



Design of a Pedagogical Model of Education for Environmental Citizenship in Primary Education

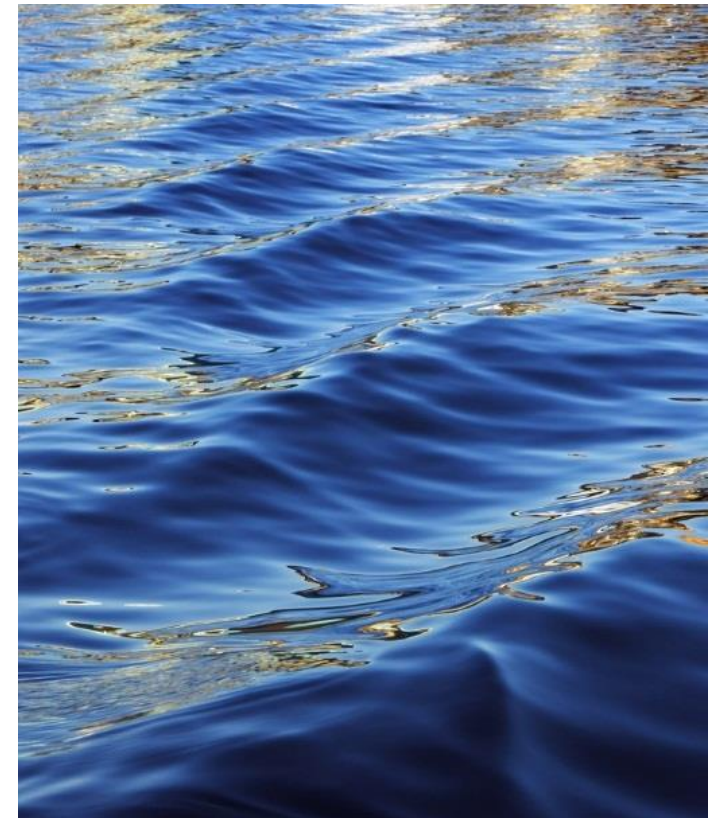
Sustainability, 13,6000
<https://doi.org/10.3390/su13116000>

Teresa Monte
teresamonte@edu.ulisboa.pt

Pedro Reis
preis@ie.ulisboa.pt



European Network for
Environmental Citizenship
Cost Action CA16229



Education for Environmental Citizenship in primary education

There are already several pedagogical models used to promote education for environmental citizenship (e.g. Chu et al., 2016; Hadjichambis et al., 2020; Hawthorne e Alabaster, 1999; Hungerford et al., 1992; Jensen, 2004)*; however, these models are general and without direct application in primary education.

This research aims to develop a pedagogical model suitable for primary education in Portugal (6 to 10 years old).

The first prototype was based on a systematic review of the literature.

The second prototype is an improvement based on opinions and suggestions from environmental education specialists.

*Chu, S. K. W., Reynolds, R. B., Tavares, N. J., Notari, M., & Lee, C. W. Y. (2016). 21st century skills development through inquiry-based learning: From theory to practice. Hong Kong: Springer.
Hadjichambis, A. Ch., e Paraskeva-Hadjichambi D. (2020). Education for Environmental Citizenship: The Pedagogical Approach. In A. Ch. Hadjichambis et al. (Eds.), Conceptualizing Environmental Citizenship for 21st Century Education (pp. 237-261). Springer.
Hawthorne, M., Alabaster, T. (1999). Citizen 2000: Development of a model of environmental citizenship. *Global Environmental Change* 9, 25-43.
Hungerford, H. R. 1992. Investigating and Evaluating Environmental Issues and Actions: Skill Development Modules. Stipes Pub Llc.
Jensen, B. B. (2004) Environmental and health education viewed from an action-oriented perspective: a case from Denmark. *Journal of Curriculum Studies*, 36(4), 405-425.

Methodology: Design-Based Research



Methodology: Design-Based Research (Preliminary investigation)

Literature Review Process

Planning	- Definition of searching criteria according with the research objectives - Selection of databases to be used
Search and evaluation of information	- Search for documents - Documents' categorization
Analysis	- Content analysis of the documents
Synthesis	- Writing results

Criteria for document selection

Education for Environmental Citizenship.

Environmental Education initiatives in different contexts with the involvement of schools, family, and community.

