



THE CONTRIBUTION OF EXPERIENTIAL LEARNING TO ENVIRONMENTAL EDUCATION: A CASE STUDY OF THE IMPLEMENTATION OF THE PROJECT METHOD IN A SECOND CHANCE SCHOOLⁱ

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Abstract:

Environmental Education constitutes an important field of learning for developing knowledge, skills, and attitudes that promote sustainable development and environmental responsibility. Within this context, the project method and experiential learning provide opportunities for learners' active participation and for connecting theory with practice. The aim of the present study is to investigate the pedagogical value of the project method in Environmental Education and to assess its contribution to the development of knowledge, skills, and environmentally responsible attitudes among adult learners. The study was conducted in a Second Chance School in the wider Athens area and adopted a qualitative methodological approach. Twenty adult learners participated in the educational project. Data were collected through semi-structured interviews and analyzed using content analysis. The findings indicated that the

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implementation of the project method enhanced participants' knowledge of environmental issues, promoted the development of social, communication, and metacognitive skills, and contributed to fostering environmental awareness and responsible citizenship. Furthermore, experiential and collaborative activities strengthened learners' self-confidence, critical thinking, and active participation in the learning process. In conclusion, the project method emerges as an effective pedagogical approach for Environmental Education in adult education

Keywords: Environmental Education, project method, experiential learning, adult education, sustainability, environmental awareness

Περίληψη:

Η Περιβαλλοντική Εκπαίδευση αποτελεί σημαντικό πεδίο μάθησης για την ανάπτυξη γνώσεων, δεξιοτήτων και στάσεων που προάγουν τη βιώσιμη ανάπτυξη και την περιβαλλοντική υπευθυνότητα. Στο πλαίσιο αυτό, η μέθοδος project και η βιωματική μάθηση προσφέρουν δυνατότητες ενεργού συμμετοχής των εκπαιδευομένων και σύνδεσης της θεωρίας με την πράξη. Σκοπός της παρούσας μελέτης είναι η διερεύνηση της παιδαγωγικής αξίας της μεθόδου project στην Περιβαλλοντική Εκπαίδευση και η αποτίμηση της συμβολής της στην ανάπτυξη γνώσεων, δεξιοτήτων και περιβαλλοντικά υπεύθυνων στάσεων σε ενήλικους εκπαιδευομένους. Η έρευνα πραγματοποιήθηκε σε Σχολείο Δεύτερης Ευκαιρίας της ευρύτερης περιοχής της Αθήνας και ακολούθησε ποιοτική μεθοδολογική προσέγγιση. Στο εκπαιδευτικό project συμμετείχαν είκοσι ενήλικοι εκπαιδευόμενοι. Τα δεδομένα συλλέχθηκαν μέσω ημιδομημένων συνεντεύξεων και αναλύθηκαν με τη μέθοδο της ανάλυσης περιεχομένου. Τα ευρήματα έδειξαν ότι η εφαρμογή της μεθόδου project ενίσχυσε τις γνώσεις των συμμετεχόντων σχετικά με περιβαλλοντικά ζητήματα, προώθησε την ανάπτυξη κοινωνικών, επικοινωνιακών και μεταγνωστικών δεξιοτήτων και συνέβαλε στην καλλιέργεια περιβαλλοντικής συνείδησης και υπεύθυνης πολιτεϊότητας. Επιπλέον, οι βιωματικές και συνεργατικές δραστηριότητες ενίσχυσαν την αυτοπεποίθηση, την κριτική σκέψη και την ενεργό συμμετοχή στη μαθησιακή διαδικασία. Συμπερασματικά, η μέθοδος project αναδεικνύεται ως αποτελεσματική παιδαγωγική προσέγγιση για την Περιβαλλοντική Εκπαίδευση στην εκπαίδευση ενηλίκων.

Λέξεις-κλειδιά: Περιβαλλοντική Εκπαίδευση, μέθοδος project, βιωματική μάθηση, εκπαίδευση ενηλίκων, αειφορία, περιβαλλοντική συνείδηση

1. Introduction

The contemporary era is characterized by complex environmental challenges, such as climate change, biodiversity loss, pollution of natural resources, and the overexploitation of ecosystems. The environmental crisis constitutes a multidimensional global problem with significant social, economic, and political implications, making it imperative for citizens to develop environmentally responsible attitudes and behaviors. Within this context, education is called upon to play a crucial role in fostering environmental awareness and promoting sustainable development.

Environmental Education, within the contemporary social and educational context, faces significant challenges that further highlight its critical role in shaping attitudes, values, and behaviors that promote the protection of the natural environment and sustainable development. At a time of intense social, environmental, and health crises, it has become clear that Environmental Education is not limited to the transmission of knowledge but aims to foster citizens' conscious and active participation in addressing environmental issues. Drawing on theoretical principles of social constructivism, it seeks to promote self-determination, the construction of personal meaning, and the empowerment of individuals, thereby contributing to the development of responsible, active, and environmentally aware citizens (Rauch, 2002).

Achieving the objectives of Environmental Education requires the use of educational approaches that encourage learners' active participation and connect knowledge with real-life contexts. Within this framework, experiential learning emerges as one of the most appropriate pedagogical approaches, as it promotes the critical processing of experience and the development of critical thinking, cooperation, teamwork, and active participation among learners. Learners themselves are placed at the center of the learning process, while the effectiveness of learning is directly linked to the way in which they learn, interpret, and make use of their experiences.

A fundamental principle of experiential learning is "learning by doing," through the utilization of learners' experiences and prior knowledge, enabling them to develop life skills and cultivate a positive attitude toward learning and personal development (Rogers, 1969). Within this framework, the project method, by combining learning with action, is considered one of the most effective instructional approaches. According to Shunk (2010), learning constitutes a process of acquiring and transforming knowledge, skills, attitudes, and behaviors through the processing of lived experiences. The project method enhances learners' motivation and strengthens their cognitive and social abilities, which are essential for self-directed learning and the creative management of complex problems (Rogers, 1969). At the same time, it promotes cooperation, interdisciplinarity, creative thinking, the utilization of prior experiences, and the gradual construction of knowledge (Frey, 1986; Fragoulis & Frantzi, 2010).

