OUTDOOR EDUCATION AND SOCIO-EMOTIONAL DEVELOPMENT: HOW THE SYNECOLOGICAL AND TECHNOLOGICAL APPROACH CAN BE INNOVATIVE IN NON-FORMAL EDUCATIONAL CONTEXTS

OUTDOOR EDUCATION E SVILUPPO SOCIO-EMOTIVO: COME L'APPROCCIO SINECOLOGICO E TECNOLOGICO PUÒ ESSERE INNOVATIVO IN CONTESTI EDUCATIVI NON FORMALI

Raffaella Zullo

Università Giustino Fortunato
r.zullo@studenti.unifortunato.eu

Tonia De Giuseppe
Università Giustino Fortunato
t.degiuseppe@unifortunato.eu

Double Blind Peer Review

Zullo, R., De Giuseppe, T. (2025). Outdoor Education and socio-emotional development: how the synecological and technological approach can be innovative in non formal educational context. Italian Journal of Health Education, Sports and Inclusive Didactics, 9(3).

Doi:
https://doi.org/10.32043/gsd.v9i3.1582

gsdjournal.it
ISSN: 2532-3296
ISBN: 978-88-6022-522-5

ABSTRACT

The research hypothesis analyzes the impact of outdoor education on children's socio-emotional development, adopting a synecological and technological approach. This perspective allows for the integration of outdoor education and digital innovation in non-formal educational contexts, such as catechism, promoting inclusion and fostering the development of children's social and relational skills.

L'ipotesi di ricerca analizza l'impatto dell'educazione in natura sullo sviluppo socio-emotivo dei bambini, adottando un approccio sinecologico e tecnologico. Tale prospettiva consente di integrare l'outdoor education el'innovazione digitale in contesti educativi non formali, come nella catechesi, promuovendo l'inclusione e favorendo lo sviluppo delle competenze socio- relazionali dei bambini.

KEYWORDS
Inglese: nature-based education; socio-emotional development; synecology; catechesis;
Italiano: educazione in natura; sviluppo socio-emotivo; sinecologia; catechesi;

Received 17/09/2025
Accepted 28/10/2025
Published 07/11/2025

The contributions of the authors in this paper are of Raffaella Zullo in the introductory part where it is explained the synecological and technological approach for an innovative education, their theoretical framework and the contribution of Neuroscience. For the methodology there is the contributions of Tonia De Giuseppe in support of the innovative and inclusive methodology of Flipped Inclusion.

Introduction

In today's society, characterized by cultural pluralism and increasing educational complexity, there is a growing need to reprogram educational practices that aim for the integral formation of the individual, using more flexible and inclusive strategies. The research question focuses on how to integrate innovative educational methodologies, such as outdoor education, and the contribution of technological innovations to non-formal educational contexts such as catechism. Outdoor education considers the synecological approach fundamental to the development of the individual in contact with nature and with their peers.

The synecological approach refers to the systemic interaction between the individual and the surrounding environment. This could be an interesting approach to explore in this article for a research hypothesis, analyzing how it could be implemented in an educational context. This could also be achieved through technological tools that make this educational experience even more stimulating and interactive.

Catechism has been shown to foster processes of socialization, internalization of values, and development of the emotional dimension. Despite this, there are limitations in the analysis of contemporary educational practices, particularly with regard to active methodologies and the use of educational technologies within non-formal learning contexts.

Integration with outdoor education allows for the enrichment of non-formal educational contexts with concrete, sensorial, and emotional experiences, fostering active and more participatory learning. Nature in this context becomes a symbolic and educational space, fostering empathy, collaboration, and inclusion.

The research questions that will be structured within this paper concern how to integrate synecological and technological approaches in a hypothetical non-formal educational context, how these impact the child's emotional well-being and the socialization of outdoor education, how to implement a hypothetical educational project, and what the methodology and expected outcomes might be.

Based on the questions stated above, the research aims to pursue several objectives, such as analyzing innovative educational strategies that develop

The contributions of the authors in this paper are of Raffaella Zullo in the introductory part where it is explained the synecological and technological approach for an innovative education, their theoretical framework and the contribution of Neuroscience. For the methodology there is the contributions of Tonia De Giuseppe in support of the innovative and inclusive methodology of Flipped Inclusion.

children's socio-cognitive resources, enhancing the synecological approach of outdoor education, and hypothesizing a possible educational project that can be implemented through various methodologies (Flipped inclusion) and innovative technological proposals (Gamification, Storytelling, digital laboratories).

