



Ecological education and sustainable development. Student opinions

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Abstract

Ecological education is one of the priorities of the contemporary educational phenomenon. This fact is not due to the existence of a "fashionable" trend in the field of pedagogy but the awareness to a growing extent of the reality that our present actions on the planet and our way of relating to its resources will determine the fate of future generations. However, in many countries, the issue of ecological education issues is often in a secondary position in terms of the school curriculum, ignoring the fact that there is a close bond between promoting a way of thinking and action oriented on ecological principles and values on the one hand and sustainable development on the other hand . Considering that the school is the main factor of forming ecological awareness and developing ecologic behavior, our research aims to study the opinions of future teachers in primary and pre-school education regarding ecological issues and how to handle them.

Keywords: ecology, ecological education, sustainable development, ecological awareness, ecological behavior.

Zusammenfassung

Die Umwelterziehung gehört zu den Prioritäten des zeitgenössischen Bildungsphänomens. Dies liegt nicht an der Existenz eines 'Trends' im Bereich der Pädagogik, sondern an dem Bewusstsein in einem zunehmend höheren Maße von der Realität, dass unser Handeln auf dem Planeten und unsere Art des Umgangs mit ihren Ressourcen werden das Schicksal künftiger Generationen bestimmen. Jedoch, in zahlreichen Ländern das Thema der Umwelterziehung wird häufig in sekundären Plan gelassen hinsichtlich der curricularen Angebot der Schule. Oft vernachlässigt man die enge Beziehung zwischen der Förderung einer Denken- und Handelart, die von ökologischen Prinzipien und Werte beeinflusst ist, auf der einen Seite und der nachhaltigen Entwicklung, auf der anderen Seite. Da die Schule der wichtigste Faktor der Umweltbewusstseinsbildung und der Entwicklung des Umweltverhaltens ist, unsere Studie stellt sich vor, die Meinungen den Studenten, zukünftigen Lehrer für Grund- und Vorschulerziehung, in Bezug auf der Umwelterziehung und der Weise ihrer Ausführung zu analysieren.

Schlüsselworte: Ökologie, Umwelterziehung, nachhaltige Entwicklung, ökologisches Bewusstsein, Umweltverhalten.

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1. Introduction

Contemporary specialty literature devotes ample spaces for the issue of ecological education and the detailed conditions of implementation. In the natural sciences, the term 'ecology' has a quite specific definition as the study of the interrelationships between living organisms and their physical environment (Walker, 2005). Industrial development and the negative effects that it has induced on the environment through pollution have determined a focus on the particular relationship between man and the surrounding world. Thus, while ecology appears to focus on relationships with the natural environment, the notion of human ecology is explicitly interested in interactions between people (individuals and groups) and their environments (Hautecoeur, 2002). Awareness of the fact that, by the nature of actions, people produce imbalances in the environment has prompted specialists in pedagogical sciences to initiate educational programs aimed at accountability, in the sense of changing human attitudes and behavior towards nature and the planet's resources. All of these steps are generically called ecological education.

The general objectives of ecological education are forming ecological awareness and developing ecologic behavior. Ecological awareness is the cognitive dimension of the ecological attitude and concerns the understanding of both the way human activity affects the environment and the impact that pollution and waste of natural resources have in the medium and long term on the future of mankind. Ecological behavior includes a number of skills and abilities guided by the ecological awareness and aimed at protecting and conserving the resources and conditions of the natural environment. We mention in this context the fact that between forming the ecological awareness and modeling the ecological behavior there is a close relationship of interdependence.

Achieving the overall objectives of ecological education requires meeting several previously set specific objectives such as:

- *awareness*: helps students gain a full understanding and sensitivity to the environment and its problems; develops their ability to understand and distinguish incentives, to process, refine and expand these perceptions; contributes to the use of these new skills in several contexts;
- *knowledge*: helps students gain a basic understanding of the functioning of the environment, human interaction with the environment and how environmental problems occur and how to solve them;
- *attitude*: helps students acquire a set of values and feelings of concern for the environment as well as the motivation and commitment to participate in maintaining the environmental quality;
- *skills*: help students acquire the skills necessary to identify and investigate environmental issues and to contribute to solving its problems;
- *participation*: helps students acquire experience in using the knowledge and skills acquired for positive and thoughtful actions that will lead to solving environmental problems (Braus & Wood, 1993) p 19.

Ecological education and its purposes are not an end in itself but they are intended, ultimately, to ensure sustainable development. Sustainable development is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Jepson, 2004). Building the capacity for such change is an essential objective of our education system, particularly to help those who are about to enter employment from higher education or those in employment who are

taking postgraduate or other forms of training as part of continuing professional development programmes (Martin, 2008).

