Attitudes of University Students towards the Environment: Environmental Education and Innovation

Macarena Esteban Ibáñez
Luis V. Amador Muñoz
Universidad Pablo de Olavide

Francisco Mateos Claros
Universidad de Granada

Attitudes of University Students towards the Environment: Environmental Education and Innovation

Actitudes del alumnado universitario hacia el Medio Ambiente: Educación Ambiental e Innovación

Macarena Esteban Ibáñez
Universidad Pablo de Olavide
mestiba@upo.es

Luis V. Amador Muñoz
Universidad Pablo de Olavide
lvamador@upo.es

Francisco Mateos Claros
Departamento de Psicologia Evolutiva y de la Educación
Universidad de Granada
fmateos@ugr.es

Abstract

This article forms part of a Teaching Innovation Project subsidised by the Directorate General of Training and Innovation and the Vice-Rectorate for Culture and Social Commitment of the Pablo de Olavide University (UPO) in collaboration with all the Andalusian Universities. Our work is performed at the UPO and recipients will be first-year students of a core subject of the Degree in Environmental Sciences and the third-year students of the Degree in Social Education.
Our purpose is to analyse the knowledge of university students with respect to the Environment and Environmental Education to find out their behaviour and the actions they would take to improve the environment around them. This is all for the purpose of developing an Environmental Education according to the findings obtained and to reinforce the teaching work in university classrooms.

Keywords: Sustainable Development; Environmental Education; Environmental Sciences; Social Education; Project-Based Learning**.**

Resumen

El presente artículo forma parte de un Proyecto de Innovación Docente subvencionado por la Dirección General de Formación e Innovación y el Vicerrectorado de Cultura y Compromiso Social de la Universidad Pablo de

Olavide (UPO) y en el que participan todas las Universidades Andaluzas. Nuestro estudio se centrará en la UPO cuyos destinatarios serán el alumnado de primer curso de una asignatura obligatoria del Grado de Ciencias Ambientales y el de tercer curso del Grado de Educación Social. Nuestra finalidad es la de analizar los conocimientos del alumnado universitario con respecto al Medio Ambiente y la Educación Ambiental para averiguar cuáles serán sus comportamientos y las acciones que llevarían a cabo para mejorar el entorno que les rodea. Todo esto con el fin de desarrollar una Educación Ambiental acorde a los resultados obtenidos y reforzar la labor docente en las aulas universitarias.

Palabras claves: Desarrollo Sostenible; Educación Ambiental; Ciencias Ambientales; Educación Social; Aprendizaje basado en Proyectos.

1. JUSTIFICATION AND OBJECTIVES OF THE STUDY

Environmental Education is a process that lasts a lifetime and which aims -through both formal and non-formal education- to try to inculcate among students aspects such as environmental awareness, ecological knowledge, attitudes, values, commitment to action and ethical responsibilities for rational use of resources, in order to achieve adequate and sustainable development.

Environmental Education represents an important area in today's society, although not all academic contexts recognise this or grant it the true value it should have. This is reflected in the lifestyle of most modern people, which has led society to create the environmental problems we are experiencing today. This characterises one of the crises of the modern world.

The raison d'etre of Environmental Education at academic institutions lies primarily in these, as they form into "micro societies" that reproduce social aspects on a small scale. Here, they consume energy, materials, there are interrelationships among its members, waste is generated, people live together, there are common spaces, decisions are taken, many activities are generated, culture and values are transmitted, information flows, etc. All this creates situations of conflict, but also many opportunities to bring about change and improve the environmental conditions of the surrounding environment, thus generalising the habits acquired from everyday life in mainstream society.

Environmental Education emphasises teaching about the Environment through interdisciplinary approaches and problem solving. This has to start as early as possible in education. Primary school is the most natural place to incorporate children into Environmental Education, as it is at this level that they instinctively have a global view of the environment. They have not yet been trained to compartmentalise their learning as separate issues as they will have to do in secondary education and, of course, even more especially, as we shall see in this paper, in higher education. This is always without overlooking, as Amador and Esteban (2011) set out, that Environmental Education should be a discipline whose intervention must take into account the educational and social aspects, as it is individuals, groups and communities that are the ones affected and the beneficiaries of changes in the environment.

It is essential to introduce critical thinking and a problem-solving approach in Environmental Education at each and every educational level; considering that students have to be able to identify and solve environmental problems as students, and later as adult citizens and possibly as decision makers. Therefore, Environmental Education should propose information that increases knowledge about the Environment and as an extension thereof lead to a reflection that allows them to improve the quality of life, enhancing environmental quality and which necessarily brings them to take action in favour of the environment (Calvo and Corraliza, 1994).

Following this precept and seeking to introduce Environmental Education in higher education, this paper attempts to analyse the knowledge of university students regarding the Environment and Environmental Education. We also seek to find out how they would behave and what actions they would carry out to improve their environment. To this end, the questionnaire was designed and given to the students with the corresponding concepts and descriptions with regard to the three selected categories: Knowledge, Environmental Education and Environmental Behaviour, for the purpose of introducing an environmental education programme in accordance with the findings obtained, strengthening the teaching work in university classrooms with activities that help raise students' awareness on the importance of looking after our environment and the key role they play in achieving this.