During the implementation of a project, the teacher acts as a facilitator, coordinator, and supporter of the learning process, working collaboratively with learners

to create learning situations that foster active interaction with the educational material and contribute to the development of the ability to “learn how to learn” (Rogers, 1999).

The purpose of the present study is to investigate the contribution of experiential learning, and more specifically the project method, to Environmental Education for adults. In particular, the study aims to highlight the experiences, perceptions, and feelings of learners who participated in an Environmental Education program at a Second Chance School, as well as to assess the contribution of the project method to the development of knowledge, skills, attitudes, and behaviors associated with environmental responsibility, active citizenship, and sustainable development.

Based on the purpose of the study, the following research questions were formulated:

- 1) How do learners experience their participation in an Environmental Education project within the context of a Second Chance School?
- 2) What knowledge, skills, values, and attitudes do learners develop through their participation in experiential and collaborative Environmental Education activities?
- 3) What is the contribution of the project method to adult education, particularly with regard to the development of environmental awareness, active citizenship, and collaboration and communication skills?

2. Theoretical Approaches to Environmental Education, Experiential Learning, and the Project Method in Adult Education

Environmental Education constitutes an interdisciplinary pedagogical field aimed at developing knowledge, skills, values, and attitudes that contribute to environmental protection and the promotion of sustainable development. It emerged during the 1960s in response to the intensifying environmental crisis and the recognition that addressing environmental problems requires citizens’ active participation and responsibility.

The main objectives of Environmental Education include understanding the interaction between humans and the environment, raising awareness of environmental issues, developing critical thinking, and empowering citizens to participate actively in decision-making and in the implementation of actions aimed at protecting the environment and promoting sustainability (Georgopoulos *et al.*, 2009).

Contemporary approaches to Environmental Education move beyond the mere transmission of knowledge and adopt participatory, experiential, and transformative forms of learning that strengthen active citizenship, cooperation, and social responsibility. Within this framework, Education for Sustainable Development promotes connections between local and global issues and encourages learners to develop attitudes and behaviors consistent with the principles of sustainability.

Experiential learning constitutes one of the most important theoretical foundations of contemporary educational practice. A central figure in its theoretical development is Dewey (1916), who argued that learning emerges through the interaction between

individuals and their environment and that experience constitutes a fundamental mechanism for constructing knowledge. According to Dewey, the educational process should be connected to real-life situations and promote learners' active participation. Kolb's (1984) theory of experiential learning extends Dewey's ideas and conceptualizes learning as a cyclical process involving concrete experience, reflective observation, conceptualization, and active experimentation. Kolb's "learning cycle" highlights the crucial role of experience and critical reflection in the learning process. This model is considered particularly applicable and has been employed in a variety of educational and professional contexts (Tennant, 1997).

Similarly, Rogers (1969), through his person-centered theory, emphasizes the importance of learners' active participation in the learning process. According to Rogers, meaningful learning occurs when individuals become actively involved in exploring and solving problems related to their needs and interests. Within this framework, the educator acts as a facilitator of learning by creating a supportive and democratic learning environment. The social dimension of learning is also significant, as developed in Vygotsky's (1978) theory, which emphasizes the crucial role of social interaction and the group in the development of knowledge, skills, and attitudes. Houle (1980) points out that experiential learning arises from direct participation in life events and that the transformation of experience constitutes an active process leading to the development of creative abilities and new ways of making sense of reality.

Mezirow's (1991) Transformative Learning Theory constitutes an important theoretical foundation for experiential adult education. According to Mezirow, learning is not limited to the acquisition of new knowledge but involves critical reflection on individuals' experiences and assumptions, leading to the transformation of established perceptions, attitudes, and beliefs. Experience serves as the starting point for a process of reviewing and reinterpreting reality. At the same time, Freire (1970) gives learning a strong social and emancipatory dimension. According to his theoretical approach, education can contribute to social emancipation and the reduction of social exclusion. Through dialogue, critical reflection, and collective action, learners acquire the capacity to gain a deeper understanding of the social conditions that shape their lives and to participate actively in social change, while the role of the educator shifts from that of the "traditional teacher" to that of a coordinator and learning partner.

The project method is an instructional approach based on the principles of experiential, empirical, and transformative learning. Its theoretical foundation draws on the theories of Dewey, Kolb, Rogers, Mezirow, and Freire, which highlight the active role of the learner and the importance of experience in the learning process.

Chrysafidis (2006) defines the project as a collective instructional process that begins with learners' concerns and interests, and then leads either to the production of a project outcome or to the solution of a problem. Similarly, Frey (1986) describes the project method as an open and flexible learning process whose boundaries are dynamically shaped by the needs and interests of the participants. Key characteristics of the method include learners' active participation, collaborative learning, an

interdisciplinary approach to knowledge, the assumption of initiative, the investigation of real-world problems, and the connection between theory and practice. The flexibility and experiential nature of the method allow it to be adapted to different learning contexts, highlighting both its potential and its limitations (Kelly, 1983). Among the most important advantages of the project method are the development of critical thinking, the enhancement of creativity, the cultivation of social and communication skills, the promotion of collaboration, and the strengthening of learners' learning autonomy.

The implementation of the project method in adult education is directly connected to the principles of Knowles' (1978, 1984) theory of Andragogy, according to which adult learners possess experiences, needs, and expectations that significantly influence the learning process. Knowles places the learner at the center of learning, emphasizing self-direction, self-awareness, and the use of prior experience as a source of knowledge.