The phenomenon of consumption is also important in the context of sustainable development. People in developed countries are among the world's largest consumers of natural resources and their production and consumption patterns have major environmental, social and economic impacts around the world. As indicated in the 1998 *Human Development Report* (UNDP 1998), for example, 20 percent of the world's population living in OECD countries earns 85 percent of the world's annual income; consumes 75 percent of global energy and more than 80 percent of other resources annually and generates 75 percent of the annual global pollution (Carley & Spapens, 2007, Fien, Cameron & Bentley, 2008).

Because sustainable development deals with the tension between ecological sustainability and economic development, both social and technological innovations come into play. Sustainable development requires innovation—based on new knowledge and technology, on a demand from the market and on educated people able to apply knowledge and technology in a societal context or to translate societal demand to research questions in a design process (Dam-Mieras & Rikers, 2007). This fact induces a double necessity in the plane of educational reality: on the one hand the need for a curricular approach in a consistent, comprehensive and integrative manner of the issues belonging to ecology and sustainable development, and on the other hand, the need to equip future teachers with the knowledge, skills and abilities able to allow treatment of environmental issues in the classroom not only from a multidisciplinary or interdisciplinary perspective but also from a transdisciplinary one. This change of perspective is not just a theoretical one, it involves numerous practical effects. For more than a decade there has been an increasing move towards the inclusion of environmental issues and sustainability in higher education institutions. Recognising that they prepare many of the world's managers, decision makers, designers and teachers and, therefore, have considerable influence over the direction that society takes (Bekessy & al. 2003; Fien 2002), universities are now accepting responsibility for leading society towards a sustainable future (Cortese 2003, Harpe & Thomas, 2009).

However, the presence of concerns regarding ecology and sustainable development in the overall economy of the contemporary educational phenomenon is, unfortunately, quite modest. If media coverage is any indication, the world at large is seriously concerned about our environment, population growth and climate change. There has been little improvement of the well-being of the average person living on earth, and in many countries the gap between rich and poor has grown considerably. Yet, despite the fact that education is seen as a key transformative factor in the improvement of the environment and our future sustainability, and the fact that there has been considerable discussion regarding education for sustainable development (ESD) at a policy level, very few countries and communities have moved to integrate ESD into their educational curriculum, let alone implemented it as the basis of a reorienting or transforming education. We contend that there are three important missing factors that contribute to this apparent lack of action: consensus as to what constitutes ESD, an adequate conceptualization of the role of human agency in sustainable development, and a basis for direct practical application of a well-defined concept of ESD in education systems. In order to develop coherent policies and practice for ESD, educators everywhere must be able to understand the meaning of ESD and its component concepts, articulate the values inherent in those concepts and identify consequent, progressive educational practices (Landorf, Doscher & Rocco 2008). We therefore believe that for the reconsideration of the place and role of ecological education in the contemporary educational paradigm it is necessary to investigate the opinions of students, future teachers, regarding this issue.

2. Major research coordinates

The main objective of our research is to study the perspective that future primary and pre-school teachers have regarding the issue of sustainable development, ecological education and its conditions of efficiency. The group of subjects consisted of 108 students from the "Primary and preschool pedagogy" specialization. The main research method used was the questionnaire based survey. The questionnaire included a total of six items with possible answers and the results were expressed as percentages in tabular form.

3. Presentation and interpretation of results

The first item of the questionnaire aimed to surprise the students' opinion regarding the importance of ecological education in relation to other dimensions of education (moral education, aesthetic education, religious education, intercultural education, health education, etc.). The results are presented via Table 1.

Table 1. : The importance of ecological education in relation to other dimensions of education.

Answers	N	%
More important	19	17.60%
Equally important	82	75.93%
Less important	6	5.55%
Not important at all	1	0.92%
Total	108	100%

As we can see in the table above, the majority of subjects (75.93%) believe that ecological education is as important as the other dimensions of education while 6.47% of the students consider that it is less useful or not useful at all. We also observe that only 17.60% of the respondents are aware of major disturbances that human activity has produced in the environment, disturbances primarily visible through ongoing climate change and they believe that ecological education should play a major role in the context of contemporary education. This fact illustrates that most of the respondents consider ecological education more of an orientation in education rather than a concrete solution for the current environmental problems that mankind presently faces.

As it is known, our beliefs deeply affect our actions. In other words, there is a linear relationship between the intensity of our beliefs regarding the positive effects of an action and the consistency with which we are willing to actually put it into practice. Thus, the second item of the questionnaire aimed to surprise the extent to which future teachers truly believe that ecological education is key to preserving the planet's resources and ensuring sustainable development. The responses to this item are summarized in Table 2.

Table 2. The effective utility of ecological education for the conservation of resources and sustainable development.

