



# Educational Action Research For Exploring Pre-Service Teachers' Understanding Of Ecological Attitude

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## Abstract

*The paper reports the findings of one of the cycles in an educational action research conducted with 37 future pre-school and primary school teachers who are taking a mandatory action research based study course "Environmental Pedagogy" in a regional university. The authors explore the following research question: what dimensions of ecological attitude are discernible in pre-service teachers' experience-based reflections on this issue. Reflection on the research participants' experiences occurred in two ways: (a) formally as individual reflection and peer discussions in pairs, held during practical seminars in the autumn semester of the year 2010 and (b) informally, during the time between the classes when the students contemplated the ideas triggered and the insights they had gained so far. Qualitative content analysis was used to analyse the data drawn from the research participants' written reports about their reflections on ecological attitude. A holistic, multi-dimensional frame of reference was identified that outlines the research participants' interpretation of the concept of ecological attitude. However, on the individual level only some research participants' frames of reference included all four of these dimensions. A considerable part of pre-service teachers were found to have three-dimensional, two-dimensional and even one-dimensional perspectives on ecological attitude. Furthermore, the behavioural and axiological dimensions were found to be slightly more pronounced than the cognitive and affective dimensions. It is argued that, in working with future teachers, it is necessary to specifically target the affective and cognitive dimensions of their frames of reference, focusing on the beliefs and emotions embedded in their experience to foster a more holistic ecological attitude. Educational action research with its commitment to reflection on experience can assist in engaging pre-service teachers in critical exploration and, potentially, transformation of their frames of reference.*

*Key words: educational action research, pre-service teachers, ecological attitude, reflection, frame of reference.*

## 1. Introduction

Sustainability is now considered the central value of education. Moore [8] believes in the potential of transformative learning for enhancing the sustainability of higher education through developing students' ecological literacy and commitment to facilitating ecological integrity and the well-being of all living systems on the planet. Our society requires sustainable thinking of the world and acting within it. Thus, we are in need of such higher education that would foster the exploration of students' frames of reference – personal paradigms through which we perceive the world, interpret our experiences and use as guidelines for action [7]. Learning should be focused on transformation of learners' frames of reference towards developing an ecological attitude to and sustainable relationships with the planet [13], characterised by deep inclusion in its systems and processes. It particularly concerns teacher education since it is they who will be nurturing the future members of a sustainable community of life on our planet.

Educational action research is a relatively new trend in teacher education. It is said to give voice to teachers [5], develop ability to reflect on the quality of their experiences and foster commitment to change and improvement [6]. Action research legitimizes practical and experience-based knowledge [10] and leads to significant insights about what it means to be a teacher in a society striving for sustainability. Therefore, educational action research concerned with inquiry into future teachers'



experiences and frames of reference through exploration of their understanding of ecological attitude was chosen as the focus of this paper.

## 2. Research design and methodology

This section provides a description of the research design and methodology used for the study presented in this paper.

### 2.1 Context of the study

The case reported in this paper is part of a broader educational action research implemented at Daugavpils University (Latvia) within teacher education study course *Environmental Pedagogy* [12]. The course is mandatory for future pre-school and primary school teachers in the first year of studies. It is implemented in the format of educational action research and involves students in reflection on their experiences about the relationships between person and environment. The meta-aim of the course is to engage pre-service teachers in exploration of their frames of reference [7] and assist them in developing their personal practical theories [4] of environmental pedagogy for future teaching life. This paper presents the action research case of autumn 2010 that engaged students in reflection on ecological attitude.

The research participants were 37 first year students of the above-described study course, all of them females aged 19-21 years. The relationships in the two learning groups (one comprised of future pre-school teachers and the other – of future primary school teachers) that met regularly during theoretical lectures or practical seminars held on alternating weeks, as well as the contact between students and the researchers (course teacher and two post-graduate assistants) developed gradually. They were initially characterised by cautions positioning of oneself in the emerging community of inquiry [10], but were gradually superseded by full involvement in the communicative space [2] developed during the semester.

### 2.2 Method and procedure

The methodological framework of this study was educational action research [11], which is considered an overarching research paradigm [14], a general research methodology [15] or an approach to inquiry [1].

In autumn 2010, the two inquiry groups focused on exploration of the students' individual and the society's collective ecological identity, ecological consciousness and ways of interaction between person and nature. At one of the seminars, the students were encouraged to reflect on what constitutes an ecological attitude. They first reflected on this issue individually, then discussed it in pairs and, in a fortnight, submitted written descriptions of ecological attitude that comprised the results of their individual- and peer-, in- and out-of-class reflections.