The project method is considered particularly compatible with the principles of adult education, as it promotes participatory learning, initiative-taking, the solution of authentic problems, and the connection of knowledge with the needs of everyday life. At the same time, it strengthens collaboration, communication, and critical reflection, which constitute key objectives of adult education. The implementation of the project method in Second Chance Schools is of particular interest, as learners often come from heterogeneous social and cultural backgrounds and possess rich life experiences. Through experiential and collaborative learning processes, the project method contributes to strengthening self-confidence, active participation, social inclusion, and the development of skills associated with their personal, social, and professional development.

3. Research Methodology

The purpose of the present study is to investigate the contribution of experiential learning, and more specifically the project method, to Environmental Education for adults. The study focuses on documenting the experiences, perceptions, and feelings of learners who participated in an Environmental Education program at a Second Chance School, as well as on highlighting the ways in which the implementation of the project method contributes to the development of knowledge, skills, and environmentally responsible attitudes.

To achieve the purpose of the study, a qualitative research approach was adopted. Qualitative research is considered appropriate when researchers seek to gain an in-depth understanding of the experiences, perceptions, attitudes, and interpretations that individuals attribute to the phenomena they encounter (Iosifidis, 2008). At the same time, it enables the investigation of complex educational processes within their natural context and contributes to identifying the subjective meanings that participants attach to their experiences (Iosifidis, 2008).

The study was conducted using a case study design. This method was selected because it enables an in-depth investigation of a specific educational context and an

understanding of its particular characteristics. In the present study, the case under investigation concerns the implementation of the project method within an Environmental Education program at a Second Chance School, with the aim of highlighting the learning experiences and outcomes resulting from the learners' participation.

The research sample consisted of twenty (20) learners attending a Second Chance School in the wider Athens area who actively participated in the implementation of the educational project. Participants were selected based on their participation in the Environmental Education program and their willingness to contribute to the research process. The sample was heterogeneous in terms of the participants' individual and social characteristics, which contributed to enriching the research data.

Semi-structured interviews were used for data collection. This particular instrument was considered appropriate because it provides the opportunity to explore participants' experiences, views, and feelings in a flexible and in-depth manner (Iosifidis, 2008). The interview guide included open-ended questions concerning the learners' participation in the project, the knowledge and skills they developed, and their evaluation of the learning experience.

Data collection took place after the completion of the educational project. The interviews were conducted in an appropriate setting within the Second Chance School at a time convenient for the participants. Prior to the interviews, learners were informed about the purpose of the study, the participation procedure, and their rights as research participants. The interviews were audio-recorded with the participants' consent and subsequently transcribed verbatim to facilitate data analysis.

The data were processed using content analysis. This method enables the systematic organization, coding, and interpretation of qualitative data, with the aim of identifying thematic categories and meanings emerging from participants' accounts (Vamvoukas, 2006). Through this process, recurring patterns, perceptions, and experiences related to the learners' participation in the Environmental Education project were identified.

The present study was designed and conducted in accordance with the fundamental principles of research ethics, with the aim of ensuring respect for participants' rights, the reliability of the research process, and the validity of the findings. Particular emphasis was placed on adherence to the principles of voluntary participation, anonymity, confidentiality, and personal data protection. Compliance with ethical principles contributed to creating an environment of trust and safety, encouraging learners to freely express their experiences, perceptions, and feelings regarding their participation in the Environmental Education program. At the same time, it strengthened the scientific validity and reliability of the study by ensuring that the findings authentically reflected the participants' experiences.

4. Design and Implementation of the Project

The design and implementation of the research project using the project method took place at a Second Chance School in the wider Athens area, taking into account the principles of adult education, the particular characteristics of the learners, and the connection between learning and authentic experiences and real-life needs. The central thematic focus of the project was Environmental Education and Sustainable Development, as these constitute fields that foster experiential learning, an interdisciplinary approach, and the development of active citizenship. The implementation of the project was organized into twelve (12) distinct stages, which are described in detail below.

4.1 Topic Selection

The topic was selected through a democratic and participatory process in which learners were invited to choose among different thematic areas related to art, culture, science, and the environment. The topic ultimately selected was “Environmental Education and Sustainable Development,” as it corresponded to the participants’ interests and needs. This choice was associated with their desire to understand contemporary environmental issues, explore the impacts of climate change, and develop practical approaches to environmental protection in their everyday lives.

4.2 Group Formation

The project was implemented with the participation of twenty (20) learners, who selected it as their first preference among the proposed topics. During the initial phase of implementation, emphasis was placed on creating a positive and supportive learning climate through experiential activities and getting-to-know-you techniques that strengthened cooperation, mutual trust, and group cohesion. At the same time, a learning contract was established, defining the framework for the group’s operation and based on the principles of mutual respect, consistency, collaboration, and the active participation of all members.

4.3 Definition of Objectives

The objectives of the project were jointly formulated by learners and educators. The main objectives included understanding fundamental concepts of Environmental Education and Sustainable Development, investigating the causes and impacts of climate change, developing collaborative and communication skills, strengthening participation in environmental protection initiatives, and cultivating responsible citizenship. To achieve these objectives, the project combined the study of contemporary environmental issues with the design and implementation of experiential activities, providing participants with opportunities for active engagement and for connecting knowledge with practice.

4.4 Thematic Subsections

Through processes of dialogue and collaborative learning, four main thematic subsections were identified: (a) Climate Change, (b) Health, Nutrition and the Environment, (c) Recycling as a Way of Life, and (d) Urban Environment and Green Cities. The learners were divided into four working groups of five members each, with each group responsible for investigating one thematic area under the guidance of the educators and the coordination of a representative appointed by the group members.

4.5 Data Collection

Information and educational material were collected through a literature search, the use of online sources, interviews with expert scientists, and participation in educational visits. This process enhanced learners' autonomy and contributed to connecting theoretical knowledge with authentic learning experiences.

4.6 Feedback

Throughout the project, weekly plenary meetings were held during which the groups presented the progress of their work and received feedback from the educators and the other members. These meetings functioned as opportunities for exchanging experiences, expressing concerns, and addressing difficulties. The educators assumed the role of advisors and mentors, providing support and guidance to participants whenever necessary.