1. Theoretical Framework

The synecological approach, inspired by ecology, considers learning as a dynamic and relational process arising from the interaction between individuals, environments, and communities. Synecological education consists of an adaptive process that, applied to learning, generates a dynamic and more participatory educational process.

In this regard, it would be interesting to explore Bronfenbrenner's bio-psycho-ecological theory, which through his studies emphasizes the importance of the environment in the development and determination of individuals throughout their lives. He placed at the center of his study the understanding of what happens to individuals at various stages of growth within an environment.

We can say that a person is an active human being, that is, a dynamic entity that continually adapts to the surrounding environment. The ecological environment he conceived is not a single entity, but rather consists of various concentric structures incorporated within one another.

Bronfenbrenner considers the environment as a set of interrelated systems, which are:

- the microsystem;
- the mesosystem;
- the exosystem;
- the macrosystem;
- the chronosystem

The contributions of the authors in this paper are of Raffaella Zullo in the introductory part where it is explained the synecological and technological approach for an innovative education, their theoretical framework and the contribution of Neuroscience. For the methodology there is the contributions of Tonia De Giuseppe in support of the innovative and inclusive methodology of Flipped Inclusion.

The microsystem represents the living environment where the child has direct and frequent contact, such as family, friends, school, and catechism class. The mesosystem concerns the relationships between individuals, such as between parents or the relationship between teachers and parents. The exosystem influences the child's lifestyle indirectly during growth and concerns the parents' lifestyle and relationships with the social environment. The macrosystem is a system that encompasses all aspects of the individual: cultural, economic, political, and religious. He later added another system, called the chronosystem, which refers to all the experiences and events that occur throughout a person's life.

To discuss the importance of learning in natural education, we can focus on the microsystem, where the subjects listed above can influence an individual's learning.

In social learning theory, Albert Bandura argues that individuals can learn by observing others as models, a type of learning called "observational learning" (Bandura, 1977). He emphasizes how the social environment can facilitate the acquisition of new knowledge. From this, it can be argued that outdoor education plays an important role in children's development, as an innovative and experiential educational strategy capable of fostering active learning (including through observation), cognitive and social skills, and greater environmental awareness.

1.2 Neuroscience and Pedagogy

The outdoor environment is part of everyday life and should be experienced by children as an educational environment with strong social, cognitive, sensorimotor, and emotional implications. Education in nature offers great flexibility for different age groups and contexts. Through contact with nature, exploration, observation, and manipulation, children can develop their personal resources.

Neuroscience states that the brain learns more effectively when engaged in stimulating environments. Neurodidactics is a discipline that integrates neuroscience and educational sciences, it demonstrates that natural conditions significantly influence cognitive processes.

Contact with natural light, smells, and external noises promote the release of dopamine and serotonin, neurotransmitters linked to well-being and attention.

The contributions of the authors in this paper are of Raffaella Zullo in the introductory part where it is explained the synecological and technological approach for an innovative education, their theoretical framework and the contribution of Neuroscience. For the methodology there is the contributions of Tonia De Giuseppe in support of the innovative and inclusive methodology of Flipped Inclusion.

These are essential not only for mood, but also for concentration and learning. A variety of sensory stimuli promotes brain plasticity, the brain's ability to modify its synaptic connections in response to experience. This is crucial because it allows the brain to learn dynamically through adaptation.

Studies conducted on children and students who participated in outdoor learning projects demonstrate improved cognitive performance and a greater capacity for emotional self-regulation (Castrovinci, 2025).

2. Methodology

Outdoor Education programming must be flexible, both based on space and children's needs.

Objectives must be established, such as planning a hypothetical scenario, determining which resources and skills can be enhanced and developed, and how to make an educational experience more inclusive and innovative, and gathering feedback at the end. The hypothetical approach is mixed, integrating qualitative and quantitative data:

- quantitative, involving the administration of questionnaires, such as the Social Emotional Learning Scale, which are rating scales regarding participation and motivation, administered to children and parents before and after catechism sessions;

- qualitative, involving participant observation during meetings and semi-structured interviews with children and parents, including a focus group.

Six parishes in diverse sociocultural contexts could be sampled (for example, 120 children aged 6 to 10).

A concrete example of how an educational project can be structured in a non-formal educational context, such as a church setting, can be structured following the Flipped Inclusion methodology, which is structured into four phases: explore, ideate, plan, and experiment.

The contributions of the authors in this paper are of Raffaella Zullo in the introductory part where it is explained the synecological and technological approach for an innovative education, their theoretical framework and the contribution of Neuroscience. For the methodology there is the contributions of Tonia De Giuseppe in support of the innovative and inclusive methodology of Flipped Inclusion.

