

CURRICULAR AND EXTRA-CURRICULAR ACTIVITIES TO DEVELOP THE ENVIRONMENTAL AWARENESS OF YOUNG STUDENTS: A CASE FROM TURKEY

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***Abstract** – The purpose of this case study was to investigate curricular (within school) and extra-curricular (out-of-school) activities undertaken to develop students' environmental awareness. In-depth information was gathered from six middle-school students (three females and three males) and three science teachers (all females) through the use of a semi-structured interview. Furthermore, selected classes and laboratories, and also school halls were observed by using an observation sheet. The interview transcripts and observation notes were subjected to content analysis. The results revealed that the students were not completely aware of their environment due to their lack of interest in environmental issues. The selected school for the study undertook various within and out-of-school activities to increase students' awareness, such as tree planting, clean-ups, and re-using and re-cycling products.*

***Key words:** Curricular and extra-curricular activities, environmental awareness*

1. Introduction

Recently, people in all parts of the world have been confronted with various environmental problems, not only on a local (i.e. air, water and soil pollution) but also on a global scale (i.e. global warming). The reasons behind the emergence of these problems are mainly due to economic growth, industrialisation, the global population explosion, growing demand for food, the limits in increasing supply, deforestation, and the extinction of biological resources (Doğan, 1997; Palmer, 1998; Smati, 2004). It is apparent that people's extensive activities in the natural environment and their lifestyle have

accelerated the emergence of the problems (Connell et al., 1999; Tung, Huang and Kawata, 2002). Until recent days, people were not aware of their role in the emergence of these problems and their negative impact on the natural environment. Even though people have recently realised the impacts of these environmental problems on their life, they have still continued to deplete environmental resources and have not changed their lifestyle. There is a clear need to be aware of these problems and to stop the extensive use of environmental resources if we want to protect our environment and to have a sustainable future. Education is an important and easy way of making people aware of their environment and these problems. Similarly, as maintained by Tosunoglu (1993), as part of the solution, education in general and environmental education in particular have an important role to play.

1.1. Review of literature

A survey of available literature on environmental awareness indicates that the relation of environmental awareness with environmental knowledge, attitudes and responsible behaviour has been investigated in several studies (e.g. Brynjgard, 2001; Kadji-Beltran, Barker and Rager, 2001; Karch, 2002; Korhonen and Lappalainen, 2004; Palmeg and Kuru, 2000; Szagun and Pavlov, 1995). Many of these studies reveal that students' environmental awareness could contribute to the development of their environmental knowledge and attitudes, sense of responsibility and their motivation to behave responsibly (Korhonen and Lappalainen, 2004) which is assumed to be the end product of environmental education (Hungerford and Volk, 1984). There are several sources which develop environmental awareness. These sources can be mainly categorised as media (printed and visual), family and the school. Field trips (Neal, 1994), case studies (Matthews and Riley, 1995, as cited in Yerkes and Haras, 1997), community inventory projects, community action projects are mentioned in the literature as school activities (Howe and Disinger, 1988). Furthermore, as pointed out by Bryjegard (2001), school gardens are excellent places to introduce the concept of environmental awareness to students. The research study conducted to determine the effects of school gardens on students' environmental awareness and responsible behaviour showed that school gardens were the best places, allowing students to be responsible and aware of their environment (Bryjegard, 2001). Another way of introducing environmental issues to students is to integrate environmentally related subjects into traditional course offerings (Wagner, 1997). In addition, outdoor activities (field trips, etc.) provide teachers and students with opportunities (Yekes and Haras, 1997) to study environmental issues (Neal, 1994), and have been recognised as effective means of teaching awareness of the environment (Palmeg and Kuru, 2000; Howe and Disinger, 1988). Media, including television, radio, newspaper and magazines, also have an impor-

tant role in developing the environmental awareness of students. The study of Connell et al. (1999) indicated that in addition to school and some other experiences, the media are a source of obtaining information regarding the environment, and then of developing environmental awareness. Similarly, the family has a strong influence on the children's awareness of environmental issues (Wagner, 1997).

