

# Outdoor Experiential Environmental Education: An Adult-Centred Intervention for the Affective Domain

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## Abstract

The aim of this research is to evaluate the impact of an outdoor experiential environmental education (OEEE) programme on the affective domain of adult participants - namely, in-service teachers from Turkey. Data collection methods such as; psychodrama, non-participant observation, open-ended questions and content analysis were used within a qualitative approach in a case study format. Activities in both the indoor and outdoor experiential programmes were designed in accordance with Kolb's theory on experiential teaching. While the indoor activities were used for control group 1, and traditional methods used for control group 2; the outdoor activities were used for the experimental group. At the end of the research, the following terms emerged in participants' expressions: 'interest, anxiety, curiosity, motivation and complaint'. The most outstanding expressions belonged to the experimental outdoor group.

**Keywords:** Outdoor education, environmental education, affective domain, experiential education, Kolb's experiential learning theory

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## Introduction

It can be very difficult for people to be aware of the outputs of environmental problems as their impacts tend to be noticed over a long period of time. The 2010 oil spill in the Gulf of Mexico involving British Petroleum's (BP) Deepwater Horizon platform (BP, 2013) serves as a good example. BP claims to have what it describes as a 'superficial oil dispersion' under control, but it is impossible to accurately know (or predict) the extent of the damage on the region's habitat and biodiversity. Similarly, the Fukushima Nuclear Power Plant suffered a catastrophic meltdown in 2011 as a result of a magnitude 9.0 earthquake. Although more than 100,000 people were evacuated due to fears of radiation (World Nuclear Association, 2014a), nobody can safely argue whether evacuation actually saved the local population from exposure to lethal levels of radioactivity. We are able to ask these questions because we are well informed of the consequences of a similar catastrophe involving a nuclear reactor in the Ukrainian city of Chernobyl. The Chernobyl nuclear disaster took place in 1986. Two workers at the nuclear plant and twenty-eight others from the local population died as a result of radioactive poisoning in the two weeks following the meltdown. As a precautionary measure, more 100,000 people were evacuated. However, research on the region's population show that health cases pointing to radioactive poisoning, such as the levels of thyroid cancer among children, are significantly higher than the averages recorded for the rest of Ukraine (World Nuclear Association, 2014b). If we take the long-term effects the accident has had on human health, it is not difficult to assume similar, currently unnoticed, long-term effects on the region's natural environment.

Rural and indigenous peoples (such as the Inuit tribes of Canada, nomadic Yoruks of Turkey, etc.), due to their strong links with nature and the environment, are likely to feel the long-term effects of the above-mentioned types of disasters on the environment on a much greater scale (Lazarus & Cohen, 1977). Lazarus and Cohen (1970:90) refer to this phenomena as 'environmental stressors'. Rural and indigenous people experience anxiety and fear due to environmental stressors, which result in their showing greater concern for environmental subjects (Lazarus & Cohen, 1977). Reports on the fatalities from the Fukushima disaster mention physical and mental stress as the main reasons (World Nuclear Association, 2014a). Similarly, reports about the aftermath of the Chernobyl disaster describe local population's fears about exposure to serious health issues (World Nuclear Association, 2014b). It is clear that environmental stressors are able to manipulate the composition of individuals' affective domains (Lazarus & Cohen, 1977).

### *Theoretical Framework*

The affective domain, along with the cognitive and psychomotor domains, represents one of the three divisions described in modern psychology. Affect refers to the experience of feeling or emotion. The affective domain is related to these experiences and includes phenomena such as: appreciation, attitude, interest, values, morals, character and mental health (Crompton & Sellar, 1981:21; Ringness, 1975:5). There are two points of view related to explaining the affective domain: the behaviouristic and the humanistic arguments. According to behaviourists, humans are a product of genes and experiential differences. Although humans react to the inner and outer world, behaviourists argue that human behaviour is predetermined. The humanistic position, on the other hand, rejects humans' description as being simple products of genes, and maintains that the interaction between a human being and the inner and outer world is very complicated. Humans, according to humanists, are interrogative by nature and have a natural tendency to continuously interpret our own feelings and emotions in a quest to understand who we are. In this line of thought, spontaneity, self-determination, self-actualization, self-direction, and becoming independent and responsible are very important facets of human emotions. Humans react with themselves, others and our environment with activities such as yoga, psychotherapy, and self-analysis, and, in this way, develop a capacity to share and understand others' emotions - namely, empathy (Ringness, 1975: p.120). In education, individual outputs after such reactive activities are different every time since there are differences in individuals' backgrounds and experiences (Ringness, 1975).