2. ENVIRONMENTAL EDUCATION IN TODAY'S SOCIETY

Environmental education came about with the aim of collaborating in environmental improvement from a broad perspective, including the need to clarify, for each social group and in accordance with their culture, the meaning of basic concepts such as "quality of life" and "human happiness", as stated in the "Belgrade Charter" (United Nations, 1975).

From the 1970s onwards, the world in general began to address the environmental issue due to growing and evident deterioration of the environment, the root cause of

which was the action of man. All due to human behaviour and attitudes and the influence of these on the environment, societies, the huge potential impact of the human factor on the environment and degrading behaviour.

Environmental education arises when Environmental degradation begins to be understood as a social problem (Spanish White Paper on Environmental Education, 1999). This education should promote the formation of environmental awareness in humans that allows them to coexist with the environment, to preserve it, and transform it according to their needs.

At the United Nations Conference on the Environment, held in Stockholm in 1972, the need for Environmental Education was recognised in the international arena. In 1975 UNESCO and UNEP (United Nations Environmental Programme) launched the International Environmental Education Programme (IEEP), which targeted its objectives at the design and promotion of educational content, teaching materials and learning methods for this new educational approach. In 1976 UNESCO and UNEP organised the Symposium in Belgrade where there was an exchange of international projects and which led to the Belgrade Charter, setting out the guidelines of Environmental Education.

A second phase of IEEP began in 1978 and ended in 1980; two major problems were evident in these early stages of the IEEP:

1. The first was to conceive of environmental education more like content than a process.

2. The second problem, closely linked to the previous one, was its problematic relationship with the teaching of science resulting from the attempt to endow environmental education with a multidisciplinary science-oriented approach, whose untoward effects were reported early on by several authors (Martin, 1975; Wheeler, 1975; Hall, 1977).

To start the third phase (1981-1983), a global survey on the needs and priorities of that time to strengthen the guidelines was applied. In this phase, the emphasis was placed on the development of content, methods and materials for practical activities in the process of training teachers and supervisors of primary and secondary schools in the areas of natural and social sciences, as well as in promoting international cooperation with and between countries and other agencies in the field of EE.

The fourth phase (1984-1985) began with the 22nd General Conference of UNESCO held in Paris (1983), where the activities proposed by the Major Programme were approved: the human environment and terrestrial and marine resources, which promotes environmental education and information to encourage ethics, attitudes and individual and collective behaviours in everyday professional life that contribute to the protection and improvement of the environment.

The fifth phase (1986-1987) of the IEEP began with the 23rd General Conference of UNESCO, held in Sofia, Bulgaria (November 1985). This phase focused more in ensuring that education policies, plans and programmes took into consideration environmental problems and their solutions.

The sixth phase (1988-1989) began with the 24th General Conference of UNESCO, held in Paris, France (20 October to 21 November 1987). Repeating the same rituals, the General Conference approved the activities related to environmental education within the Major Programme X, and took into account the resolutions of the UNESCO-UNEP International Congress on Environmental Education and Training, held in Moscow, USSR, from 17 to 21 August 1987.

The seventh phase (1990-1991) began with the 25th General Conference of UNESCO, held in Paris, France, and which, following its atavistic routines, recognised EE as an important part of basic education, including literacy and post-literacy both for young people and adults. And this together with UNEP, which intervened and established the eight areas of focus: climate change and air pollution, management of shared freshwater resources, deterioration of coastal and ocean areas, degradation of soil, biological impoverishment, waste and hazardous and toxic materials, and degradation of health conditions and quality of life.

The eighth phase (1992-1993) was approved at the 26th General Conference of UNESCO, giving priority to the development of EE by supporting environmental protection, rational use of natural resources and sustainable development. The 1992-1993 UNESCO programme and budget included, within its programme, education for the 21st century, the intensification of humanistic and cultural values, mutual and international understanding, attitudes and new behaviour towards the environment.

Accordingly, the Summit in Rio de Janeiro in 1992 (subsequently revised in 2002 in Johannesburg), no longer speaks specifically of EE, but rather the importance of education for environmental purposes, viz., showing the purely instrumental role that has been assigned to education in the context of environmental policy and management. Institutionalised environmental education (González Gaudiano & Arias Ortega, 2009), the European Union in its 2001 Sustainable Development Strategy and the Sixth Environment Action Programme of the European Community (2002-2012) attach particular importance to the need to change behaviours and mobilise citizens to contribute to sustainable development (Estrategia Andaluza de Educación Ambiental, 2006 publication).