1.2. Research on environmental awareness

In order to explore to what extent the students were aware of their environment, Palmberg and Kuru (2000) designed a study with thirty-six 11 to 12-year-old pupils selected from three schools on the basis of their experiences with outdoor activities. The results indicated that those who had been involved in outdoor activities showed higher self-confidence and a feeling of safety when compared to those who had not experienced outdoor activities. The students also indicated the importance of nature and expressed their anxiety about it. The pupils were not only aware of global and local environmental problems, but mentioned concrete environmental problems. Students showed deep concern about animals, pollution and trees. The research points out that increased awareness and knowledge of environmental action strategies contribute to increased motivation to take action.

In another study, Korhonen and Lappalainen (2004) examined the environmental awareness and knowledge of 200 children and 32 adolescents living under different ecological conditions. Those who were from schools where an environmental education (EE) programme was implemented showed more environmental awareness than those from schools where no EE programme was implemented. EE had a great influence on primary students' environmental awareness, but not on that of secondary students.

Kadji-Beltran, Barker and Rager (2001) investigated whether school activities, age-group activities, and indoor (within school) and outdoor (out-of school) activities had an impact on developing environmental attitudes and an understanding of environmental issues. The researchers studied a sample of 675 students of the fifth grade in Cyprus. They found that the EE programme offered by eco schools fostered the students' positive attitudes toward the environment. There were significant mean differences between the experimental and control group in terms of gaining positive attitudes toward the environment. The finding also indicated that one of the important factors affecting the inculcation of environmental attitudes in schools was the school's ability to incorporate the environmental dimensions into class activities and into whole school activities. The case study results indicated that the more the schools or teacher used class or whole school activities regarding the environment, the more positive an attitude the student had toward the environment.

Szagun and Pavlov (1995) carried out a study with a sample of 1,220 children and adolescents (610 Germans and 610 Russians) in order to assess the environmental awareness of students in Germany and Russia. The findings indicated that the adolescents of both countries displayed highly emotional attitudes towards environmental problems and they appeared to be willing to engage in personal and political pro-environmental behaviour. The results also indicated that adolescents' environmental awareness differed significantly with regard to gender, culture and age. Environmental awareness was higher in the lowest age group in Germany. The researchers referred to engagement in extra-curricular school activities with an educational value and receiving social support from peers and teachers as indicators of environmental feelings and behaviour.

A study carried out by Brynjugard (2001) with parents, teachers and students in elementary schools investigated the effect of using a school garden on students' understanding and appreciation of the environment. The study showed that studying in the garden and being involved there with their hands helped the students become aware of the environment and assume responsible behaviour towards it. While studying in the garden, the students saw the value of living things and how they relate to the quality of our lives.

1.3. Purpose

Since there is no separate environmental education course (Hotinli, 2004) in many educational systems that helps learners become aware of the natural environment, there is a need to develop students' environmental awareness and sensitivity toward the environment through within and out-of-school activities, as well as by integrating environmentally-related topics into other course subjects. Determining whether the schools are carrying out any activities or programmes to develop such affective tendencies (i.e. awareness and sensitivity raising) is crucially important. In this regard, this study might provide in-depth information about within and out-of school environmental activities for curriculum developers and teachers who plan to design such activities. The purpose of the study was to investigate curricular (within school) and extra-curricular (out-of-school) activities undertaken to develop students' environmental awareness and sensitivity from the teachers' and students' point of view. The followings sub-questions were addressed in the present study:

1. What is an environmentally aware individual?
2. How do teachers and students perceive environmental problems and issues?
3. What are the sources which play a role in developing environmental awareness?

4. What are the curricular and extra-curricular activities in relation to developing students' environmental awareness?
5. What are the teachers' and students' perceptions of the contribution of environmental awareness to behaviour and attitudes?