The perspective this research takes is in accordance with the humanistic position mentioned above. Psychodrama as a group psychotherapy technique is used in order to facilitate better interaction between participating individuals' personal inner worlds and their self-reflections. However, the research also acknowledges humanists' arguments on how difficult it is to predict individuals' behaviour due to the immense factors our affective domains are exposed to after birth - such as family and society. By the time we are engaged with the education systems of our respective countries, we already have a substantial amount of formative factors established in our affective domains. Another important issue is, although all individuals have feelings and emotions, not all may not be aware of them and even fewer may find it easy to express them. It is because of this difficulty in participating adults' self-expression that motivates educators and researchers to cooperate with a specialist (a psychologist) when evaluating individuals' feelings and emotions (Ringness, 1975: 167-170).

Educators often find themselves aspiring to develop both the cognitive and affective domains of their students, and yet, usually end up engaging them within an essentially cognitive context. Hence, the affective domain has had a long history of neglect in the field of education (Iozzi, 1989; Ringness, 1975). Popular teaching models around the

world and in Turkey tend to be directed at the cognitive domain (Gunter, Estes & Mintz, 2010; Joyce, Weil & Calhoun, 2004; Ozcelik, 2010); whereas teaching models intended for the affective domain are rare and mostly focused on 'attitude' (Gagne, 1985).

Martin and Briggs (1986; in Bichelmeyer, Marken, Haris, Misanchuk, Hixon & Fostering, 2009) characterize the affective domain as a huge area inclusive of: ego, motivation, concern, attitude, value, self-respect, self-control, curiosity, creativity, mental health, independence, individual development, group dynamics and dreams. Ozcelik (2010), points at the need for long term research on individuals in order to determine development in all of the aforementioned concepts of a person's affective domain. It is still not known how researchers can set goals and achieve aims with regard to concepts in the affective domain as there is very little known about its features and developing factors - especially in terms of programme development (Reis & Roth, 2009; Ringness, 1975).

With regard to theoretical material related to the affective domain, the two studies that are noticed are: 'The Humanistic Programme' (McNeil, 1996) and 'Enhancement of Affective Outputs' (Bichelmeyer et. al., 2009). The cognitive and affective domains might be seen as two different fields but the famous neurologist Antonio Damasio, who studies patients suffering from brain injuries discovered the essence of emotion in logical thinking (1994, in Bichelmeyer et. al., 2009). It is also claimed that educational learning can translate into successful development in both areas (Ringness, 1975). If research tells us that people have various features in their affective domains (Crompton & Sellar, 1981; Martin & Briggs, 1986; in Bichelmeyer et.al., 2009; Ringness, 1975), then it is obvious that similarly various learning environments need to be setup in order to develop them. Outdoor environmental activities, social interactions, and activities intended to engage with our five senses might be used in this capacity with the aim of building rich learning environments (Ford, 1986; Okur, Guder, Sezer & Yalcin-Ozdilek, 2013; Okur-Berberoglu, Guder, Sezer & Yalcin-Ozdilek, 2013a).

The affective domain is also determined to be of higher priority when compared to the cognitive domain in the field of environmental education. Iozzi (1989:4), for example, has found most other disciplines too focused on the cognitive, rather than the affective, domain; whereas in environmental education the focus is the exactly opposite. 'Environmental attitude and value education', in Iozzi's 1989 study are researched with an understanding that they reside within the affective domain. Most researchers in the field of environmental education similarly approach the phenomenon of 'environmental attitude' from the context of the affective domain (Okur, 2012). Yet, concepts within a person's affective domain, such as pain, hurt, anxiety and fear, tend to be on a much more sensory (rather than analytic) level (Martin & Briggs, 1986 in Bichelmeyer et.al.,2009; Ringness, 1975). Some of the present literature continues to mention the significance of the affective domain in education (Combs, 1982; Meredit, Fortner & Mullins, 1997; Okur et.al., 2013; Okur-Berberoglu et.al., 2013a; Reyes, 1984; Ringness, 1975), however, research on this issue continues to be patchy.