Below, a proposed educational program based on Flipped Inclusion in the four phases of E.I.P.S. will be illustrated, in a non-formal catechetical educational context contextualized in Outdoor Education.

Title: Encountering God in Creation: Faith, Nature, and Community

Phase 1 – EXPLORE

Objective: To stimulate curiosity and predispose children to the theme of faith in creation.

Activities to be carried out:

- At home or in the classroom: children receive brief, accessible stimuli (illustrated Bible video, image, short audio prayer) on the theme "God speaks to us through creation and relationships."

- Task: Collect a thought, a question, or a natural object that prompts reflection on God and creation.

Inclusion: Differentiated materials (visual cards, audio readings, simple maps) so everyone can prepare.

Phase 2 – DESIGN

Objective: Stimulate creativity and bring out personal interpretations of the message.

Activities:

- Outdoor meeting: Children share objects and thoughts.

- Brainstorming: "In what ways does God speak to us through nature and people?"

- Each group develops an idea for an activity that connects the message of faith to everyday life (e.g., simple prayer, symbolic sign, small performance).

Inclusion: Opportunity to express themselves through different languages (words, gestures, drawing, music).

Phase 3 – ORGANIZE

The contributions of the authors in this paper are of Raffaella Zullo in the introductory part where it is explained the synecological and technological approach for an innovative education, their theoretical framework and the contribution of Neuroscience. For the methodology there is the contributions of Tonia De Giuseppe in support of the innovative and inclusive methodology of Flipped Inclusion.

Objective: Organize a community activity that combines catechesis and concrete experience.

Activities:

The children, divided into groups, plan:

- an act of environmental care (picking up trash in the courtyard/park),

- a religious symbol made from natural materials (cross, heart, tree of life),

- a short prayer or story to share.

- Role definition (collector, builder, writer, storyteller).

Inclusion:

Roles assigned according to each child's talents and abilities; peer support.

Phase 4 – EXPERIMENT

Objective: To live the community experience and reflect on the connection between faith, nature, and life.

Activities:

The groups carry out their projects in the outdoor setting:

- Time for sharing: final circle, sharing of works, community prayer.

- The educator connects the experience to catechesis: "Creation is a gift to be protected, a sign of God's love."

Inclusion:Each child participates according to their own expressive modalities (words, gestures, images, song, silence).

3. Results and Discussion

The contributions of the authors in this paper are of Raffaella Zullo in the introductory part where it is explained the synecological and technological approach for an innovative education, their theoretical framework and the contribution of Neuroscience. For the methodology there is the contributions of Tonia De Giuseppe in support of the innovative and inclusive methodology of Flipped Inclusion.

The research hypothesis and proposed methodological framework suggest a series of expected results across multiple dimensions: individual, socio-relational, educational, and community.

Regarding personal and emotional development, integrating Outdoor Education into catechism sessions could promote a reduction in stress levels, an increase in emotional self-regulation, and an increase in adaptability, as confirmed by neuroscientific studies (Castrovinci, 2025).

Furthermore, other resources could be developed, such as the ability to empathize and collaborate through group activities and experiential workshops. Children learn to cooperate, listen, and respect others' time and ways of expressing themselves. This undoubtedly has positive implications for communication skills, which are exercised by children's ability to express themselves in a variety of ways (drawing, gestures, music). Storytelling and interpersonal sharing skills are strengthened, which increases children's sense of self-efficacy in their active roles within educational projects and increases their confidence in their social skills.

Another expected outcome concerns inclusiveness: the use of diverse materials, the provision of multisensory activities, and the opportunity to assume different roles within the projects makes the program accessible even to children with special educational needs. Catechesis becomes a truly inclusive space, where each child feels valued and can develop their personal resources. At the same time, the ecclesial community is strengthened, becoming a place of belonging and exchange where children, families, and educators share values and meanings.

On a value-based and spiritual level, the experience translates into a deeper internalization of Christian principles, such as care, respect, and gratitude. The union of words of faith and concrete actions allows children to directly grasp the connection between catechesis and daily life, overcoming the dichotomy between doctrinal content and real experience. Nature, in this sense, is not merely a backdrop but becomes the protagonist of an education in ethical responsibility and the stewardship of creation, seen as a gift to be protected and valued.