Consequently, we do wish not conclude this section without recalling that, as stated by Aparicio (2012), there must be a parallel between respect and protection of the Environment that we wanted to set out with a document as important as the Human Rights document. The author rightly comments, and here we are in agreement, that under this documentation, in the same way as there are cultural practices and political guidelines that promote homogenisation and/or denial of cultural diversity

and the reproduction of socioeconomic inequality, there must be strategies that avoid increasing the systematic destruction of biodiversity.

3. THE ROLE OF ENVIRONMENTAL EDUCATION AT THE UNIVERSITY

Environmental Education, as we have seen in light of the above, is an ongoing process in which individuals and communities become aware of their environment and learn the knowledge, values, skills, experience and also the determination that enables them to act, individually and collectively, in solving present and future environmental problems. The challenge of Environmental Education is, therefore, to promote a new relationship of human society with its surroundings, to ensure current and future generations a more just, equitable and sustainable personal and collective development that can guarantee conservation of the physical and biological support on which it is based.

Under this precept, in Spain, the Environmental Education White Paper calls for education that must not and cannot be detached from the environment in which it occurs. This education extends throughout life and takes place in different contexts: home, school, leisure, work and the community, meaning that this medium represents an educational space. One of these contexts is that of the University which we believe should be the place for Environmental Education that mainly responds to three social functions, such as basic and applied research, higher level education and the production of critical thinking.

For this and other reasons we hope that, faced with problems as urgent and serious as the aforementioned environmental crises, the University responds with projects targeted at researching details of the crisis and proposing solutions from a solid and rigorous scientific analysis. Therefore, their curricula should include the implementation of the environmental dimension in the entire academic community, in such a way as to guarantee its competence to answer for the health and integrity of the environment, in the sense of an environment according to life in all its forms.

Over the last three decades, the need to include the environmental dimension in higher education appears as an imperative. Higher education institutions worldwide should provide an effective response for application of models that focus on Sustainable Development, showing ways and means aimed at meeting the basic needs of society. Thus, the integration of environmental issues has appeared in the Institutional Education Projects of universities and, more specifically, in their institutional functions of teaching, research, extramural studies and management.

Universities are also urged (Thomas and Nicita, 2002; Junyent, Geli and Arbat, 2003, Abdul-Wahab, Abdulraheem and Hutchinson, 2003; Martínez et al, 2007; Mora, 2007, Leff, 2010) to:

- include management and environmental sanitation policies of the university campus;

- develop interdisciplinary curricula and study plans, which explicit the articulation from the socio-humanistic to the techno-scientific area;

- support sustainable research, in the sense of contributing to local, regional and global sustainability, considering incentives and rewards to teachers and their groups;

- provide future professionals with the ability to develop skills consistent with sustainable human development and

- promote the formation of environmentally sustainable university networks, creating interinstitutional cooperation agreements (9th International Conference on Science Education Research, 2013).

From the 1990s onwards, Universities concerned themselves with developing plans to make their teaching consistent with sustainable development. On many occasions classroom teachings were not reflected in the actual management of the territory they occupied. So while advocating, for example, the treatment of wastewater, the laboratories were contaminating with their liquid waste from laboratories.

On the other hand, it is important to emphasise the role played in recent times by the degree and diploma courses whose main core is pedagogy and didactics, because they too have made a laudable effort to bring the environment into university education.

In a complementary fashion, the University needs to promote research, both applied and theoretical, in environmental matters. It is not sufficient for environmental education to form part of the study plans; it must also be present in the research of university departments. Research advances knowledge in a given subject, and is of major importance in a case such as the environment, where there are still many aspects to discover. Thus, the University has to take a leading position, to be ahead of society and to try to build bridges through cooperation agreements, so that the fruits of research reach the business world promptly and effectively.

Any University student has the right and the obligation to receive minimum environmental training, however elementary this is. In other words, environmental education at the University should not be limited to a few select degrees, however many of these could produce professionals and researchers dedicated entirely to the environment. The University not only has to try to produce experts, technicians and scientists trained in the environment, but also persons that are aware of the need to appreciate and respect it.

Helping all students, regardless of the degree that they will obtain, to acquire sufficient knowledge to reach a rational understanding of environmental

issues to enable them to establish their own sensitivity in this regard and to adopt personal stances on the basis of voluntarily accepted values and with a critical and independent spirit of judgement; that should be an essential purpose of the university environmental education.

With these aspects, and based on the White Paper on Environmental Education, at the Pablo de Olavide University in Seville and within the professional profiles that are set for this degree is where we find the "environmental training and education". This profile covers all professionals engaged in one way or another in teaching and dissemination related to the environment (ANECA, 2004).

New degrees are being created thanks to the new study plans, among which is the Degree of Environmental Sciences, which started in 1998. In this degree, Environmental Education forms part of the set of electives offered to students (UPO study plan). With the introduction of the Degree in 2009, the subject of Environmental Education disappears and becomes part of another subject called Social Intervention and Environmental Education (hereinafter SIEE) to which 30% of the subject is devoted and this is taught during the first year of this degree.