Answers	N	%
Very useful	21	19.44%
Useful	60	55.55%
Slightly useful	26	24.08%
Useless	1	0.92%
Total	108	100%

The percentages shown in the table above confirm our conclusions from the analysis of the data in Table 1. We thus observe that only 19.44% of students believe that ecological education is very useful from the point of view of conserving the planet's resources and sustainable development. Although 55.55% of them appreciate the utility of ecological education from this perspective, we cannot fail to notice the fact that 25% of future teachers consider ecological education as being slightly useful or not useful at all, a worrisome fact, in our opinion.

The third item of the questionnaire focused on factors that students consider as the most important in the formation of ecological consciousness and behavior. We present the results recorded via Table 3.

Table 3. The factors responsible for the formation of ecological attitudes.

Answers	N	%
Family	13	12.04%
School	71	65.74%
Friends	2	1.85%
Mass-media	22	20.37%
Total	108	100%

The analysis of data presented in the table above shows that 65.74% of respondents consider that the main responsibility in forming ecological awareness and modeling ecological behavior falls on the school. In the second position, from this point of view, lies the mass-media (20.37%), followed by family influences (12.04%) and the group of friends (1.85%). We notice the fact that students recognize both the importance that the school, as the formal educational factor, holds in the overall economy of ecological education as well as the major influence that the mass-media, as an element of informal education, has on the development of the ecological attitudes of the young generation.

The next item was aimed at capturing the students' opinion on the curricular status that ecological education should hold in school. The results are summarized in Table 4.

Table 4. The curricular status of ecological education in school.

Answers	N	%
Mandatory subject	19	17.59%
Optional subject	39	36.11%
The topics of ecological education to be included as modules in other disciplines	41	37.97%
Studying ecology is not necessary	9	8.33%
Total	108	100%

The data presented in the table above reveals that most of the respondents believe that ecological education should be included as modules in other disciplines such as biology, chemistry etc (37.97%) or that ecological education should have the status of optional discipline (36.11%). The option of introducing ecological education as a mandatory subject was opted for by 17.59% of students while 8.33% consider that the study of ecology in school is not necessary.

The fifth item of the questionnaire sought to identify the subjects' opinions on the relationship between ecological education and other disciplines such as biology, physics, geography or chemistry. The students' responses to this item are shown in Table 5.

Table 5. The status of ecological education in relation to other subjects.

Answers	N	%
Complementarity	78	72.22%
Diferentiation	17	15.74%
Superposability	13	12.04%
Total	108	100%

The vast majority of subjects, 72.22%, consider that between ecological education and the disciplines listed above there is a complementary relationship in that, on the one hand, teaching knowledge and processes specific to these disciplines facilitates understanding the importance that the actions of the human species are exercised on the environmental conditions and on the other hand, ecological education provides the opportunity to address the reality that surrounds us as a whole. However we cannot fail to notice that if 15.74% of respondents consider that ecological education has no relation to the subjects mentioned above, 12.04% believe that teaching ecological education in schools is not necessarily needed because its contents are found incorporated in various forms in disciplines such as biology, physics, geography and chemistry.

The last item of the questionnaire was aimed at capturing the extent to which future teachers believe that teaching ecological education requires a specialized initial training. In other words, we wanted to see not only what the opinion of future teachers is regarding the importance and usefulness of ecological education but also the extent to which they believe that an efficient teaching of this discipline requires the introduction of specialized courses in the initial training program specialized on teaching and learning ecological education . The results are shown in Table 6.

Table 6. The need for special training for the efficient teaching of ecological education.

Answers	N	%
Yes	51	47.22%
No	29	26.85%
Undetermined	28	25.93%
Total	108	100%

The subjects' responses to this item indicate that less than half of them (47.22%) believe that teaching ecological education requires psychopedagogical training and specialized methods. Moreover, we observe that 26.85% consider that this initial specialized training is not necessarily required and 25.93% answered that they are undetermined. We believe that both types of responses indicate in the best case scenario the existence of a superficial attitude or even carelessness towards issues of teaching ecological education in schools.

4. Conclusions

The results obtained following the survey regarding the attitude of the future teachers regarding ecological education allow us to draw several conclusions. First of all, we observe that the vast majority of subjects (75.93%) believe that ecological education is as important as other disciplines of study. However, almost a quarter of them consider that ecological education can contribute only slightly or not at all to conserve the planet's resources. This lack of confidence in the effective usefulness ecological education can be observed in item four, where over 80% of respondents believe that ecological education should not be a mandatory subject. We also observe the fact that although 65.74% of the students consider school to be the main factor responsible for the formation of an ecological attitude in the young

generation, only 47.22% of them believe that their initial training program should provide specialized training in this regard. This fact makes it necessary, in our opinion, both to raise awareness to a greater extent of future teachers regarding the importance of ecological education as well as restructuring initial training programs by providing specialized courses on the issues of ecology and its role in ensuring the conservation of the planet's resources and sustainable development.

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