©LUMEN Proceedings

15th Edition of the International Conference on Sciences of Education,
Studies and Current Trends in Science of Education, ICSED 2017,
9-10 June 2017, Suceava (Romania)

# Studies and Current Trends in Science of Education

## Ecological Literacy in the Context of Institutionalized Education. Psych-Pedagocical Attributes

Adriana MUNTEAN, Stela GÎNJU

https://doi.org/10.18662/lumproc.icsed2017.29

How to cite: Muntean, A. & Gînju, E. N. (2017).Ecological Literacy in the Context of Institutionalized Education. Psych-Pedagocical Attributes. In O. Clipa (ed.), *Studies and Current Trends in Science of Education* (pp. 268-277). Suceava, Romania: LUMEN Proceedings. https://doi.org/10.18662/lumproc.icsed2017.29

© The Authors, LUMEN Conference Center & LUMEN Proceedings.
*Selection and peer-review under responsibility of the Organizing Committee of the conference*

This is an Open Access article distributed under the terms of the Creative Commons Attribution-Noncommercial 4.0 Unported License, permitting all non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited

©LUMEN Proceedings

# Ecological Literacy in the Context of Institutionalized Education. Psych-Pedagocical Attributes

Adriana MUNTEAN[1], Stela GÎNJU[2]

*Abstract*

*This study proposes an analysis of the conceptual framework to be fastened to the environmental issues reflected psychologically. The valued concepts are "ecological literacy", "ecological identity", "environmental activism", and "environmental education". Simmons (1998) defines ecological literacy as the ability to process information in order to make everyday decisions based on experiences in the real world that surrounds us. An environmentally literate person can discuss environmental issues and actively harness the skills to improve his environment. Educating people in order for them to become ecologically literate means preparing them to become "global citizens" with two concerns: analysis of the world around them and engaging in making decisions about the actions taken by their societies (Mac, 2003).Delimitation of the literature reveals three levels of ecological literacy (Roth, 1992): (1) the nominal level - basic knowledge of how natural systems operate and their interaction with humans; (2) functional level - awareness, concern and the ability to analyze information; (3) the operational level - active behavior for environmental purposes, both individual and collective, locally and globally. Developing values, conceptualized as guiding principles important in a person's life (Rokeach, 1973; Schwartz, 1992) is primarily a process of socialization (UNESCO, 1985), with significant implications in the formation of an ecological identity from an institutionalized education perspective (formal and non-formal).Pedagogical approach to the concept of "ecological literacy" is an essential direction in the development of the ecological activism of pedagogical training, treated from the perspective of curriculum paradigm.*

**Keywords:**Ecological education; Ecological literacy; Ecological activism.

## 1. Introduction

Accelerating change on all levels, the impact of technology and the natural environment requires a new mentality on environmental issues, therefore an environmental education from the earliest age.

[1] Stefan cel Mare University from Suceava, School no. 8, Suceava, Romania.
[2] Associate Prof., UPS "I. Creangă".

https://doi.org/10.18662/lumproc.icsed2017.29
*Selection and peer-review under responsibility of the Organizing Committee of the conference*

This is an Open Access article distributed under the terms of the Creative Commons Attribution-Noncommercial 4.0 Unported License, permitting all non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited

A 1982 UNESCO document, under the title of *World problems in school*, proposed introducing environmental issues topics into the curriculum, among other themes and topics of food, nutrition and malnutrition.

Introduction of "new education" in the curriculum of pre-school and school is currently a need, growing in requirements the more we are witnessing new challenges in social evolution (incessant deterioration of the environment, demographic explosions, cultural oriented aggression caused by media etc.) all of which are having an impact on the formation of the basic behaviors of children, the future citizens.

## 2. Retrospective, current and future environmental education

Environmental education is situated at the border between pedagogical sciences and ecology.

The first scientist who highlighted the principle of interaction in the living world was Charles Darwin, but the term *ecology* was introduced later by German zoologist Ernest Haeckel, in 1866, who explained the Greek words "oikos" = "house" and "logos" = "science" and claimed that it is the science of the dwelling space, of habitat.

But concerns still find the ancient philosophers: Aristotle (384-322î.H.), who submits that young disciples should be educated on the basis of conformity with nature, in his piece of work entitled "State", Democritus (460-370î.H.) who urged his apprentices towards knowledge of the laws of nature, Heraclitus (530-470 I.H), saw in nature the 'source of all knowledge. "(Sinteze ecoeducaţionale 2010)

Later, in the era of scholasticism (philosophical thinking), we encounter the first attempts to study human nature and its impact on the human being, in the faculties of medicine in: Bologna, Paris (XIIc), Prague, Krakow and Vienna (XIVc).