The data from these descriptions were analysed with the method of qualitative content analysis [3]. We tried to answer the following research question: what dimensions of ecological attitude are discernible in pre-service teachers' experience-based reflections on this issue? The texts were transcribed in MsWord format, read for general comprehension, broken into meaning units and condensed into categories which ultimately converged into themes [3]. To increase the credibility of the conclusions, the categorisation process was performed independently by the two authors. The results were then compared, some of the categories renounced and/or altered.

## 3. Research findings

Content analysis of the research participants' (n=37) reflexive discourse on ecological attitude identifies a holistic and multidimensional frame of reference for understanding this phenomenon (Table 1).



Table 1. Frame of reference for understanding ecological attitude

Behavioural dimension ( $d_1=30$ )	Active activity – carrying out desirable actions	Demeanour	person's demeanour (towards nature and self)
		Lifestyle	ecological way of life
		Care	care for the ecology and attempts to save the environment, make it cleaner
		Help	wish and attempts to help the environment, promote its safe existence
		Protective action	protection of nature from destruction of species and effects of human activity
		Educative action	promotion of social disposition and the idea of “green”, nature-friendly lifestyle
		Sustaining purity	care for preserving the purity of nature and environment (ecological is synonymous to pure)
	Passive activity – avoiding undesirable actions		not damaging nature and thus oneself not polluting not harming nature
Cognitive dimension ( $d_2=15$ )	Thinking		ecological thinking
	Understanding		of interaction between person and nature that people hurt nature
	Awareness		of the power of nature and its significance in person's life that people damage the environment and themselves with unecological action
	Planning		ideas or plans to improve our ecology plans for green living
Axiological dimension ( $d_3=24$ )	System of values		environmentally-friendly values system, its cultivation and development balance between the material and the spiritual honesty towards self and others respect towards all nature's creations selflessness (help without taking/expecting anything in return) purity (pure attitude towards others and life, pure consciousness) orientation towards inclusion (harmonious joining of nature's and people's interests, merging with nature)
Affective dimension ( $d_4=19$ )	Benevolence		benevolent attitude towards nature and its processes positive attitude towards others, oneself, life wanting the best for nature, the world
	Optimism		looking at the bright side of life
	Friendliness		friendly attitude, friendliness towards everything
	Peacefulness		peaceful and considerate attitude

$d_1$ - $d_4$  – number of students whose interpretations of ecological attitude contain traits of the given dimension

As seen from Table 1, the identified frame of reference in the group of research participants is holistic and relates ecological attitude to behaviour, cognitions, values and affect. It should be noted, however, that on individual level only some students' frames of reference included all four of the identified dimensions. A considerable number of students were found to hold three-dimensional, two-dimensional and even one-dimensional perspectives on ecological attitude (Table 2).

Table 2. Dimensions of research participants' individual frames of reference ( $n=37$ )

4-dimensional frame	$n_1=7$ (19%)
3-dimensional frame	$n_2= 11$ (30%)
2-dimensional frame	$n_3= 8$ (21%)
1-dimensional frame	$n_4= 11$ (30%)

The obtained results will be analysed in more detail, and conclusions will be drawn in the following section of the paper.



#### 4. Discussion and conclusions

The frame of reference which was found to characterise the research participants' understanding of ecological attitude permits to conclude that pre-service teachers consider ecological attitude as a complex phenomenon with behavioural, cognitive, axiological and affective dimensions. Its behavioural component emphasises care, help, avoidance of destructive activity, and desire to spread the message of environmentally-friendly lifestyle. The cognitive dimension reflects the students' awareness of the importance of pure environment in people's lives, and acknowledgement that people's current way of life is unsustainable. The axiological dimension of ecological attitude underscores the need for "pure", respectful and harmonious relations between person and nature, an orientation towards person's inclusion in the wider community of life that transcends the limits of social world. The affective dimension is characterised by such emotions and dispositions as benevolence, optimism, friendliness and peacefulness.

It should be noted, however, that, explored on the individual level, only some of the identified pre-service teachers' frames of reference describing ecological attitude display all four dimensions. In other cases the participants' interpretation of ecological attitude is two- or three-dimensional, and even one-dimensional. Besides, the behavioural and axiological dimensions of the identified frame of reference were generally most pronounced, with cognitive and affective dimensions being slightly less discernible. Transformative learning theory states that people's frames of reference are holistic in that they determine how persons affectively experience and conceptually systematise their perceptions of the world and act within it [16]. Other researchers [9] highlight the importance of emotions and beliefs as crucial affective and cognitive sources of ecological attitude which determines people's behaviour. Thus, the present study revealed that, in working with future teachers, it is necessary to specifically target the affective and cognitive dimensions of their frames of reference, focusing on the beliefs and emotions embedded in their experience to foster a more holistic ecological attitude. Educational action research with its commitment to reflection on experience can serve as a viable means for engaging pre-service teachers in critical exploration and, potentially, transformation of their frames of reference.

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