves.
PJ11	Different groups should continually identify needs, and new programs with reforms should be created in teacher training systems.
PJ16	Teacher professional development and competence is one of the most critical issues in our society today.
PK9	Education has not changed much compared to the past and should incorporate future needs in its programs.
PK12	Changes are a necessity because rapid social developments are happening daily.
PN3	Exploring what our students will need in the future will lead us to professional development.
PO9	We must pay special attention to the real and true needs of the country.

### Contextual Factors

According to Strauss and Corbin (2012), contextual factors are specific conditions that come together in time and space to create circumstances to which people respond through actions and interactions. Contextual conditions were extracted from the interviews through three coding stages - open coding, axial coding, and selective coding ( **Table 4** ).

**Table 4.** Interview text on contextual factors

Interviewee Code	key points from the interview texts
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PC15	A major problem is mindsets. New attitudes need to be developed on various issues.
PD17	Teachers should be respected and trusted.
PH15	The status of teachers in the social system must be elevated.
PJ17	Teachers are the main pillars of society whose occupational and job security status should be improved.
PK6	Unfortunately, since social positions have always been at a certain level, like medicine being high, unless these positions are resolved in terms of social prestige, problems will persist.
PK7	I believe a teacher's position in the Ministry of Education should be equal to a university professor's.
PL8	Society's perspective on teachers and their status must change.
PM7	Teaching should be one of the highest economic and social positions.
PN19	Successful developed countries are those where teaching is the most important profession. In our country, those who fail in other professions enter this field.



### *Intervening Conditions*

These are conditions that strategies are influenced by. They constitute a set of mediating variables and intermediaries. Based on the qualitative research findings analysis, three groups of factors emerged under intervening conditions ( **Table 5**).

**Table 5.** Interview text related to the dimensions of responsibility

<b>Interviewee Code</b>	<b>key points from the interview texts</b>
PD2	We must examine the expectations of responsible agencies regarding teacher education.
PH5	We must see our expectations of teachers and plan teachers' professional futures accordingly.
PI2	We have taken power away from the teacher but still expect the same things from him/her.
PJ10	The Ministry of Education must take into account the expectations that society has of a high school graduate.
PM1	The nature of the expectations from Farhangian University is influenced by the institution that acts as the employer of this university, the Ministry of Education.

### Strategies

According to Strauss and Corbin (2011), strategies are behaviors, actions, interactions, and maneuvers used in the usual mode of action and how individuals manage situations when facing issues and solving them; by taking place, they shape a specific phenomenon ( **Table 6** ).

**Table 6.** Interview text related to strategies

Interviewee Code	key points from the interview texts
PF4	
PF14	I support teacher education, so anyone who wants to enter teacher education should take a specialized teacher education course.
PF19	In the future, those passionate about the teaching profession should enter the field of education.
PG7	If we focus on teacher education for the next ten years, we'll be 20 years ahead.
PJ6	Our teacher education should move towards entrepreneurship, employment, and creativity.
PK5	The mission of Farhangian University should be to nurture competent teachers with high professional capabilities for the future.
PM2	Since teacher education is currently the responsibility of Farhangian University, special supervision should be exercised over it.
PM3	Farhangian University students have stronger teaching skills, and I envision a good future for them.
PM6	Based on the mission of Farhangian University, they have focused somewhat on teaching skills.

### Consequences

The consequences obtained from analyzing the interviews can be divided into four groups: teacher as a model thoughtful and wise teacher, educating thoughtful students and desirable and effective citizens for the future, and a multicultural approach ( **Table 7 and figure1** ).

**Table 7.** Interview text related to consequences

Interviewee Code	key points from the interview texts
PC13	The ground should be paved for the role and status of teachers in society as a model to be promoted.

PH11	As a successful human being and role model, the teacher has gone through this path and should be introduced as a successful role model.
PL5	Teachers must be good student role models in the current circumstances and cultural onslaught.