In the XV century, François Rabelais, in "Gargantua and Pantagruel" describes that Gargantua receives an instruction with elements of astronomy and natural science and then, on Thomas Morus' island of "Utopia", everyone had a duty to train continuously, whilst also studying the letters and arts and nature withal.

Renaissance marks the genesis of ecology as a new science in the aspect of education, facts concerning the role of nature in the youth's education arising. J.A Comenius (1641) writes in "Pansofia" – the encyclopedia of nature and society – generalizations that specify the need of the young generation to grow feeding from Mother Nature's bossom, stating that man is part of nature and must obey its laws. J.J.Rousseau (1762) takes

the principle of "conformity with nature" from Montaigne (1533-1592) and substantiates the source saying that te spring of education is found in nature, in people, and in things. I.H.Pestalozzi, J.F.Herbart, L.N.Tolstoi contribute to the evolution of eco-education, advocating for education in accordance with nature.

In Romania, Cantemir (XVIIIc) in the opera "Divan" points out that the purpose of education is to prepare wise individuals, and guide them onto the path of knowledge of nature. In the eighteenth and nineteenth centuries, Gheorghe Asachi founded the first Museum of Natural Sciences in Romania, realizing the bond between theory and practice through collected materials and exhibits.

C.D.Uşinski noted then that the logic of nature is the most accepted by pupils and that relations between organisms and their studying are to be cherished within pedagogy.

Unfortunately, in the year 1930 appears a motto that changes perception, breaks the string and distorts the thinking of generations: *We must not stand with outstretched hands towards nature begging, but we must take from it our hereby duty !*", which sounds rather like a catchphrase imposed by one party.

There exists a comeback back in 1950 when some organizations are created, companies which aim to raise awareness in order to protect the environment.

In 1960 an alarm regarding the health of nature is triggered, investigation commences and procedures pursuing the incorporation of the theme into the curriculum are launched, then publications targeting the methodology of educating students appear, environmental contents double in diverse disciplines: biology, geography, chemistry.

In 1968, the problem is tackled globally within the framework of UNESCO's expert conference on "Biosphere and the Environment", continuing in the US during the 1970 International Conference in Nevada about environment protection and then in Switzerland through an European Conference dedicated to ecological education, the experts realizing the need of implementing theory and practice of education using nature as an ally.

In 1970, Forrester D and D Medouws, two physicists who have analyzed the tendency of world economic welfare and demographic development in the theory of dynamic systems, focus our attention on the potential disappearance of natural resources and ecosystems, as well as food supplies and drinking water on the planet.

As of now, we can speak of environmental education as a new branch in pedagogical theory and practice, the following being defined as objectives: gathering scientific concepts, skills, attitudes and forming a green culture. There appeared ideas and ideologies that wanted an environmental

method of alerting the public, method which represented an integral system of knowledge about human-nature interaction, norms and rules of behavior in the environment.

Environmental education establishes the action of modeling and the action of training the human personality, for the natural environment's thrive. The purpose of environmental education is represented by training and fostering problem-solving capacities, problems that occurred at the same time with the industrial application of technologies social scale, which have seen many negative effects on the level and nature of human existence.

A definition and unusual teaching method was developed by E. Georgescu, which states that environmental education consists of comprehension of contents and cultivating beliefs, attitudes and behaviors related to a systematic and interactional approach regarding environment.

Studying the concept of "ecological literacy" and "environmental education", we observe a strong correlation between the elements. The concept of "new education" mentioned in the 1988 UNESCO document entails discussions about: searching and applying non-traditional techniques in training, so as to upgrade older techniques, activating the environmental movement and building an ecological perception, thus it entails general discussions about diversifying methods and forms of activity in this area.

Another concept, "sustainable development" , takes shape in 1992, when the dawn of the thriving environment begins, which implied: educating society with reference to conservation and natural resources' availability, formation of ecological awareness, symbiosis of individual conscience and perceiving nature as a part of existence . This way, there begins a period of research focused on the factors influencing favorable action on the environment, with the aim of improving environmental behavior. In the "Our Common Future" Brutland report, presented at the United Nations Conference in Rio de Janeiro the same year, "sustainable development" appears defined as a new kind of human strategy conducted with the aim of reconciliation between economics and the environment, for development of the entire planet, thinking globally but acting locally.