Pedagogical models for Environmental Education and Environmental Citizenship.

Research on attitudes, behavior, emotions, and decision making in primary education, about environment.

Environmental Education and innovative pedagogical strategies.

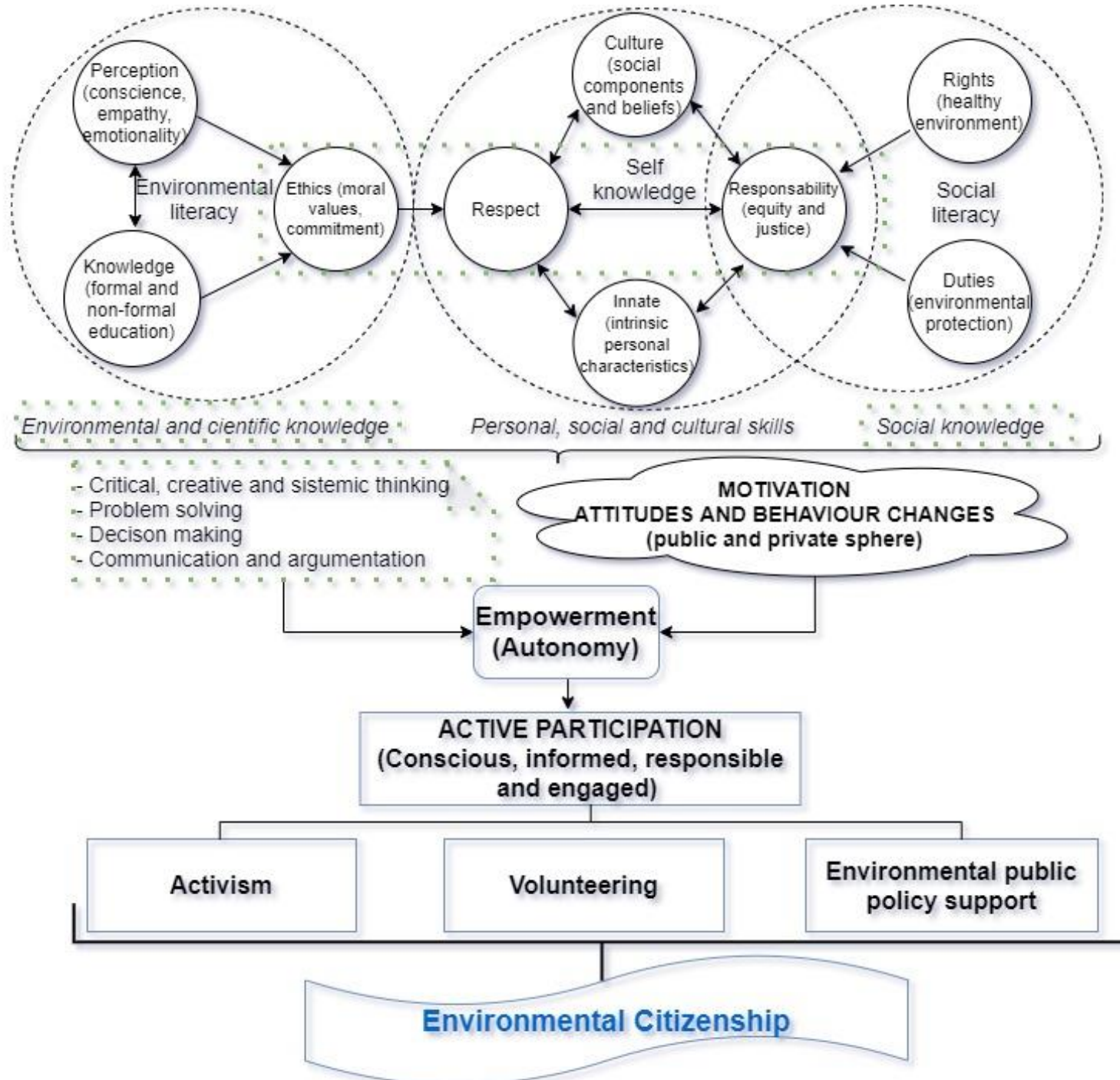
Databases used:

- Library Database at the Institute of Education (University of Lisbon), containing the University of Lisbon Integrated Library System (SIBUL), the General Repository of the University of Lisbon, and the Scientific Repository of Open Access of Portugal (RCAAP).
- EBSCO and B-ON portals to access full texts of scientific journals.
- Google Scholar, the website of the Ministry of Education, and websites of Environmental Non-Governmental Organizations (ONGA).