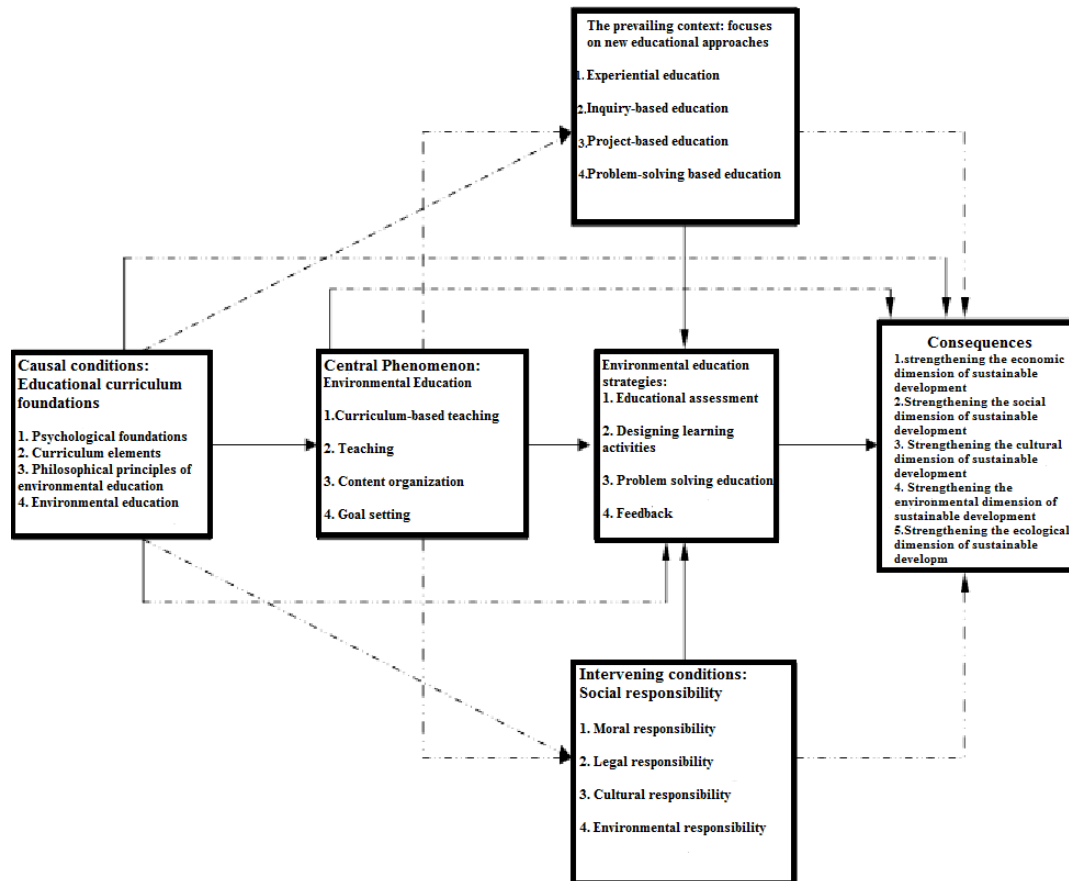


Figure1. Axial coding based on the paradigmatic model

## CONCLUSION

The current research aims to identify influential factors in environmental education for elementary school students in the context of sustainable development.

No specific conclusions or comparisons with other results are presented in this study.

To improve the conditions, it is emphasized that attention should be paid to the importance of supervisory and instructional guidance in enhancing the teaching-learning process. It is recommended to employ capable and experienced individuals in this important role. Additionally, teachers must have sufficient professional knowledge in various areas such as subject matter content, teaching methods, assessment methods, educational materials production

and utilization, educational psychology, student development characteristics, learning theories, etc.

Strategic solutions at the school level are also recommended, including the establishment of homogeneous working groups in neighboring schools for the exchange of experiences, the participation of educational managers and deputies in training courses, and empowerment programs in leadership, human relations, and group dynamics.

To improve the governing framework, it is suggested to elevate the status of education and training as the most important institution for human resource development and the generator of social capital. This includes implementing approved policies, providing guidance and oversight from early childhood education to universities, and improving human resources management.

To enhance the intervening conditions, it is proposed to prepare a charter of teachers' rights, grant educational and training awards to qualified teachers, increase public awareness and professional knowledge of teachers, and support teacher innovation and entrepreneurship centers.

This research used grounded theoretical modeling, and the research model was tested in the relevant statistical population. Therefore, it is recommended for a more detailed and aligned examination that the model presented in this study should be tested in other similar organizations, such as higher education institutions, and the results should be compared. One of the limitations of this research is the prioritization of interviews and the use of expert opinions over the examination of documents and records related to environmental education in the long-term process. Therefore, it is suggested that future research should focus on documents and records related to education and take action accordingly.

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