It is my belief that researchers and educators will be rewarded with fascinating data if they focus on the affective domain in terms of outputs of environmental education (EE) programmes - especially those intended for adults. The reason I forward this argument can be found in Ringness' (1975) identification of adults as not open to change when it comes to exploring and expressing their feelings, especially when compared to children. If the affective domains of adults could be engaged with, then they may accept innovation and be more open to different viewpoints to the problems societies face around the world. In terms of EE, if people could be stimulated to 'feel' the natural environment around them (with experiences such as: pain, hurt, anxiety, fear, empathy etc.), then they might enjoy a better connection to it (Haskell, 2000; Lazarus & Cohen,

1977; Martin, 2004; Ozdemir, 2010; Reis & Roth, 2009). Some of the literature point toward a gap between theory and practice within EE (Bolstad & Baker, 2004; Bozkurt & Kaya, 2008; Eder, 1999; Irwin, 2010). It is already suggested that this gap can be filled within the context of OEEE (Innes, 2012; Miller, 2008) due to experiential learning being the basis of it, and the facilitating it provides of a rich learning area along with a supportive environment with an affective domain focus (Crompton & Sellar, 1981; Iozzi, 1989). Some outdoor education and experiential education studies focus on the affective domain, however their programmes are based on adventure education (kayaking, rock climbing, biking, winter backpacking etc.) and are, more importantly, intended for a younger, student audience instead of adults (Haskell, 2000; Martin, 2004; Okur et.al. 2013; Okur-Berberoglu et.al., 2013a; Ozdemir, 2010; Palmberg & Kuru, 2000).

### *Literature Review*

Palmberg and Kuru (2000) studied camp activity for students aged 11-12 in Finland. The activities offered at the camp were: canoeing, hiking, sailing, etc. Students also slept in tents they pitched in the forest during the camp. The researchers focused on environmental sensitivity among students by utilizing qualitative methodology. They found that as the students' environmental knowledge and attitudes increased they tended to have empathy to the natural environment around them - but the perspective of the students towards nature was generally egocentric.

Haskell (2000) participated at an outdoor adventure education programme in Canada with an 8<sup>th</sup> grade high school student. She tried to determine the perceptual knowledge in the student's outdoor experience. At the completion of the programme, the student explained that she felt fear and a connection with the natural environment.

Martin (2004) researched the effectiveness of outdoor adventure activities on the relationship students build with nature. He studied 11 and 12 year students participating in an outdoor and environmental studies course in Bendigo, Australia. The students developed emotional resonance with the natural environment at the end of the course. They used terms such as: 'love, peace, joy, happiness and contentment' in describing their experience. Although this and the two other studies mentioned above were based on observing participants' affective domains, the educational programmes they focused on had an explicit adventure education and sports essence.

Ozdemir (2010) examined the effectiveness of an OEEE programme on the environmental perspectives of 6<sup>th</sup> and 7<sup>th</sup> grade students in Turkey. The programme covered topics such as: recycling, biodiversity, habitat, decomposition and usage of natural resources. Using mixed methodology, Ozdemir found that the students' levels of anxiety increased at the end of the programme and that they felt emotional affinity towards the environment.

Okur et.al.'s (2013) experiential study looked at the effectiveness of advanced organizer and haptic learning applications on the cognitive and affective domains of 5<sup>th</sup> grade students in Canakkale, Turkey. The activity in focus was designed around the dissection of a sheep heart during a science camp. The data was collected using mixed methodology and evaluated within a case study understanding. At the end of the activity, students' levels of knowledge on the subject were found to increase and participants evaluated their experiences using terms such as 'interesting' and 'entertaining'.

Okur-Berberoglu et.al.'s (2013a) research was aimed at determining the affective perspective of participating students in an outdoor hydrobiology activity in Canakkale, Turkey. The data was collected using non-participant observation along with a survey and was based on a qualitative methodology. At the end of the activity, students were

asked to fill out a survey designed record their feelings and emotions. Additionally, one of the researchers observed the students during the activity and took notes. The surveys were evaluated using discourse analysis. The data accumulated showed that students learned by touching their activity environments and their perspectives on streams were changed at the end. Students described the activities as 'interesting' and 'enjoyable'.