As we have explained above, among the professional profiles established appears the non-formal environmental training and education. However, this area represents only 2% of total credits of the degree. Therefore, the aim of the study is to investigate the post-study viewpoints of first-year students of Environmental Sciences with regard to Environmental Education, to get an understanding of the real training provided to them.

In light of the foregoing and with the idea of contributing to the promotion of Environmental research at university level, we wanted to conduct the study that we set out below.

4. STUDY METHODOLOGY

The methodology we used for the project was mainly quantitative, through the compilation of a survey given out to first-year students of Environmental Sciences at the Pablo de Olavide University (Seville).

To conduct the study, we chose the Likert-type additive survey, whose questionnaire is registered as a trademark under the name of Social and Educational Environmental Attitudes Questionnaire (CASEM in Spanish). In this method, all items measure attitudes with the same intensity and the respondent answers with a score that in this case is from one to four, in which one corresponds to "strongly disagree", two to "disagree", three to "agree", and four to "strongly agree". This kind of scale avoids the answers taking the middle ground as there is no middle choice of the "Doesn't know/ Doesn't answer" type, to encourage the student to respond positively or negatively depending on the knowledge acquired or their perception towards these concepts.

Accordingly, this type of scale tells us whether the individual has a favourable or unfavourable attitude toward the study variable. The final attitude will be the average of the score that each respondent gives to each of the questionnaire items and this will be measured so that questions of greater agreement are positive and, contrariwise, the responses in the order of greatest disagreement will be assessed negatively with regard to the study variable. The survey also includes a section for comments where suggestions or other observations about the survey can be written.

The aim of this scale is for students to answer the questions with complete confidence, on the understanding that responding with numbers two or three means they are not completely sure or that this issue does not fully comply with the question.

According to Colás and Buendía (1992), "the goodness of this type of instrument is characterised in that the variables are not manipulated, no attempt is made to establish cause-effect relationships, but only describes them and observes them, and it emphasises individual differences, so that it observes how the sample subjects differ in a particular trait".

Based on previous knowledge and consultations of previous surveys carried out with alumnae, we begin to deal with the items. We select forty items, as shown in Figure 1, which we divide into three categories:
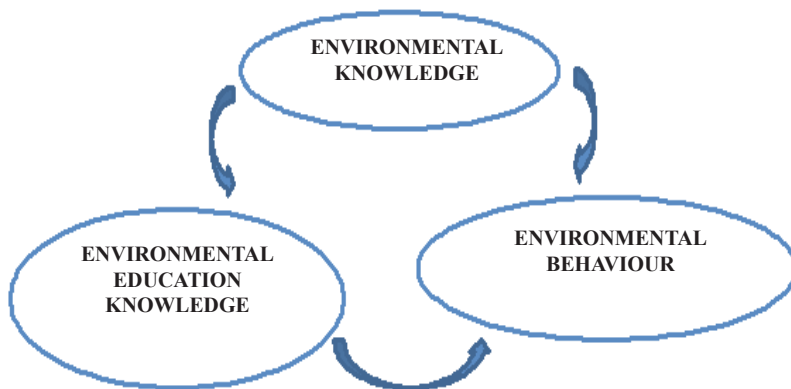

Figure 1

These categories were selected taking into account the different objectives so that students acquire the competencies established in the SIEE course.

The category of Environmental Knowledge sets out the indicators related to concepts concerning the environment and their relationship with humans, as well as knowledge of the individual and social impact of man on the environment, basic concepts that we presuppose new students should have or at least a perception about these concepts.

Environmental knowledge, according to Febles (2001): "is a complex process, which includes the collection, analysis and systematisation by the individual of information from their environment, social by nature. This is an important step for his understanding through specific actions, which in turn, influence the development of this knowledge".

The category of Environmental Education aims to know how informed students are about the concept of Environmental Education and whether or not it is correct, given that Environmental Education is one of the professional opportunities offered by the degree, and we want to know if there should be greater emphasis on the matter. The items therefore include questions about concepts and objectives of Environmental Education as well as the knowledge acquired during teaching.

And lastly, the category of Environmental Behaviour corresponds to the student's actions with the environment, targeted at changing aspects of the environment, and which in turn influence the concepts, perceptions and sensitivity that the individual has with their surrounding environment. They can be positive or negative depending on the individual's relationship with the environment. Therefore the questions affect participation and awareness for respect and preservation of the environment.

For validation of this survey we have the collaboration of twenty judges from various professional fields: teachers of Obligatory Secondary Education and University Teachers belonging to the area of Experimental Sciences, as well as experts in environmental issues.

5. ANALYSIS OF FINDINGS

After conducting the surveys we proceed to the process of analysis, interpretation and evaluation of the findings.

Having completed the "coding" process, each textual unit was assigned a category. In this regard, each selected unit has been coded for frequency counting, through the statistical analysis program SPSS Statistics 24.0.

In the second stage, the "interpretation and inference" processes were carried out. The SPSS software facilitates the creation of data files in a structured way and allows the databases to be organised so they can be analysed with various statistical techniques (Figure 2).