2. Method

This work was designed as a case study to provide researchers with information about what students and science teachers do, what they know, and what kinds of activities they are involved in, etc. Qualitative research procedures to allow researchers to produce a great deal of detailed information on a small group of participants were used. As asserted by Patton (1990), studying with a small group but with a wealth of detailed information “increases the understanding of the cases but reduces generalizability” (14). Further, qualitative inquiry helps the researcher to carefully scrutinise the targeted sample. In other words, qualitative inquiry allows researchers to work on selected issue, cases, and events in depth and in detail (Patton, 1987).

2.1. Subjects (Interviewees)

Six middle-grade students from various grades and three science teachers, each of whom teaches science and technology to the 6th, 7th, and 8th grades, constituted the subjects of the study. While selecting students, two factors were considered for maximising the sample characteristics: *grade level* and *gender*. Maximum variation sampling procedures “aiming to capture and describe the central themes or principal outcomes that cut across a great deal of participant variation” (Patton, 1990, 172) were used. Thus, one female and one male from each grade (6th, 7th and 8th) were drawn on.

2.2. Instruments

Two semi-structured interview schedules (one each for students and teachers) and one participant-observation sheet were used for data collection. The interview schedules were developed after a comprehensive review of the literature regarding environmental awareness. As claimed by Bogdan and Biklen (1998), by using a semi-structured interview researchers could be confident of gaining comparable data across the subjects. Each individual interview with a teacher, which took about 30-35 minutes, was recorded on cassette, whereas individual interviews with students were recorded in notebooks, in accordance with school policy. More than 12 open-ended questions together with prompt questions were posed during both types of interview. The school halls and bulletin boards were examined through the use of an observation sheet which guided researchers to focus solely on environment-related

posters and documents. Students' and teachers' responses and the observation results were triangulated for the purpose of "contributing to verification and validation of qualitative analysis" (Patton, 1990, 464).

2.3. Data Analysis

The data collected through individual interviews were subjected to content analysis. Data analysis was performed in line with the five-step approach suggested by Schloss and Smith (1999). The steps followed were organisation, classification, categorisation, the search for patterns, and synthesis. The individual interviews were first transcribed verbatim. Then, each of the interviews was content analysed, that is, coded. The emerging codes were organised, categorised and the potential patterns were examined. According to the emerging patterns, themes were constructed. Finally, these themes were interpreted with the use of codes and selected quotations from the interview.

3. Results

The responses gathered from the students and teachers were grouped into five categories according to the research questions posed.

3.1. Features of environmentally aware individuals

Teachers related environmental awareness to sensitivity and responsible behaviour in protecting the environment and in preventing environmental problems. They believed that those who were aware of environmental issues and problems were assumed to show sensitivity towards and interest in environmental issues, to have basic knowledge regarding the environment and to demonstrate responsible environmental behaviour. One of the teachers indicated that these students should protect their environment, produce solutions for environmental problems, warn other people who dirty the environment, and share their knowledge on the environment with their peers, friends and parents. These all are perceived as features of students who potentially show environmental awareness.

3.2. Perceptions of environmental problems

Teachers reported that students' knowledge and awareness of local and global environmental problems were somewhat limited. Their claims were supported by the students' responses. Students mentioned several environmental problems where they lived, in Turkey as a whole, and in the world, but these problems were known by many people in society. The local problems

they mentioned were air and noise pollution, and inadequate use of garbage bins in the streets. The problems mostly faced in Turkey were water, sea, soil and air pollution, deforestation, inadequate waste management, and intensive construction in natural areas. With regard to environmental problems in the world, the students reported global environmental problems such as acid rain, global warming, the depletion of the ozone layer, water shortage, and problems emerging as a result of urbanisation and industrialisation.