From a methodological and educational perspective, the expected results concern the validation and transferability of the Flipped Inclusion model to the catechetical context. The experiment shows how the four-phase structure (explore, ideate,

The contributions of the authors in this paper are of Raffaella Zullo in the introductory part where it is explained the synecological and technological approach for an innovative education, their theoretical framework and the contribution of Neuroscience. For the methodology there is the contributions of Tonia De Giuseppe in support of the innovative and inclusive methodology of Flipped Inclusion.

design, experiment) can foster effective structuring for active and participatory learning, even in informal contexts. The integration of innovative technological tools, such as gamification, storytelling, and digital workshops, does not replace but enhances the outdoor experience, making learning more engaging and interactive.

Finally, the long-term impacts concern the possibility of building an educational continuity that goes beyond the catechetical moment, intertwining with the school and family curriculum.

Children who experience faith through active and sustainable citizenship practices, such as environmental care and community engagement, develop pro-social and pro-environmental behaviors that can be consolidated into adulthood. In this way, the project not only strengthens the catechism experience, but also helps promote an innovative pedagogy capable of integrating nature, technology, and spiritual education into a single educational path.

Conclusions

Based on the studies discussed, we can argue that the integration of outdoor education, understood as a synecological approach, and innovative and inclusive educational methodologies represents a significant perspective for the renewal of catechesis as a context for non-formal learning. Pedagogical and neuroscientific literature confirms that contact with nature and the use of active and multisensory strategies foster not only cognitive development but also socio-emotional development, promoting resilience, intrinsic motivation, and the ability to self-regulate. At the same time, the spiritual dimension finds fertile ground in nature and the educational community for a deeper internalization of Christian values and for building meaningful connections between faith and everyday life.

The application of the Flipped Inclusion methodology, enriched by the contribution of educational technologies (gamification, storytelling, digital laboratories), demonstrates the possibility of making catechesis an inclusive, participatory experience that can be replicated in different contexts. This approach values individual talents, fosters collaboration, and allows each child to feel an integral part of a community journey.

The contributions of the authors in this paper are of Raffaella Zullo in the introductory part where it is explained the synecological and technological approach for an innovative education, their theoretical framework and the contribution of Neuroscience. For the methodology there is the contributions of Tonia De Giuseppe in support of the innovative and inclusive methodology of Flipped Inclusion.

Therefore, catechesis, integrated with natural education and innovative tools, not only contributes to the child's harmonious growth—cognitive, emotional, relational, and spiritual—but also serves as a laboratory for active and sustainable citizenship. Looking ahead, this educational model can be a valuable resource for the holistic development of the individual, capable of combining tradition and innovation in a pedagogical synthesis that meets contemporary educational challenges.

References

Bandura A., Autoefficacia. Teoria e applicazioni, Erickson, 2000.

Bandura A. (1977). Social Learning Theory. Englewood Cliffs: Prentice-Hall.

Barra L. & Trecate F., Oltre la formazione un tour nella gamification, Armando Editore, 2021.

Bronfenbrenner U., The Ecology of Human DevelopmentExperiments by Nature and Design, Harvard University Press, 1979.

Castrovinci L., Neurodidattica e attività outdoor. Cosa succede al cervello fuori dalla classe, TuttoScuola, 2025.

De Giuseppe T., Corona F., La Flippled Inclusion tra paradigmi esistenziali e mission di inclusività sistemica, pag. 31, RTH Brain Education Cognition, 2020.

Dewey J., Experience and Education, New York Macmillan Company, 1938.

Lucisano P.& Salerni A., Metodologia della ricerca in educazione e formazione, Carocci, 2002.

Mortari L., Apprendere dall'esperienza il pensare riflessivo della formazione, Carocci, 2004.

Paparella N., Romeo F., Tarantino A., Vulnerabilità e resilienza. Dispositivi pedagogici e prospettive didattiche per l'infanzia, FrancoAngeli, 2018.

Piaget J., The Principles of Genetic Epistemology, London Routledge, 1972.

The contributions of the authors in this paper are of Raffaella Zullo in the introductory part where it is explained the synecological and technological approach for an innovative education, their theoretical framework and the contribution of Neuroscience. For the methodology there is the contributions of Tonia De Giuseppe in support of the innovative and inclusive methodology of Flipped Inclusion.

Rivoltella P., Neurodidattica. Insegnare al cervello che apprende, Raffaello Cortina Editore, 2024.

Tramma S., Che cos'è l'educazione informale, Carocci, 2009.

The contributions of the authors in this paper are of Raffaella Zullo in the introductory part where it is explained the synecological and technological approach for an innovative education, their theoretical framework and the contribution of Neuroscience. For the methodology there is the contributions of Tonia De Giuseppe in support of the innovative and inclusive methodology of Flipped Inclusion.