To complete the process of analysing the concepts and because it was interesting to know the prevalence of the concepts of old age throughout the diachronic study, a statistical analysis was performed from the Mask and the Summary of case processing to obtain the concepts that have endured over time along with the specific weight each of these have had. Finally, to perform a positive assessment of the prevalence

Figure 2. Categorial system developed with IBM SPSS Statistics 24.0

of the concept, it was considered that it had to appear in at least three of the four academic courses studied.

Following the scoring structure of the Likert scales, scores from 1 to 4 were assigned to each of the four alternative answers of disagreement-agreement shown above (1. Strongly disagree; 2. Disagree; 3. Agree and 4. Strongly agree).

Having prepared an initial bank of items, and clarified how each of these will be scored and how the score of each subject will be obtained, we begin with the quantitative analysis phase of the items. The bank of items has been applied to a sample of 80 students divided into 40 line 1 students (mornings) and 40 line 2 students (afternoons) of the SIEE Course in the Degree of Environmental Sciences of the Faculty of Experimental Sciences at Pablo de Olavide University in Seville.

We presume that there are two types to analyse the data from a Likert scale: a correlational analysis of items and an analysis based on the criterion of internal consistency (Franciele Cascaes da Silva, Elizandra Gonçalves, et al, 2015). In our case and because of the characteristics of both the sample and the context in which the study is conducted, we have opted for the second. Accordingly, the findings were obtained from the comparison of scores in the group item with the highest scores in the test (and therefore a favourable attitude) with scores in the group item with the lowest scores in the test (and therefore an unfavourable attitude).

We also tackle this analysis aware that the Likert method does not allow items to be "measured", viz., it does not provide estimates of the degree of attitude necessary to be in agreement with an item. So the findings are assessed taking into account the majority and minority obtained in the group classes, both of line 1 and line 2.

Given what has been said, we proceed to analyse the findings of the questionnaire on the two lines of the SIEE subject, considering the three categories referred to previously:

Environmental Knowledge

Table 1 shows, based on the percentages obtained, that all of them, both in line 1 and line 2, have acquired certain Environmental Knowledge, since they are in the second term of their course. Students' perceptions about environmental knowledge mainly focus greater agreement on the answers to questions 1, 2, 3, 18, 19, 21 and 27.

Table 1. Survey results for Environmental Awareness of Line 1 and Line 2.

Conocimiento Ambiental (Línea 1)									
		Preguntas							
		1	2	3	18	19	21	27	32	Total
Porcentaje	1	6,67	0,00	0,00	0,00	40,00	0,00	6,67	6,67	7,50
	2	6,67	0,00	0,00	6,67	20,00	20,00	53,33	46,67	19,17
	3	46,67	6,67	40,00	40,00	33,33	73,33	26,67	46,67	39,17
	4	40,00	93,33	60,00	53,33	6,67	6,67	13,33	0,00	34,17

Conocimiento Ambiental (Línea 2)									
		Preguntas							
		1	2	3	18	19	21	27	32	Total
Porcentaje	1	5,41	0,00	0,00	5,41	5,41	8,11	18,92	60,00	12,91
	2	10,81	5,41	2,70	10,8	29,73	18,92	24,32	26,67	28,67
	3	54,05	24,32	56,76	43,24	54,05	40,54	43,24	46,67	45,36
	4	29,73	70,27	40,54	40,54	10,81	32,43	10,81	13,33	31,06

This knowledge is reflected in the results related to the definition of the Environment as the natural environment that surrounds us with 86.67% in line 1 and 83.78% in line 2 in item 1 (from here onwards only the item numbers will be specified) of the questionnaire; which, as seen in question 2, affects our way of life, of particular prominence with 93.33% in line 1 and 70.27% in line 2 and which, as set out in 3, influences our culture supported by 60% in line 1 and 56.76% in line 2.

Another aspect that highlights the students in question 18 with 53.33% in line 1 and 43.24% in line 2 is that they already correctly know the concept of Sustainable Development and that they consider -with 73.33% in line 1 and 40.54% in line 2- that the use of recycled products benefits the economy of countries, as shown in 21. We should point out that only line 1 students, with 53.33%, say they still need a better understanding of the types of waste in the future, in response to 27.

Note that line 2, with 54.05%, directly relates Environmental protection as an aspect dependent on suitable Sustainable Development as we see in 19; unlike what is said on line 1 with 33.33%, which does not consider it a priority.

What we can emphasise is that in both lines there is remarkable lack in one aspect and it is the one related to 32, asking whether the current economic model is based on Sustainable Development. Both groups agree that this is not the case, with 40% of line 1 students and 45.36% of line 2.

Knowledge in Environmental Education

In this category, as noted in Table 2, for both line 1 and line 2, prior knowledge of students regarding Environmental Education is minimal, with some nuances between the lines, which is what makes some findings relevant to us.

We begin by highlighting that students of line 1, with 66.67%, tend to provide answers related to Environmental Education that mainly teaches us to look after the natural resources we have, put forward in item 30. An education which in turn helps us to understand the relationships between people and their surrounding environment, as highlighted with 60% in item 6.