A conclusion that was reached at that time is that environmental and ecological knowledge inevitably lead to ecological action, a linear model sometimes existing entirely, sometimes moderate and, unfortunately, sometimes nonexistent. Environmental education's moral values emerge from the diversity of human values: cultural-anthropological (human-nature relation), cultural-philosophical (desired object-subject relation) and cultural-psychological (human experience-budding relation). General human values (truth, the good, justice, beauty), democratic values (freedom, rights and duties, solidarity, tolerance) and vital values (physical and mental health,

beauty and harmony of body condition and the equilibrium state of the environment, material assets and economic prosperity) generate a set of fundamental attitudes towards life, towards the environment.

In general, environmental education is promulgated by the necessity of forming attitudes and feeling acquainted to the values of learning and it means the educated one being oriented towards harnessing natural resources, under different aspects:

- Each individual and the whole community should be aware of the environment's impact on life;
- The environment is accepted thinking from the: natural, cultural, social, environmental and educational perspectives, realizing how complex the factors affecting life and development of human bodies and nonhuman ones are.

Organic-education is based on a number of psych pedagogical theories and models:

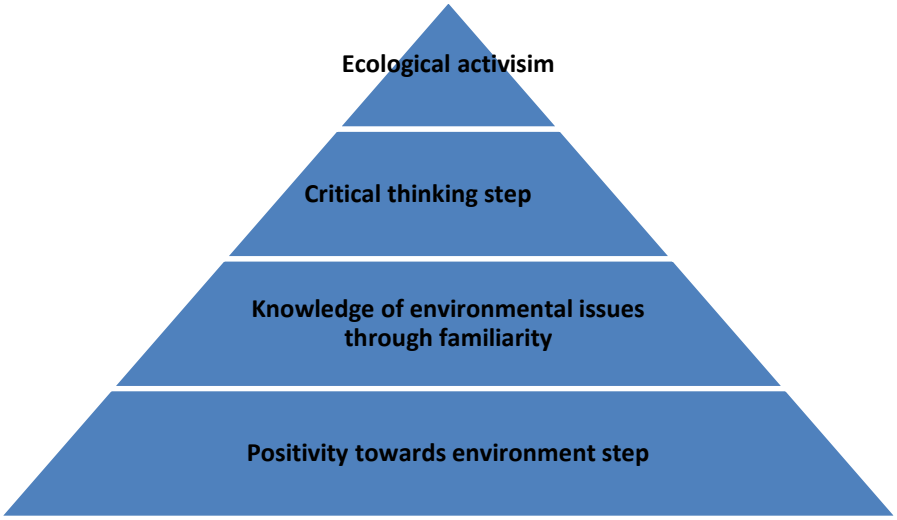



Figure 1: Stages of ecological literacy

Let's see how to pursue further steps in ecological literacy curriculum documents in the context of institutionalized education regarding preschool education in the primary stage.

In Moldova, ecological literacy starts right from the age of 1-3 years. At this age, education curriculum for early and preschool age children (1-7 years old) from Moldova does not offer a separate curriculum area, but ecological literacy training occurs in the positive feeling towards the environment through the curriculum that embraces it: world knowledge, personal and social development, which follows developing a positive

attitude towards people, plants, and animals. Also, it is at this age that we observe the emergence of the stage which involves getting to know more about the environmental issues, during which children cultivate representations of the sentient and insentient objects of nature. Participating in group and individual activities, they observe natural phenomena such as rain, wind and snow. Children can also observe the process of taking care of plants, trees and decorative outdoor plants, which corresponds to the stage that involves critical thinking.

We can say that the at the ages of 1-3 years, the step of forming positive feelings towards nature prevails as the preschoolers begin to familiarize with the environment, this being an incipient stage of critical thinking.

Preschool (3-7 years) education curriculum for early and preschool age children (1-7 years) in Moldova proposes a separate curricular area for environmental education and ecological culture, which pursues the next steps in ecological literacy:

**Positive sentiment towards nature step** achieved through setting the following objectives: the formation of moral-affective behaviour towards nature, the focus on ecological culture and through the conduct of an adequate and environmental behavior, to show a caring and participatory attitude regarding nature.

**Awareness of environmental issues through familiarization step** achieved through setting the following objectives: developing elementary representations about the interaction between man and nature and through benchmark objectives: distinguishing human interaction with the natural environment; explaining the concept of nature, reproducing the natural environment components and specifying peculiarities of certain groups of animals and plants living in different environments.