Learning outcomes

Learning outcomes:

- environmental awareness and consciousness,
- social, environmental and scientific knowledge,
- critical and creative thinking,
- ethics,
- respect,
- responsibility,
- self-knowledge,
- communication skills,
- problem solving and decision-making skills,
- empowerment.



Pedagogies

All pedagogies are:

- Childhood-centered learning,
- Action-oriented learning,
- Decision making, and problem solving, in a conscious and informed way,
- Learning that encourages children's involvement with nature, motivating them for their active civic participation in social and environmental issues throughout life.
- Play based learning and contemplative learning are included in the other pedagogies.



Pedagogies *versus* Learning outcomes

Learning outcomes

Pedagogies	Learning outcomes											
	Environmental consciousness	Environmental and scientific knowledge	Social knowledge	Critical and creative thinking	Ethics	Respect	Responsability	Self knowledge	Communication skills	Problem solving skills	Decision making skills	Empowerment
Colaborative learning				x		x	x	x	x	x		
Socio-emotional learning (SEL)	x		x			x	x	x	x			
Critical inquiry learning	x	x		x			x		x	x	x	x
Community-oriented learning			x		x		x		x	x		x
Outdoor learning	x	x			x	x	x	x	x			
Nature-based solutions learning (NBS)	x	x		x		x	x		x	x	x	x

Environmental activities

Proposed Activities	Pedagogies that can be used	Learning outcomes
Plantation of native species and eradicate invasive flora species around school and in public places in collaboration with Municipal Council.	Nature-based solutions learning Nature-based learning (Outdoor) Collaborative learning Community-oriented learning	Environmental consciousness and knowledge Respect, Responsibility, Ethics Critical and creative thinking Empowerment
Construction, plantation, and maintenance of a vegetable plot, inside and outside the school, with recycled materials.	Nature-based solutions learning Nature-based learning (Outdoor) Collaborative learning	Environmental consciousness and knowledge Respect, Responsibility, Ethics Critical and creative thinking Empowerment
Conduct a composting point at school and in community, together with Municipal Council.	Collaborative learning Community-oriented learning Socio-emotional learning Nature-based solutions learning	Environmental consciousness and knowledge Respect, Responsibility, Ethics Critical and creative thinking Empowerment Social and self knowledge
Identification of specific urban environmental issues in the community, choose situations that most concern them, like social inequality and poverty and act to improve, presenting their solutions to local authorities.	Nature-based solutions learning Critical inquiry learning Collaborative learning Community-oriented learning Socio-emotional learning	Environmental consciousness and knowledge Respect, Responsibility, Ethics Critical and creative thinking Empowerment Social and self knowledge Problem solving and decision making Communication skills
Creation of a "laboratory-garden" in collaboration with Municipal Council, community, and NGOs.	Nature-based solutions learning Critical inquiry learning Collaborative learning Community-oriented learning Socio-emotional learning	Environmental consciousness and knowledge Respect, Responsibility Critical thinking Empowerment Social and self knowledge

Proposed Activities

Construction of vertical and/or roof gardens at school and promote this gardens at student's home and at community public places, like libraries, in collaboration with Municipal Council.

Realization of community exhibitions and markets in collaboration with scientists, environmentalists, agronomists, farmers, NGOs, and environmental centers, concerning to climate changes adaptation.

Creation of networking and online platforms in collaboration with other schools in the region/country.

Study visits to natural areas and field activities for fauna and flora observation of the surrounding area, as well as identification of threatened species.

Waste separation games from a set containing: packaging, papers, bottles, fruit peels, batteries, oils, and other waste from school.

Construction of mini eco points to place inside the classrooms, reusing recycled material.

Poster exhibition in school, museums, and municipal libraries with measures to save electricity and water.

Cleaning campaigns in school outdoor spaces and surrounding together with community institutions and Municipal Council.

Marine waste management exhibitions, in public places, like museums and libraries, and debates together with local communities.

Dynamics of yoga and / or mindfulness activities through children's stories and games, in collaboration with elderly homes.

Dramatization about the theme of Education for Environmental Citizenship, considering the syllabus of primary education.