3.3. Development of environmental awareness

As revealed by the responses, environmental information facilitates one's environmental awareness which later contributes to the development of responsible environmental behaviour. Students obtained environmental information from various sources which were grouped as school, family and media (printed and visual). Teachers, peer groups and friends, curriculum, textbooks, posters on the school walls and activities were reported as the information sources as part of the school. Only one of the teachers indicated that NGOs could be a source of environmental information. A highly experienced teacher indicated that teachers, the curriculum and textbooks were three important sources. The other teacher said that "There is no time to go through all the course content. We just teach the theory part of the units." In addition to the formal curriculum, teachers and students strongly believe that the hidden aspect of the curriculum (the school walls, visual presentations, posters, and school bulletin boards) promoted the students' awareness of environmental problems and issues. As indicated by one of the teachers, teachers always use posters in the science class, in science laboratories and on school boards. The posters on the walls were not only designed by the teachers, both also by the students. In this regard, one of the teachers claimed that school halls and bulletin boards were crucially important since the posters on them were observed by almost all the students in the school. The other teacher suggested that the messages given by these posters and pictures were not the same as those given in the books. It was indicated that parents played a great role in this process. Parents could be a role model for their children. Their concern about the environment could directly influence their children's environmental awareness and behaviour. News related to the environment on TV, the radio, in newspaper articles and on the internet reached various students at all levels and increased students' level of awareness with regard to local and global environmental problems and issues. Books, family members and society were also considered as one of the sources of environmental information. One of the teachers, in this regard, reported that "We are not reading many books and not searching many journals. ... having our children become aware of their environment is society's task. However, we, as adults, have to work very hard and we neglect this".

3.4. Curricular and extra-curricular activities

From the interviews, it emerged that many within and out-of-school activities for developing students' environmental awareness and sensitivity were undertaken in different settings. These activities can be divided into two main categories: curricular and extra-curricular activities.

Curricular activities: Curricular activities were those offered by the formal curriculum. Teachers claimed that because of the time limitations, they mostly used lecturing and question-and-answer sessions when teaching environmentally related topics. On the other hand, as part of their instruction, they found creative activities associated with recycling and re-using products (e.g. clothes, books, glass, etc). Teachers encouraged their students to prepare PowerPoint and poster presentations by using the computer and overhead transparencies. Teachers gave research homework on environmental issues which allowed the students to be involved in both group and individual projects to develop basic skills as well as environmental awareness. Students' responses indicated that most of the environmentally related activities were undertaken outside the classroom. For this reason, teachers created an environment in which the students put into practice their theoretical knowledge regarding environmental issues. Students, for example, were encouraged to attend science festivals, seminars, discussions and exhibitions. The students indicated that their school adapted the eco-school project principles which brought several environment-related activities into practice. These activities mainly involved cleaning up, recycling and planting. Experiments and problem solving activities regarding environmental problems were also reported.

Extra-curricular activities: As part of extra-curricular activities, the students were encouraged to participate in international projects and conferences to share their knowledge with other audiences. Through the eco-school project, the students attended field trips, observations and took part in bird watching activities.

3.5. Responsible environmental behaviour

Teachers' and students' responses revealed that increased environmental awareness could result in the development of responsible environmental behaviour. One teacher indicated that if a student had environmental awareness, s/he tended to demonstrate various types of responsible behaviour, such as keeping the environment clean, recycling and re-using products, saving water and energy, tree planting, warning others, and attending environmental projects in school. The teachers believed that age also plays a role in shaping responsible behaviour. They indicated that students were observed to be more responsible at a younger age. However, when the students grow older, their affective tendencies decrease and they tend to demonstrate irresponsible

behaviour. In this respect, one of the teachers reported that “when I look at the children now, I come across students who dirty their environment and are not very sensitive toward living organisms and plants ...”.

3.4. Affective tendencies

From the interviews, it emerged that environmental awareness seems to be associated with several affective tendencies toward the environment, such as sensitivity, willingness, attitudes and responsibility. Teachers indicated that responsibilities were shared within the grounds of the school for cleaning the school garden, creating and using recycling bins, checking the water fountain and warning others about dirtying the school garden. They believed that sharing responsibility with students increased their level of awareness and sensitivity regarding environmental issues. Furthermore, the teachers observed that the students’ experiences with the natural environment, their knowledge about the environment and their age could directly influence their level of environmental interest, sensitivity and awareness. All participating teachers agreed that parents and teachers played a role in shaping students’ affective tendencies.