4.7 Reassessment

During the interim evaluation, it was considered necessary to redefine certain objectives and aspects of the implementation schedule. At the same time, key principles of the learning contract concerning consistency, participation, and compliance with agreed responsibilities were reformulated in order to maintain group cohesion and effectiveness.

4.8 Action Planning

The learners designed and implemented a series of Environmental Education activities, including tree planting, the adoption of public spaces, the creation of a botanical garden, community clean-up and environmental awareness activities, green walks, documentary screenings, discussions on the social impacts of extreme weather events, as well as workshops on creative reuse and food-label reading. In addition, they participated in events organized by the local municipality and developed volunteer initiatives that connected the learning process with social action and environmental responsibility.

4.9 Organization of Materials

To document the research process, each learner and each group maintained a portfolio containing diaries, notes, photographic material, videos, a *Guide to Good Environmental Protection Practices* leaflet, forms, and other materials produced during the

implementation of the project. At the same time, the material was organized and stored in an electronic archive, facilitating its systematic documentation and subsequent use.

4.10 Presentation

At this stage, the method for presenting the project outcomes was organized. The groups collaborated to create presentations, posters, multimedia material, and informational resources, selecting appropriate means for effectively communicating the results to the educational community and the wider social environment.

4.11 Dissemination of Results

Following the completion of the research process, a public presentation of the project outcomes was held. The learners presented their findings and activities through digital presentations, videos, and photographic material. This process contributed to the development of communication skills, the enhancement of participants' self-confidence and self-esteem, and the recognition of the Second Chance School as an open and active institution within the local community.

4.12 Evaluation

The project was evaluated at three levels: initial, formative, and final evaluation. The initial evaluation focused on investigating the learners' needs, expectations, and motivations. Formative evaluation systematically monitored the implementation of the project, enabling the timely identification of difficulties and the adoption of corrective interventions. The final evaluation focused on assessing the degree to which the objectives had been achieved, the development of knowledge and skills, and the participants' overall learning experience.

The final assessment of the learning experience, as reflected in the participants' interviews, revealed positive perceptions regarding their participation in the project. The evaluation of the project formed part of the overall research process and was used to assess the participants' experiences, the findings of which are presented in the following section.

5. Results – Findings

The analysis of the data obtained from the semi-structured interviews with the twenty (20) learners revealed five main thematic categories: (a) acquisition of knowledge about Environmental Education and Sustainable Development, (b) development of collaboration and communication skills, (c) enhancement of critical thinking and reflection, (d) cultivation of environmental awareness and responsible attitudes, and (e) personal empowerment and transformation of perceptions.

5.1 Acquisition of Knowledge about the Environment and Sustainability

Participants reported that, through their involvement in the project, they acquired substantial knowledge about climate change, the relationship between health, nutrition, and the environment, recycling as a daily practice and way of life, as well as issues related to the urban environment, green cities, and the sustainable management of natural resources. At the same time, they developed an understanding of fundamental concepts of Environmental Education and Sustainable Development, recognizing the close interdependence between environmental, social, and economic factors.

The connection between theoretical knowledge and experiential activities, educational visits, field research, and activities within the local community made a substantial contribution to participants' understanding of complex environmental issues. Learners emphasized that their active involvement in the learning process helped them approach environmental problems not as abstract concepts, but as issues that directly affect quality of life and the future of local communities. Many participants stated that, prior to their involvement in the program, they had only fragmented or limited knowledge of environmental problems and their consequences for everyday life. Through systematic investigation of the thematic areas, information seeking, collaboration with group members, and interaction with scientific experts, they developed a more comprehensive and critical understanding of the relationship between humans and the environment.

Particular emphasis was placed on understanding the concept of individual and collective responsibility toward the environment. Learners recognized that addressing environmental problems is not exclusively the responsibility of governmental bodies or scientific experts, but requires the active participation of all citizens through responsible everyday choices and behaviors. In addition, several participants emphasized that their engagement with issues such as recycling, energy conservation, sustainable consumption, and the protection of public spaces led them to adopt new practices in their personal and family lives. As they characteristically reported, the knowledge they acquired was not confined to the school context but was also transferred to their family and social environments, thereby having a multiplier effect on the environmental awareness of others.

Indicatively, one participant stated: *"I realized that protecting the environment is not only the responsibility of the government or experts, but also depends on our everyday choices."*

Another learner noted: *"Before we started the project, I thought that climate change was something distant. Now I understand that it directly affects our health, our quality of life, and our children's future."*

Similarly, one female participant stated: *"Through the activities, I realized that small changes in our everyday habits can have a significant positive impact on the environment."*

The above findings demonstrate that participation in the project contributed substantially not only to the acquisition of new knowledge but also to a deeper understanding of environmental issues, strengthening learners' environmental literacy and fostering connections between learning, everyday life, and social reality.

5.2 Development of Collaboration and Communication Skills

Participation in the project's group activities made a substantial contribution to the development of collaboration, communication, and collective decision-making skills. Learners reported that working in groups provided them with opportunities to exchange ideas and experiences, manage different perspectives, and jointly formulate decisions through processes of dialogue and negotiation. At the same time, systematic interaction among group members contributed to the development of relationships based on mutual respect, trust, and mutual support.

The opportunity to collaborate with individuals of different ages, cultural backgrounds, educational levels, and professional experiences emerged as particularly important. Participants pointed out that the diversity of the group had a positive impact, as it enabled them to become familiar with different ways of thinking and to draw on the experiences of other members as a source of learning. Through this process, acceptance of diversity and an understanding of the value of collective effort were strengthened.