Table 2. Survey results for Environmental Education knowledge of Line 1.

		Educación Ambiental (Línea 1)										
		Preguntas										
		6	10	11	12	20	30	31	37	39	40	Total
	1	26,67	0,00	6,67	0,00	0,00	26,67	6,67	6,67	0,00	0,00	7,33
Porcentaje	2	60,00	33,33	20,00	6,67	13,33	66,67	46,67	20,00	6,67	0,00	27,33
	3	0,00	46,67	60,00	53,33	60,00	0,00	33,33	46,67	53,33	0,00	35,33
	4	6,67	13,33	6,67	33,33	20,00	0,00	6,67	20,00	33,33	0,00	14,00

Table 3 shows how in the other line, line 2, 53.33% consider they have not received adequate training in environmental education, as can be seen in item 12, to distinguish what is bad or good for the Environment. Therefore, as set out in 31, EE will help us to better find out about the Environment, an aspect highlighted with 46.67%.

Table 3. Survey results for Environmental Education knowledge of Line 2.

		Educación Ambiental (Línea 2)									
		Preguntas									
		6	10	11	12	20	30	31	37	39	40	**Total**
Porcentaje	1	2,70	62,16	5,41	2,70	0,00	5,41	37,84	16,22	0,00	0,00	13,24
	2	2,70	37,84	13,51	10,81	5,41	16,22	56,76	43,24	13,51	2,70	20,27
	3	51,35	0,00	56,76	72,97	35,14	56,76	5,41	32,43	59,46	56,76	42,70
	4	43,24	0,00	24,32	13,51	59,46	21,62	0,00	8,11	27,03	40,54	23,78

In summary, and we believe that to be of major importance, both Line Groups make clear several aspects to be taken into consideration in this study. Firstly, that Environmental Education is a tool to raise awareness about the environment around us, as seen in item 20 with 60% in line 1 and 59.46% in line 2. Secondly, that a person with Environmental knowledge that we see in 11 (which is their case, as future environmentalists) could train others in Environmental Education, with 60% in line 1 and 56.76% in line 2. An interesting fact to note are the results of 37, where 46.67% of line 1 and 32.43% of line 2 consider that new technological advances harm environmental education.

Last but not least, in 39 it is stated that Environmental Education is very important to achieve Sustainable Development, supported by 53.33% in line 1 and 59.46% in line 2. Special mention should be made of the response to item 10 of the questionnaire where line 1, with 46.67%, believes that we all have a good Environmental Education, unlike the students in line 2, with 62.16%, who think that we do not all have a good Environmental Education.

Environmental Behaviour

For this case, as shown in Table 4, the type of response to Question 9 is more homogeneous in both lines. Both groups, with 86.67% in line 1 and 81.08% in line 2, consider that they are concerned about the preservation of the Environment and that caring for the Environment influences their quality of life, with 86.67% in line 1 and 70.27% in line 2 with regard to item 4. This fact relates to 7, in which 60% in line 1 and 67.57% in line 2 point out that interest in preserving the Environment could help solve environmental problems. But they go further, as 46.67% in line 1 and 54.05% in line 2 believe that their own actions can affect the preservation of the Environment, reflected in 16. This reveals that, as stated in 36, although customs have an influence in respecting the environment, reflected with 66.67% in line 1 and 51.35% in line 2, they believe that they can, as seen in 34, help the environment by raising awareness of those closest to them, figures backed by 46.67% in line 1 and 48.65% in line 2.

Table 4. Survey results for environmental behaviour of Line 1 and 2

		Comportamiento Ambiental Linea 1 Porcentaje					Comportamiento Ambiental Linea 2 Porcentaje			
		1	2	3	4		1	2	3	4
	4	0,00	0,00	6,67	86,67	4	0,00	2,70	29,73	70,27
	5	20,00	46,67	20,00	6,67	5	27,03	51,35	16,22	5,41
	7	0,00	6,67	60,00	26,67	7	0,00	5,41	67,57	29,73
	8	0,00	20,00	26,67	46,67	8	0,00	13,51	29,73	56,76
	9	6,67	0,00	0,00	86,67	9	0,00	0,00	18,92	81,08
	13	26,67	53,33	6,67	6,67	13	51,35	35,14	10,81	2,70
	14	33,33	40,00	13,33	6,67	14	21,62	48,65	24,32	5,41
	15	66,67	20,00	0,00	6,67	15	81,08	13,51	2,70	2,70
	16	0,00	0,00	46,67	46,67	16	0,00	5,41	54,05	40,54
	17	26,67	33,33	20,00	13,33	17	32,43	51,35	13,51	5,41
Preguntas	22	0,00	0,00	33,33	60,00	22	2,70	2,70	27,03	67,57
	23	0,00	6,67	46,67	40,00	23	5,41	10,81	35,14	45,95
	24	0,00	13,33	46,67	33,33	24	2,70	16,22	35,14	45,95
	25	26,67	20,00	26,67	20,00	25	21,62	29,73	18,92	32,43
	26	0,00	33,33	33,33	26,67	26	18,92	35,14	18,92	29,73
	28	40,00	46,67	6,67	0,00	28	54,05	27,03	16,22	2,70
	29	26,67	33,33	33,33	0,00	29	45,95	24,32	24,32	2,70
	33	6,67	33,33	20,00	33,33	33	10,81	18,92	48,65	21,62
	34	6,67	0,00	46,67	40,00	34	2,70	5,41	48,65	43,24
	35	6,67	13,33	33,33	40,00	35	8,11	32,43	29,73	27,03
	36	0,00	6,67	20,00	66,67	36	0,00	0,00	51,35	51,35
	38	0,00	13,33	60,00	13,33	38	10,81	35,14	24,32	27,03
Total		13,33	20,00	27,58	32,12	Total	18,06	21,13	29,36	31,70