The curriculum also offers a range of content that can be used as a basis in order for preschoolers to familiarize with the natural environment: the sky, the air, the land, the water, the plains, the hills, the mountains, the forests, the animals, the humans; The main elements of the universe (the moon, the sun, the planets, the cosmic vehicles): Similarities/differences; recognition of natural phenomena (wind, storm, rain, frost, hail, lightning, storm, lightning, thunder) and the moment they arise; living bodies: breathe, feed, move, grow, multiply, adapt to circumstances; rigid bodies; the existence of the four seasons, together with their sequence and their specific phenomena; how living organisms adapt to seasonal changes, such as: lowering the temperature, light intensity, the disappearance of insects, birds migrating etc.; peculiarities of plant adaptation to the environment: root, stem, branches, leaves, propagating ways, importance in nature and in

human life; peculiarities of adaptation to the environment of animals (fish, birds, mammals, insects).

**Critical thinking step;** at this age it is manifested by achieving the objectives contained in the framework: the development of interest to know nature and man, developing skills in exploration by applying elements of observation and experiment, which can afterwards be accomplished through benchmark objectives: experience and evaluate the influence of ecological factors, abiotic and biotic effects on living organisms.

**Ecological activism step** is reflected neither in the framework objectives, nor in the reference, but there are some examples in learning activities: practical activities of care and protecting plants and animals.

In the primary cycle, the ecological literacy occurs both within the discipline of Sciences and within the optional course of Environmental Education. Following, the achievement of literacy step is represented, together with its milestones, all within the discipline of Sciences, regarding elementary school.

**Positive sentiment towards the environment step**, within the discipline of Sciences this aspect is reflected by the specific competence: the adoption of appropriate behavior in the natural environment and the social environment, but this step is not reflected by the skills and learning activities.

**Knowledge of environmental issues step;** it prevails in primary school and is emphasized both by specific skills: reception of scientific information and oral and written communication using scientific style, and sub-skills: using key-terms in scientific communication; communication, in various forms, of media comments made on the life of the living world; documentation from various sources of information with reference to the bodies in the Solar System etc.

**Critical thinking step** is clearly evident, both proposing curriculum skills and learning activities:

Skill branches: comparison of bodies in nature based on personal observations; ordering of objects on the basis of data; carrying out simple experiments based on a given algorithm.

Learning activities: exercises comparison and classification of bodies as group equivalence (living/non-living, natural/artificial); achieving a journal of observation; ordering the logical sequence of statements or images that have certain stages in the life of living organisms; development of thematic projects.

**Ecological activism step**, which was rather reviewed than insisted on during the pre-school period appears essential in elementary school:

Skills: identifying positive/negative effects on human activity on the environment; applying rules to maintain healthy homes, schools and communities, designing threat-repellant actions for the protection of the environment.

Learning activities: poster contest, other materials to alert the population considering the negative impact of human actions that alter the environment; guided tours in order to identify pollution sources; establishing rules of conduct towards the environment (through games, discussions, dramatizations).

By making a comparative analysis between the preschool and primary stages of ecological literacy, it is easy to observe that preschool prevails when referring to the step of forming positive feelings towards the environment but the other stages lack good roots , whereas in primary school prevails the stage of getting to be familiar with the environment and its problems, increases the probability of reaching the critical thinking stage raises and the ecological activism step that was previously just reviewed appears. (Figure 2)

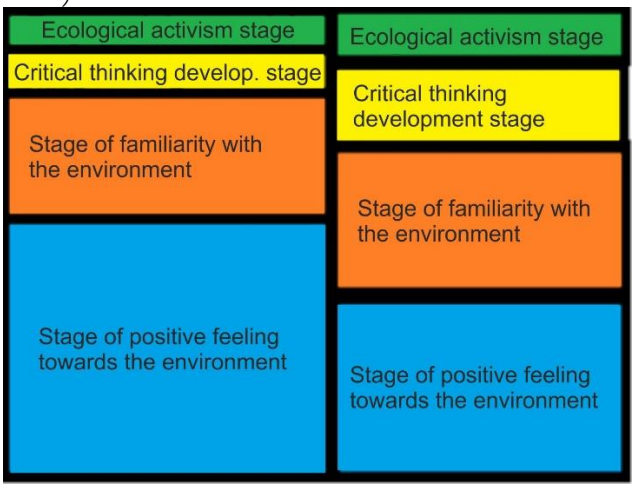



Figure 2. Graphical representation of ecological literacy in preschool and primary.