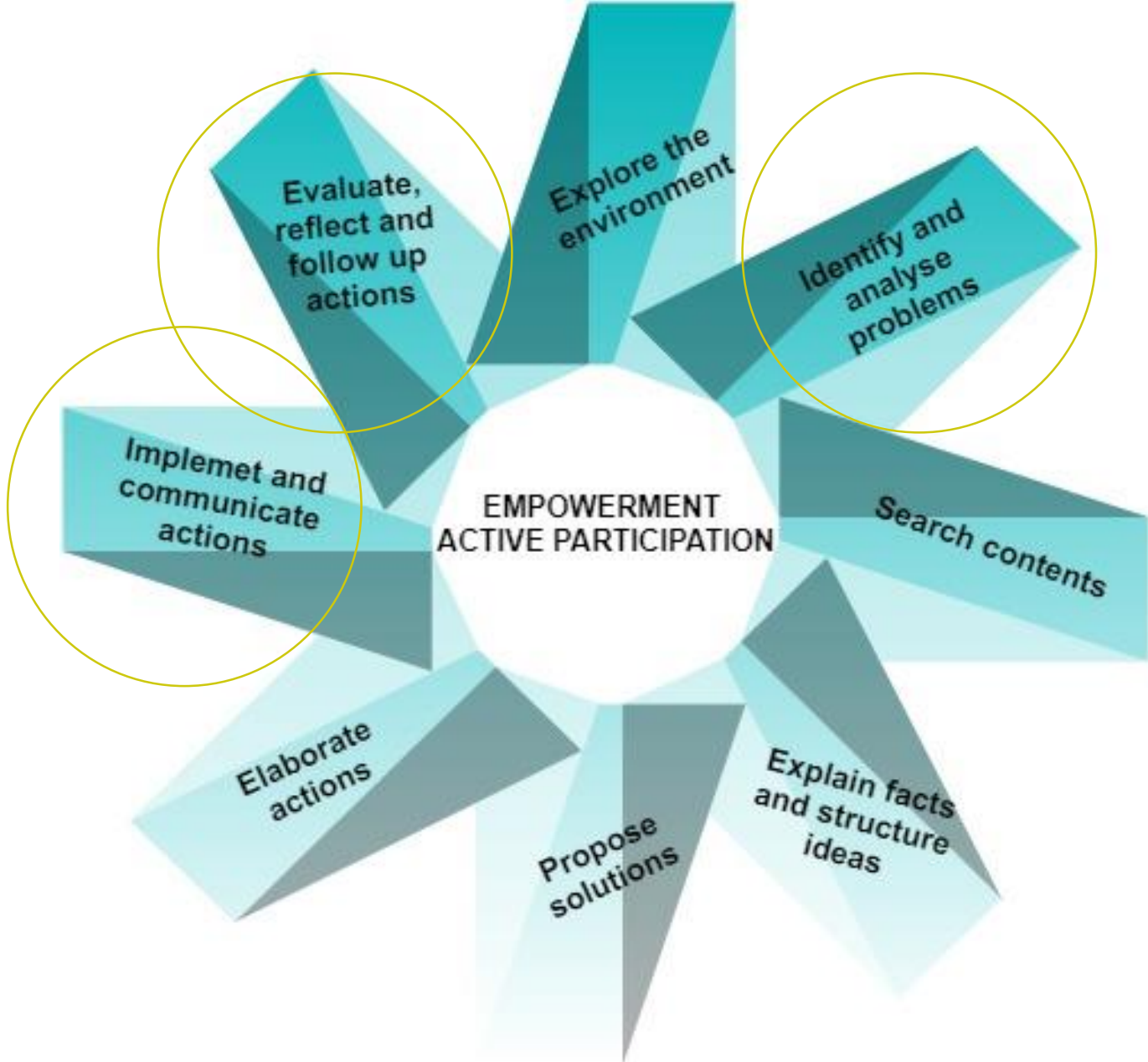
Conducting a Peddy – Paper involving several clues to find and unravel, along the way, filling out a field notebook where students are asked about Education for Environmental Citizenship content.

Implementation of a sustainable management for capture and reuse of rainwater in school.

Find empty and abandoned places and make them wilderness areas to increase biodiversity.

Donation of seeds to the population to plant in their homes, in collaboration with Municipal Council.

Prototype stages



Prototype of a Pedagogical Model for Education for Environmental Citizenship