On the other hand, it is worth noting, as seen in 13, that they also coincide in pointing out that large companies are not influencing Environmental protection, with 53.33% in line 1 and 51.35% in 2. In this regard, they state in 15 that preservation of the Environment is only the responsibility of the government, with 66.67% in line 1 and 81.08% in line 2. Contradictorily, in 17, both lines state that they do not participate very much in activities carried out at their own university to protect the Environment, with 33.33% in line 1 and 51.35% in line 2.

In items related to recycling practices -24, 28 and 29- they believe, with 46.67% in line 1 and 45.95% in line 2- that individual recycling is useless if most citizens do not do it or they don't know how to recycle properly and that they do not separate

the waste very much because they do not know where the containers are located, with 33.33% in line 1 and 45.95% in line 2. But ultimately, they consider that they contribute little by recycling if others do not do it, as supported by the 46.67% of line 1 and the 54.05% of line 2.

Finally, we highlight the fact that students of both lines, with 60% in line 1 and 67.57% in line 2, consider in 22 that the current economic system will eventually deplete the planet's resources. They go as far as stating in 23 that all productive activities are harmful for the Environment, with 46.67% in line 1 and 45.95% in line 2. As a distinguishing note, we can point to the response to 38 in which line 1, with 60%, believes that environmental preservation depends on each country, while line 2, with 27%, believes that is not the case.

6. FINAL CONSIDERATIONS

In light of the findings obtained, we believe we can establish an initial approximation of conclusions from the study conducted. These are not to be extrapolated to other study groups, but even so we believe they give us clues to take into account before starting to teach the SIEE subject in these groups that will take place in the Second Semester. Therefore, it becomes an experience of innovation, given that the study conducted will allow transferability to the groups themselves and in a self-learning process.

In a second phase, the findings of the questionnaire will be brought into the classroom so that students can reflect and draw conclusions from the answers they have been contributing. This will help them understand more comprehensively the meaning of the subject that they will build on throughout the Second Semester. Furthermore, they will discover the attitudes of their colleagues, which will provide them with different views and different ways of perceiving the same reality set out in the questionnaire completed. Without forgetting the fact that there is a need to continue delving into concepts that are still not sufficiently clarified or processed.

As first-year students, we will present them as already having acquired initial Environmental Knowledge focused mainly on concepts concerning the environment and its relationship with humans, as well as knowledge of the individual and social impact that they exercise in their surrounding environment.

We will comment that with regard to the category of Environmental Education, they consider that they are not yet sufficiently informed about the concept of Environmental Education and whether or not this is the correct perception, despite the importance they attach to it. What they do have clear is that it represents one of their professional opportunities but they do not yet know which career opportunities it involves. This fact gives us information on how to address the offer of the degree course. This brings us to ask ourselves whether greater emphasis should be placed

on the issue, taking into consideration that some items also provide us with the level that the students have with regard to the concepts and objectives sought by Environmental Education as well as the knowledge acquired during the teaching they received previously.

This once again highlights the value and importance attached to Environmental Education as a means of raising awareness and as a knowledge tool, required for the Environment and Sustainable Development.

Finally, we will provide information to students on the perceptions that appear in the work on Environmental Behaviour, in other words, with regard to the actions that they carry out with respect to the environment. Actions that ultimately should be targeted at improving the environment and, although they perceive it as necessary, there is still a minimal level of student sensitivity or empathy concerning the surrounding environment. This fact is evident, because they themselves recognise that even knowing that their own University carries out environmental activities, their level of participation in these is still very low. They say that these should also be carried out by other institutions: the state itself, if necessary. This brings us to defend the idea that Environmental Education should form part of all actions and policies prior to university.

We conclude, not without drawing attention to the importance of innovation carried out mainly with the monitoring of the teaching staff mentioned, given that with this kind of study the students learn to better understand the subject and even help their colleagues to understand it better. We would also like to comment that the same study is currently still being conducted by new colleagues that are performing their Dissertation in the same faculty. This will allow us to continue extending and clarifying concepts that help us to make sense of Environmental Education in the Environmental Education Degree, as one of the mainstays in the list of their career prospects. All this with the purpose of remaining committed to the process of research-action for and in the educational management of Environmental Education as an element and means to achieve growing ethical awareness in the environmental field.