Learners also emphasized that their participation in discussions, presentations, and joint activities significantly improved their communication skills. They reported feeling more comfortable expressing their views in public, providing arguments, actively listening to others, and participating in problem-solving processes. This development was particularly significant for several participants who, at the beginning of the program, appeared hesitant or reluctant to engage actively in group activities. At the same time, several learners reported that they learned to manage disagreements and conflicts arising during collaboration more effectively. Through dialogue and the search for common solutions, they developed skills in mediation, compromise, and respect for differing viewpoints, which they considered useful both in the educational process and in their personal and professional lives.

One participant characteristically stated: *"We learned to listen to one another, work together, and find solutions collectively."*

Another participant reported: *"At first, I found it difficult to speak in front of others. Through the group meetings, I gained more confidence, and now I find it easier to express my opinion."*

Similarly, one learner noted: *"Although we had different opinions, we learned to discuss them and reach common decisions without disagreements."*

The above findings demonstrate that the project method functioned as a dynamic framework for developing learners' social and communication skills, strengthening collaborative learning, active participation, and social interaction. This process contributed not only to the effective implementation of the project but also to the participants' personal and social development.

5.3 Enhancement of Critical Thinking and Reflection

One of the most significant findings of the study concerns the development of learners' critical thinking and reflective abilities. Participants stated that, through the investigation of environmental issues, the collection and evaluation of information from different

sources, and their participation in group discussions, they developed the ability to critically examine data, formulate evidence-based opinions, and approach complex social and environmental issues with greater responsibility. The project process functioned as a dynamic context for active learning and reflection, within which learners had the opportunity to connect their personal experiences with new knowledge and reconsider perceptions and beliefs that they had previously taken for granted. Engagement with real environmental problems encouraged them to seek alternative interpretations, evaluate different approaches, and recognize the complexity of environmental challenges.

At the same time, the systematic exchange of views within the working groups strengthened their ability to listen to different perspectives, formulate arguments, and reconsider their positions through processes of dialogue and reflection. Learners reported that collaborating with individuals with different experiences and perspectives helped broaden their ways of thinking and enabled them to approach issues with a more critical mindset. In addition, several participants emphasized that the project increased their awareness of the consequences that individual and collective choices have on the environment. This realization led them to reflect more deeply on their lifestyles, consumption habits, and personal role in environmental protection.

Another particularly important finding was that learners gained greater confidence in seeking, evaluating, and using information. Many participants stated that they learned to cross-check sources, identify unreliable information, and support their views with evidence-based data, a skill they considered particularly useful both in everyday life and in their participation as active citizens.

As one learner stated: *"I started thinking differently about issues that I had taken for granted and seeking more information before forming an opinion."*

Another participant emphasized: *"Through the discussions, I realized that a problem can have many sides and that you need to listen to different opinions before reaching conclusions."*

Similarly, one learner reported: *"I learned to search for information more carefully and not to believe everything I read so easily. Now I try to check whether information is reliable before using it."*

In addition, one participant noted: *"The project made me think more about my own habits and wonder how I can also contribute to protecting the environment."*

The above findings demonstrate that participation in the project contributed not only to the acquisition of knowledge but also to the development of higher-order cognitive skills, such as critical analysis, reflection, information evaluation, and evidence-based decision-making. This process strengthened learners' ability to approach issues of everyday life critically and to participate actively and responsibly in social and environmental contexts.

5.4 Cultivation of Environmental Awareness and Responsible Attitudes

Participation in the project made a substantial contribution to enhancing environmental awareness and shaping environmentally responsible attitudes and behaviors. Most learners reported that, following the completion of the program, they had developed a

greater awareness of environmental problems and of the ways in which everyday individual choices affect the natural environment. This new awareness led several participants to adopt more environmentally friendly practices, such as systematic recycling, conserving energy and water, reducing the use of single-use plastic products, and actively participating in environmental protection activities.

Experiential activities, direct engagement with environmental issues affecting the local community, and participation in field-based activities played a decisive role in fostering a more active and responsible attitude toward the environment. Learners did not limit themselves to acquiring knowledge; rather, they developed a stronger sense of personal and collective responsibility, recognizing that environmental protection is a shared responsibility of all citizens. At the same time, several participants stated that they began to reconsider everyday habits and consumption practices that they had previously taken for granted. This process led them to adopt more conscious choices regarding waste management, the use of natural resources and the protection of public spaces. According to their accounts, environmental responsibility ceased to be merely a theoretical concept and became a way of life that influenced their everyday decisions.

In addition, a particularly important finding was the learners' willingness to transfer the knowledge and experiences they had gained to their family and social environments. Many participants reported that they now discuss environmental issues more frequently with members of their families, encourage friends and relatives to participate in environmental activities, and act as agents for disseminating environmental messages within their communities. At the same time, some learners emphasized that their participation in the project increased their interest in issues of social and environmental justice, as they came to understand that the consequences of environmental degradation directly affect citizens' quality of life, health, and well-being. This realization contributed to the development of a more comprehensive understanding of the relationship between individuals, society, and the environment.

Indicatively, one participant stated: *"Now I try every day to do things that help the environment and to inform my family as well."*

Another learner noted: *"In the past, I did not pay much attention to recycling. Now I believe that it is everyone's responsibility and I try to apply what I have learned at home as well."*

Similarly, one participant stated: *"The activities we carried out helped me understand that even small actions can make a difference when many people participate."*

In addition, one female learner emphasized: *"I began to see my neighborhood differently and became more concerned about cleanliness and the protection of public spaces."*

The above findings demonstrate that participation in the project contributed substantially not only to increasing learners' environmental awareness but also to shaping attitudes, values, and behaviors associated with responsible environmental action and active citizenship. The participants' experiential engagement in authentic environmental activities appears to have strengthened their commitment to the principles of sustainability and created the conditions for maintaining positive environmental behaviors beyond the completion of the program.

5.5 Personal Empowerment and Transformation of Perceptions

The final thematic category concerns the personal empowerment and transformation of perceptions experienced by the learners through their participation in the project. The analysis of the interviews revealed that active participation in the activities, taking initiative, collaborating with other group members, and publicly presenting the results contributed significantly to strengthening the participants' self-confidence, self-esteem, and sense of personal efficacy.