## 3. Conclusions:

There is a long way from positive attitude towards environment and being aware of the now-existing issues regarding it to ecological activism, but we are acting positive believing that by acting together we will we will succeed into learning how to live with nature in harmony

Environmental education in pre-school and in primary school, however, is a constant concern for all categories of activities. This approach is of great importance, having a multi-disciplinary feature and high complexity in its form, rapidly evolving and being unpredictable it should be seen as a priority for the future of the planet and the survival of the human species.

Awareness of diversity and the importance of environmental issues, like human behaviors that affect the environment, the correct understanding of the individual-environment relation, developing respect for the environment and responsibility, critical analysis of environmental issues and the capacity to make decisions are objectives that any teacher must follow in order for ecological literacy to flourish among pre-school children.

**References:**

Geamănă N. *(*2008). *Educaţia ecologică la vîrsta preşcolară*. Bucureşti: C.N.I."Coresi" S.A.

Geamănă N. (2005). *Ecogrădiniţa-suport de curs*, prezentat la modulul de formare a cadrelor didactice la nivel preprimary şi primar. Satu-Mare.

Gordea L.,& Ursu L. (2013) Formarea competenţei profesionale de educaţie ecologică la viitoarele cadre didactice din învăţământ primar, Chişinău.

Gînju S. Valorile educaţiei ecologice şi pentru protecţia mediului. În: *Univers Pedagogic*, 2012, ISSN 1811-5470.

Gînju S. (2014) Educaţia ecologică. Suport de curs pentru studenţi, specialitatea pedagogie preşcolară. Chişinău: UPS "I. Creangă", Gînju S. Educaţia ecologică a viitoarelor cadre didactice din învăţământul preşcolar prin prisma valorilor naţionale. În: *Educaţia din perspectiva valorilor. Idei, Concepte, Modele*, Materialele Conferinţei ştiinţifice internaţionale 2013, Cluj-Napoca: ed. Eicon, V. III, 103-106, ISBN 978-973-757-918-8.

Gînju, S. Corelaţia dintre cunoştinţele şi comportamentul ecologic al elevilor. Modalităţi de echilibrare. În: Culegere de materiale a Conferinţei de totalizare a muncii ştiinţifice şi ştiinţifico-didactice a corpului profesoral-didactic pentru anul 2010 of UPS "I. Creangă" ; Probleme ale ştiinţelor socioumane şi modernizării învăţământului, 2011, Volumul I, 119-123, ISBN 978-9975-46-094-1.

Gînju, S. (2011). Conexiuni între educaţia ecologicăşi educaţia pentru sănătate. Sugestii metodologice de realizare. În: Culegere de materiale informative şi ilustrative pentru educaţia ecologică"Sănătoşi într-un mediu sănătos" AO "Mediul şi Sănătatea" , Chişinău, Continental Grup SRL, 25-33, ISBN 978-9975-4248-3-7.

Pascari, V. (2006).*Continuitatea în formarea competenţelor de învăţare la copiii de 6-8 ani.* Autoreferat al tezei de doctor în pedagogie. Chişinău, 24.

Mîsliţchii, V. (2012). Continuitatea în formarea competenţelor lingvistice la copiii de vîrstă preşcolară mare şi şcolară mică. Autoreferat la teza de doctor. Chişinău,
Teleman, A. Formarea competenţei de explorare/investigare a proceselor ecologice la elevii claselor primar. Monografie. Chișinău: Tipografia centrală.
Teleman, A. (2014) Educație ecologică. Suport de curs pentru studenții specialității pedagogia învățământului primar. Chișinău: UPS "I. Creangă".
Ursu, L. 2008. Educaţia pentru mediu – obiectiv al Strategiei de Dezvoltare durabilă al Uniunii Europene. În Materialele conferinţei ştiinţifice international. Pregătirea şi perfecţionarea cadrelor didactice în domeniul învţământului primar şi preşcolar. Chişinău, UPS „Ion Creangă". 12-20.
Ursu, L.(coord.); Saranciuc-Gordea, L.; Gînju, S.; Rusuleac, T.; Teleman, A. Sinteze EcoEducaţionale. Retrospectivă, actualitate şi perspectivă a Educaţiei Ecologice. Aplicaţii metodologice inter/transdisciplinare. Ch.: Garomond-Studio SRL, 2010,210. ISBN 978-9975-4104-1-0.
Ursu, L.(coord.), Saranciuc-Gordea, L., Rusuleac, T., Gînju, S. & Teleman, A. Haheu, *E. (*2010). *Educaţie ecologică în clasele primare. Centrare pe competenţe.* Monografie. Ch: Garomond-Studio SRL, 227 p. ISBN 978-9975-4104-3-4.