It is our aim to continue this field of research. We believe that the learning associated with this experience can be transferred to other subjects, areas, faculties, even universities.

7. BIBLIOGRAPHICAL REFERENCES

Agencia Nacional de Evaluación de la Calidad y Acreditación [ANECA], (2004). Libro Blanco del Título de Grado en Ciencias Ambientales. Madrid: Universidad de Alcalá.

Alea García, A. (2006). Diagnóstico y potenciación de la educación ambiental en jóvenes universitarios. Odiseo, *Revista Electrónica de Pedagogía*, no. 6 Mexico. Available

at http://www.odiseo.com.mx/2006/01/print/alea-diagnostico.pdf [Consultation: Wednesday, 11 January 2017].

Amador Muñoz, Luis V. and Esteban Ibáñez, Macarena (2011). Desde la educación social a la educación ambiental. Hacia una intervención educativa socioambiental. *Revista de Humanidades* [on-line], n. 18, article 8, ISSN 2340-8995. Available at http://www.revistadehumanidades.com/articulos/20-desde-la-educacion-social-a-la-educacion-ambiental-hacia-una-intervencion-educativa-socioambiental [Consultation: Wednesday, 11 January 2017].

Antón, B. (1998). Educación ambiental: conservar la naturaleza y mejorar el medio ambiente. Madrid: Editorial Escuela Española.

Aparicio (2012). La educación en América Latina: límites y posibilidades de la participación social y laboral de los jóvenes. Más allá de la panacea y el escepticismo. *Revista Interuniversitaria de Pedagogía Social*, n. 20, p. 273-301.

Berenger, J., Corraliza, J.A., Moreno, M, Rodríguez, L. (2002). La medida de las actitudes ambientales: propuesta de una escala de conciencia ambiental (Ecobarómetro). *Intervención Psicosocial*, vol 11, n. 3. p. 349-358.

Calvo, S.; Corraliza, J.A (1994). Educación Ambiental. Conceptos y propuestas. Madrid: CLS.

Cánovas, M. (2002). Educación ambiental y cambio de valores en la sociedad. Crónica bibliográfica. *Observatorio Medioambiental,* vol. 5 (2002): 357-364

Caride, J.A. (2001). Educación Ambiental y Desarrollo Humano. Barcelona: Ariel.

Consejería de Medio Ambiente [CMA], (2003). *Estrategia Andaluza de Educación Ambiental.* Sevilla: Consejería de Medio Ambiente, Junta de Andalucía.

Colás, MP. and Buendía, L. (1992). Investigación Educativa. Seville: Alfar.

Esteban Ibáñez. M. (2001). Introducción a la educación ambiental en el ámbito internacional. Seville: Edición digital@tres.

Febles, María (2001). Hacia un enfoque holístico del Medio Ambiente desde la Psicología Ambiental. La Habana: Facultad de Psicología, Universidad de La Habana.

Franciele Cascaes da Silva, Elizandra Gonçalves, Beatriz Angélica Valdivia Arancibia, Gisele Graziele Bento, Thiago Luis da Silva Castro, Salma Stephany Soleman Hernandez, Rudney da Silva (2015). Estimadores de consistencia interna en las investigaciones en salud: el uso del coeficiente alfa. *Revista Peruana de Medicina Experimental y Salud Pública*. Vol 32(1). http://dx.doi.org/10.17843/rpmesp.2015.321.1585

González Gaudiano, E. & Arias Ortega, M. (2009). La Educación Ambiental Institucionalizada: Actos Fallidos y Horizontes de Posibilidades.

Junta de Andalucía (1996). La Educación Ambiental en Andalucía. Sevilla: Consejería de Medio Ambiente, Junta de Andalucía.

Martín Sosa, N.; Jovaní A. and Barrio Juárez F. A. (1998). La educación ambiental, 20 años después de Tbilisi. Salamanca: Amarú.

Ministerio de Obras Públicas y Urbanismo [MOPU] (1991). Educación ambiental: situación española y estrategia internacional. Madrid: Centro de Publicaciones.

Ministerio de Medio Ambiente [MMA] (1999). Libro blanco de la educación ambiental en España. Madrid: Secretaría General de Medio Ambiente.

Novo, M. (1995). La educación ambiental. Bases éticas, conceptuales y metodológicas. Madrid: Universitas.

Ocaña Moral, M. T.; Pérez Ferra Mi. and Quijano López, R. (2013). Elaboración y validación de una escala de creencias de los alumnos de educación secundaria obligatoria respecto al medio ambiente. *Revista de currículum y formación del profesorado*, vol 17. n. 1.

United Nations Organization for Education, Science and Culture [UNESCO] and United Nations Environmental Programme [UNEP] (1977). Intergovernmental Conference on Environmental Education. Tbilisi (USSR).