4. Conclusions

This study was conducted with three science teachers and six middle-school students (three females and three males) from various grades to investigate the curricular and extra-curricular activities undertaken to develop the environmental awareness of young students. Those with environmental awareness are considered to be knowledgeable about the environment, they show a high interest in and concern about it, and demonstrate responsible behaviour in preventing environmental problems. The interview results indicated that the students were not completely aware of their environment due to a lack of knowledge and interest in it. Their lack of or limited knowledge of the natural environment and environmental problems and issues could be attributed to the lack of sufficient guidance from teachers and parents, and also to the limited amount of news regarding the environment in the media. These three sources were reported as the main elements which contribute to students’ environmental knowledge, attitudes and behaviour, and thus awareness.

In the sphere of the school, teachers and the formal curriculum (i.e. textbooks, activities) are the main source of environmental information for students. Thus, teachers as the implementers of the curriculum have an important role in shaping students’ environmental awareness and responsible behaviour. In this respect, their level of pedagogical content knowledge regarding the environment and the way they teach environmental topics could have an

impact on increasing students' knowledge and awareness of the environment. As the teachers themselves asserted, they frequently used lecturing and question-and-answer methods for instruction due to limited time. Even though teachers sometimes used creative and student-centred methods, their number and frequency seemed to be limited. More student-centred methods should be used to enable students to construct their own knowledge which may help them internalise the topics and increase their level of environmental awareness. Furthermore, the study revealed several activities carried out in school and out-of school in helping to develop students' environmental awareness. Some of the activities are suggested and/or dominated by the curriculum, whereas others are created by the teachers. As claimed by the teachers, the activities in the schools vary, but are not adequate in developing environmental awareness and sensitivity.

Family members, especially the father and mother, were reported as information sources regarding the environment. It was thought that parents should guide their children and take them to natural areas in order to increase their awareness of the natural environment. Furthermore, as far as the students' and teachers' responses were concerned, environmentally related books, the internet, magazines, TV and newspaper articles are the information sources categorised as media. Since everybody in society reads magazines and newspapers and/or watches TV programmes, environmentally related information could be easily disseminated through both printed and visual media. This was also supported by the participants of this study. Considering the students' low level of environmental awareness, it can be suggested that more environmentally related news be integrated in the media.

This was a qualitative study seeking in-depth information about the sources of environmental awareness. This is one of the initial studies in this area in Turkey. However, the study was limited in terms of the number of teachers and students. It is suggested that further studies be conducted with a larger sample from different levels, including elementary, secondary and even university levels. In this way, students' environmental awareness could be compared with regard to gender, grade level, SES, type of school, parental environmental concerns and other background variables.

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NASTAVNE I IZVANNASTAVNE AKTIVNOSTI ZA RAZVOJ EKOLOŐKE SVIJESTI MLADIH UČENIKA: PRIMJER IZ TURSKE

Mehmet Erdođan i Muhammet Uřak

Sađetak – Svrha ovoga studijskoga primjera jest istrađiti nastavne (řkol-ske) i izvannastavne (izvanřkolske) aktivnosti koje se provode radi razvoja ućenićke ekoloŐke svijesti. Detaljni podaci prikupljeni su od 6 ućenika viřih razreda osnovne řkole (tri djevojćice i tri djećaka) te triju nastavnica prirode putem polu-strukturiranog intervjua. Osim toga, promatrani su odabrani razredi i laboratoriji te řkolski hodnici uz popunjavanje obrasca za opađanja. Prijepisi intervjua i biljeŐke s opađanja podvrgnuti su analizi sadrđaja. Rezultati su pokazali da ućenici nisu imali potpuno razvijenu svijest o svom okoliřu zbog nedostatka interesa za ekoloŐka pitanja. řkola u kojoj je provedeno ovo istrađivanje provela je niz izvannastavnih aktivnosti radi povećanja svijesti ućenika, poput sađenja drveća, ćišćenja řkolskog okoliřa, ponovnog koriřtenja, i recikliranja.

Kljućne rijeći: nastavne i izvannastavne aktivnosti, ekoloŐka svijest.