Many learners stated that, through the project process, they discovered abilities and capabilities that they had not previously believed they possessed. Their participation in activities involving research, organization, decision-making, and the presentation of results provided them with opportunities to assume an active role in the learning process and experience success, thereby strengthening their belief in their own abilities. At the same time, several participants reported that their involvement in the project contributed to changing the way they perceived themselves both as learners and as active members of society. The processes of inquiry, reflection, and collective action helped them overcome feelings of insecurity or hesitation and develop greater confidence in their ability to learn, collaborate, and make meaningful contributions to addressing social and environmental issues.

A particularly important finding concerned the strengthening of learners' social participation. Many participants stated that, following the completion of the project, they felt more willing to participate in local community activities, express their views publicly, and take initiatives related to issues of social and environmental concern. This experience appears to have strengthened their sense of belonging and active citizenship. In addition, several participants referred to changes they observed in their ways of thinking and approaching problems. They stated that they learned to face difficulties with greater optimism, seek alternative solutions, and use collaboration as a means of addressing complex situations. This experience contributed to the development of a more positive and creative attitude toward learning and life in general. At the same time, some learners emphasized that the successful completion of the project served as motivation to continue their educational journey and personal development. Participation in an organized process of inquiry and experiential learning strengthened their willingness to pursue further learning, self-improvement, and active involvement in future educational or social initiatives.

Characteristically, one participant stated: *"For the first time, I felt that my opinion mattered and that I could contribute to something important for society."*

Another learner noted: *"Through the project, I realized that I can achieve my goals when I work with others and make an effort."*

Similarly, one female participant stated: *"Presenting our work in front of an audience was an experience that helped me overcome my fear and believe more in myself."*

In addition, another female participant emphasized: *"It was not only my knowledge about the environment that changed. The way I see myself and my own abilities changed as well."*

These findings highlight the transformative nature of the learning experience offered by the project method within the context of adult education. Active participation, collaboration, critical reflection, and the connection of learning with real social issues appear to have contributed not only to the acquisition of knowledge and skills but also to the re-evaluation and transformation of perceptions, values, and attitudes. Learners were empowered both personally and socially, developing greater autonomy, self-confidence, and willingness to participate actively in community life.

Table 1: Thematic Categories and Illustrative Codes

Thematic Category	Illustrative Codes
Knowledge	climate change, sustainability, recycling
Collaboration	dialogue, teamwork, communication
Critical thinking	information evaluation, reflection
Environmental awareness	behavioral change, responsibility
Empowerment	self-confidence, active participation

Overall, the findings of the study demonstrate that the implementation of the project method within the context of Environmental Education contributed substantially to the development of knowledge, skills, and attitudes associated with sustainability, active citizenship, and the personal empowerment of learners. At the same time, the findings highlighted the transformative potential of experiential learning in adult education and confirmed the pedagogical value of the project method in Second Chance Schools.

6. Discussion

The findings of the present study provide important insights into the pedagogical value of the project method in the fields of Environmental Education and Adult Education. The analysis of the interviews revealed that learners' participation in a structured experiential project contributed substantially to the acquisition of knowledge, the development of skills, the cultivation of environmental values, and the formation of attitudes associated with active citizenship. At the same time, the findings confirm the importance of participatory and experiential approaches to learning, as described in the relevant literature on Environmental Education and Adult Education. An analysis of the research questions indicates that the project method constitutes an effective pedagogical approach that enhances experiential learning, environmental awareness, and the active participation of learners.

6.1 How Do Learners Experience Their Participation in an Environmental Education Project within the Context of a Second Chance School?

With regard to the first research question, the results showed that learners experienced their participation in the project as a particularly positive, creative, and empowering experience. Most participants described the program as a process of active engagement

that enabled them to express their views freely, collaborate with other learners, and connect learning with issues arising from everyday life.

This experience differs significantly from traditional teaching practices, as learners were not confined to the role of passive recipients of information but participated actively in inquiry, the search for solutions and decision-making. These findings support the views of Rogers (1969), according to whom learning becomes more meaningful when it is based on learners' experiences, interests, and real needs. They are also consistent with Kolb's (1984) theory of experiential learning, which maintains that knowledge is constructed through the continuous interaction of experience, reflection, and action.

The development of feelings of self-confidence, acceptance, and participation was particularly significant. Learners reported that they felt they were members of a learning community in which they had the opportunity to share experiences, express concerns, and participate equally in the learning process. This experience appears to be particularly important for learners attending Second Chance Schools, who may have previously experienced educational failure or social exclusion.

6.2 What Knowledge, Skills, Values, and Attitudes Do Learners Develop Through Their Participation in Experiential and Collaborative Environmental Education Activities?

The second research question concerned the knowledge, skills, values, and attitudes developed by learners through their participation in experiential Environmental Education activities.

The results showed that participants acquired substantial knowledge about climate change, recycling, the sustainable management of natural resources, sustainable development, the relationship between the environment and health, as well as the importance of green cities and sustainable everyday living. At the same time, they developed skills related to searching for, evaluating, and using information, problem-solving, critical thinking, decision-making, and collaboration.

These findings support Kolb's (1984) theory, according to which knowledge is acquired more effectively when it is connected to direct experience and active participation. The active involvement of learners in real environmental protection activities appears to have facilitated their understanding of complex environmental concepts and strengthened the transfer of knowledge to authentic contexts of application. Equally important was the development of social and communication skills. Learners learned to collaborate, manage conflicts, construct arguments, and make collective decisions. These results are consistent with recent research highlighting the contribution of the project method to the development of collaboration, communication, and social interaction skills (Guo *et al.*, 2020).

At the same time, participants developed values and attitudes associated with respect for the environment, social responsibility, collective action, and solidarity. The cultivation of environmental awareness was not limited to the cognitive level but extended to the adoption of everyday practices and behaviors. The development of more

responsible consumption habits, participation in environmental activities, and the willingness to disseminate environmental messages within family and social environments constitute indications of meaningful changes in attitudes and values.

Furthermore, the findings revealed strong elements of transformative learning. Learners reconsidered established perceptions, challenged stereotypical views, and developed new ways of understanding the relationship between humans and the environment. This finding is directly connected to Mezirow's (1991) theory, according to which the critical examination of experience can lead to the transformation of frames of reference and to bigger changes in perceptions and attitudes.

6.3 What is the contribution of the project-based method to adult education, particularly in developing environmental awareness, active citizenship, and collaboration and communication skills?

With regard to the third research question, the findings indicate that the project-based method constitutes a particularly effective educational approach to adult education and, more specifically, to the promotion of Environmental Education.

The contribution of the project-based method is initially reflected in the enhancement of active participation and self-directed learning. Learners take initiative, participate in the design of the learning process, and develop a stronger sense of responsibility for their own learning. This finding is consistent with the principles of Knowles' (1984) andragogic theory, according to which adults learn more effectively when they actively participate in the planning and implementation of the learning process.

At the same time, the project-based method made a substantial contribution to the development of environmental awareness. Through the exploration of real-world environmental issues and participation in field-based activities, learners developed a deeper understanding of environmental problems and a stronger sense of personal and collective responsibility. These findings are consistent with contemporary approaches to Education for Sustainable Development, which emphasize that experiential participation is a key prerequisite for developing environmentally responsible behavior (Sancho Avalos *et al.*, 2023; Ardoin *et al.*, 2020).

Furthermore, participation in collective actions enhanced learners' active citizenship. Participants did not limit themselves to acquiring knowledge but developed a sense that they could positively influence their community and contribute to addressing social and environmental problems. This finding is consistent with Freire's (1970) pedagogical approach, according to which education should contribute to the empowerment of citizens and their conscious participation in social transformation.

The contribution of the method to the development of collaboration and communication skills was particularly significant. Group work, the exchange of perspectives, problem-solving, and the presentation of outcomes created conditions that fostered interaction, trust, active listening, and effective communication. These skills are

considered essential not only for learning success but also for citizens' active participation in democratic and sustainable societies.

Overall, the findings of the study confirm that the project-based method constitutes a powerful pedagogical approach to adult education, combining experiential learning, critical reflection, and collaborative action. Through their participation in the project, learners acquired not only knowledge about the environment but also developed skills, values, and attitudes associated with sustainability, social participation, and active citizenship. The findings of the present study support the perspectives of Rogers (1969), Kolb (1984), Mezirow (1991), Guo *et al.* (2020), Wiek *et al.* (2011) and Redman & Wiek (2021), highlighting the potential of the project-based method as a tool for transformative learning and social change within Second Chance Schools.

A particular contribution of the present study lies in highlighting the project-based method as a tool for cognitive development and as a means of supporting the reintegration and empowerment of adult learners participating in second-chance education settings. In this context, Environmental Education functions as a field of social learning through which learners redefine their role as active citizens.

7. Conclusions

The present study investigated the pedagogical value of the project method within the context of Environmental Education and adult education through its implementation with learners attending a Second Chance School. The findings demonstrated that the project method constitutes a pedagogical practice that makes a significant contribution to experiential and collaborative learning, substantially supporting the development of knowledge, skills, values, and attitudes associated with sustainability, active citizenship, and the personal empowerment of learners.

The participants experienced the learning process as a creative, enjoyable, and meaningful experience that enabled them to actively participate in the construction of knowledge, collaborate with others, exchange views, and connect theory with practice. This finding confirms the importance of active participation and intrinsic motivation in the learning process, as supported by Rogers (1969, 1999), as well as by contemporary studies highlighting the positive impact of the project method on learners' engagement and motivation (Kokotsaki *et al.*, 2016).

At the same time, the study demonstrated that participation in experiential and collaborative Environmental Education activities contributed significantly to the development of cognitive, social, and metacognitive skills. The learners acquired substantial knowledge about climate change, sustainable development, recycling, the protection of natural resources, and the relationship between humans and the environment. In addition, they developed skills in seeking, evaluating, and using information, critical thinking, problem-solving, communication, and collaboration, while also strengthening their self-organization, self-directed engagement, and learning autonomy. These findings are consistent with Kolb's (1984) theory of experiential

learning, according to which knowledge is constructed through experience and reflection, as well as with the principles of self-directed learning, which are considered fundamental in adult education (Loeng, 2020).

The contribution of the project to the cultivation of environmental awareness and responsible attitudes toward the environment was particularly significant. The learners developed greater awareness of environmental issues and adopted practices that promote sustainability in everyday life, such as recycling, conserving natural resources, and participating in environmental protection activities. Their active involvement in field activities and interventions within the local community strengthened their sense of personal and collective responsibility, confirming that learning acquires greater value when it is connected to authentic social and environmental issues (Wiek *et al.*, 2011; Redman & Wiek, 2021).

Furthermore, the findings highlighted the transformative character of the project method. Through their participation in the learning process, the learners re-examined perceptions, values, and attitudes they had previously held, developed greater confidence in their abilities, and strengthened their self-esteem and social participation. This finding supports Mezirow's (1991) views on transformative learning, according to which critical reflection on experience can lead to substantial changes in the way individuals perceive themselves and the world around them. At the same time, the social and emancipatory dimension of learning described by Freire (1977) emerged through the learners' active participation in collective actions and processes of social intervention.

The study also highlighted the crucial role of the educator as a mentor, facilitator, and supporter of learning. The supportive relationship developed between educators and learners contributed to the creation of a democratic and collaborative learning environment, strengthening learners' active participation and willingness to take initiatives. This finding is consistent with the views of Rogers (1999) and Hmelo-Silver *et al.* (2021), who argue that the effectiveness of collaborative and inquiry-based forms of learning depends to a considerable extent on the supportive and guiding role of the educator.

Overall, the present study demonstrates that the project method constitutes an integrated pedagogical approach that connects knowledge with action, promotes experiential and collaborative learning, and supports the development of skills essential for the twenty-first century, such as critical thinking, collaboration, communication, and problem-solving (Guo *et al.*, 2020). At the same time, it contributes substantially to the promotion of Environmental Education and Education for Sustainable Development, as it encourages learners to connect local environmental issues with global challenges and to assume an active role in shaping sustainable societies (Sancho Avalos *et al.*, 2023).

In conclusion, the implementation of the project method in Second Chance Schools emerges as a particularly effective educational practice that not only enhances the learning process but also contributes to the development of active, responsible, and environmentally aware citizens who are capable of participating meaningfully in social life and promoting sustainable development.

8. Limitations of the Study

Despite the significant contribution of the present study to understanding the pedagogical value of the project method within the context of Environmental Education and adult education, it is necessary to acknowledge certain limitations that affect the interpretation and generalizability of the findings.

First, a major limitation concerns the sample size. The study was conducted with the participation of twenty (20) learners, a number considered adequate for a qualitative case study; however, it does not allow the findings to be generalized to the entire population of learners attending Second Chance Schools or other adult education settings. The findings reflect the experiences and perceptions of a specific group of participants and should therefore be interpreted within the particular social and educational context in which they were developed.

A second limitation is related to the fact that the study was conducted in only one Second Chance School in the wider Athens area. The specific characteristics of the school, the composition of its learner population, its sociocultural context, and the practices followed may differentiate the findings from those that might emerge in other Second Chance Schools or different educational settings. Therefore, caution is required when transferring the conclusions to other educational structures or geographical areas.

Furthermore, the use of a qualitative research approach, although it enabled an in-depth exploration of the learners' experiences, views, and feelings, may be influenced by the subjective nature of the participants' narratives. The personal experiences, attitudes, and perceptions recorded reflect the way in which the learners themselves experienced their participation in the project and cannot fully capture all dimensions of the learning process.

At the same time, the use of semi-structured interviews as the main data collection tool may have been influenced by socially desirable response bias. Participants may have expressed more positive views regarding their experience, particularly because of their direct involvement in the programme and the relationship they had developed with the educators and the research process.

Another limitation concerns the duration of the study. The research focused on recording the learners' views immediately after the completion of the project and, therefore, did not investigate the long-term retention of the knowledge, attitudes, and behaviours developed during their participation. Consequently, it is not possible to determine with certainty the extent to which the changes identified were sustained over time.

Finally, the researcher's role as directly involved in the educational process may have influenced, to some extent, both the collection and the interpretation of the data. Although every effort was made to ensure the objectivity and reliability of the study through systematic data analysis and adherence to the principles of research ethics, the possibility of researcher bias cannot be completely excluded.

Despite these limitations, the present study provides useful empirical evidence regarding the implementation of the project method in Environmental Education for adults and contributes to a better understanding of the potential offered by experiential and collaborative learning in Second Chance Schools.

9. Suggestions for Future Research

The findings of the present study highlight the significant contribution of the project method to Environmental Education and adult education, while also creating new research perspectives that merit further investigation. Further study of this field could contribute to strengthening scientific knowledge regarding experiential and collaborative learning approaches, as well as to improving educational practices implemented in Second Chance Schools and other adult education settings.

Initially, it is considered appropriate to conduct similar studies in a larger number of Second Chance Schools from different geographical regions of Greece. Expanding the research field would allow comparisons of findings across different social, cultural, and educational contexts, contributing to the development of more generalizable conclusions regarding the effectiveness of the project method. At the same time, the inclusion of a larger and more diverse sample of learners in terms of age, educational level, professional background, and cultural origin could reveal potential factors that influence the learning experience and the outcomes of participation in Environmental Education programmes.

Furthermore, the use of mixed-methods approaches, combining qualitative and quantitative research data, is of particular interest. Qualitative research provides the opportunity for an in-depth understanding of learners' experiences, emotions, and perceptions, whereas quantitative approaches can contribute to measuring variables such as the development of environmental attitudes, self-efficacy, collaborative competence, and environmental responsibility. Combining the two approaches could enhance the validity and reliability of the findings, providing a more comprehensive picture of the educational impact of the project method.

Another important direction for future research concerns the longitudinal monitoring of learners after the completion of the programmes. The present study recorded the experiences and perceptions of the participants immediately after the completion of the project, without investigating the duration and stability of the changes that occurred. Future studies could examine whether the knowledge, skills, values, and attitudes developed are maintained over time and transferred into learners' everyday lives. Of particular interest would be investigating whether participants continue to adopt environmentally responsible behaviours, participate in local community activities, and act as agents for the dissemination of environmental values within their family and social environments.

At the same time, it would be useful to investigate the application of the project method in other thematic areas of adult education, such as health education, digital education, cultural education, social inclusion, and the development of professional

skills. Such an expansion would allow the adaptability and effectiveness of the method to be evaluated across different learning environments and subject areas.

Equally important is further investigation of the role of the educator as a mentor, coordinator, and facilitator of learning within experiential approaches. Future studies could examine the skills, strategies, and pedagogical practices that enhance learners' active participation, autonomy, and critical reflection, contributing to the development of a comprehensive professional development model for adult educators.

Finally, it is proposed that future research investigate the relationship between participation in Environmental Education programmes and the development of characteristics associated with active citizenship, such as social participation, volunteering, initiative taking, and involvement in decision-making processes at the local level. This research direction could further highlight the role of Environmental Education as a mechanism for social transformation and citizen empowerment.

Overall, the above suggestions could contribute to further establishing the project method as an effective pedagogical approach in adult education, while enhancing understanding of the factors that promote experiential learning, transformation of perceptions, environmental responsibility, and the development of active and socially aware citizens.

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Conflict of Interest Statement

The authors declare no conflicts of interest.

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