As can be noticed from the above examples, affective domain studies tend to focus on student participants. Research intended for adults within OEEE are very limited. Moreover, OEEE research mostly studies 'environmental knowledge and awareness' (Blair, 2008; Guler, 2009; Hanna, 1995; Lugg & Slattery, 2003; Palmberg & Kuru, 2000; Thomas, 2005) - in other words, on the cognitive domain. The amount of research dealing with the affective domain, such as those studying 'environmental attitude' (Emmons, 1997; Hanna, 1995) is very rare. This situation is problematic as the main aim of EE is to succeed in changing individuals' environmental behaviour (Bolstad, 2003; Lucas, 1972; Tilbury, 1995), and research in the field is focused on the relationship between changes in attitude and behaviour (Barker & Rogers, 2004). However, simply aiming at changing individuals' environmental attitude does not translate into a similar change in their behaviour (Ringness, 1975). People may display favourable changes in their attitude toward the environment, but it doesn't necessarily mean that they also have a positive change in their environmental behaviour (Erten, 2005; Hanna, 1995; Kasapoglu & Turan, 2008). This is due to the presence of different concepts within the affective domain (such as motivation, self-concept, anxiety and curiosity) that play a substantial role in changing individuals' environmental behaviour (Lazarus & Cohen, 1977; Ringness, 1975).

One of the aims of the research this article is presenting here is to support the self-development of in-service teachers with regard to EE. In light of the available literature dealing with the subject, the author expected participants to: feel anxiety (Heskell, 2004; Lazarus & Cohen, 1977; Ozdemir, 2010), evaluate the activities and their knowledge gained as 'interesting' (Okur et.al. 2013; Okur-Berberoglu et.al., 2013a), be curious about environmental subjects (Ringness, 1975), have motivation to learn about and teach environmental subjects (Jensen & Schnack, 1997; Ringness, 1975) and be willing to participate in direct action (Eryama, Yalcin-Ozdilek, Okur, Cetinkaya & Uygun, 2010; Guler, 2009). Essentially, the research took into consideration Irwin's (2010) findings that emphasize the most important point of EE as the capacity to cause mental chaos in the learner directed towards self-development, rather than expressing what is true or not. The line of thought pursued during this research was to get the participants to consider environmental knowledge with reference to terms such as '*interest*' and '*anxiety*' so s/he could be *curious* and *motivated* to acquire more information or take a more active role in solving environmental problems (Figure 1).

The relationship between change in environmental behaviour and the affective domain concepts mentioned above is excluded from this research as change in behaviour is determined over research programmes that require a much longer time period (Guler, 2009; Hanna, 1995). The research focuses on the development of some of key affective domain concepts (such as interest, anxiety, curiosity, motivation and complaint) with regard to the OEEE programmes mentioned above. There are many studies looking into OEEE programmes intended for adults (in-service teachers) in Turkey (Eryaman et. al., 2010; Guler, 2009; Yalcin-Ozdilek, Ozdilek, Okur & Eryaman, 2011; Okur-Berberoglu, Yalcin-Ozdilek, Eryaman, Uygun & Cetinkaya, in press). However, the outputs and/or aims of these studies are not related to observing developments in participants' affective domains. The aim of this research is to evaluate the impact of an OEEE programme on the development of some concepts within the affective domain of adult participants.

### Methodology

A part of this research is based on data obtained from a project (Project Number: 110B051) sponsored by The Scientific and Technological Research Council of Turkey (TUBITAK) entitled 'The Ecology of Canakkale City and its Suburbs, 2011'. The case study format was used in analysing development of the affective domain of participating in-service teachers based on qualitative methodology. The preference for the case study format was due to its usefulness in terms of collecting enough data (Yildirim & Simsek, 2006), and the fact of its capacity for yielding descriptive and explanatory results (Forces & Richer, 1973 in Zanovello, 1999). In terms of establishing the research's reliability, the qualitative analyses conducted were buttressed by the triangulation data collection method, which included: non-participant observation, video camera records, open-ended questions and psychodrama (Bas & Akturan, 2008; Yildirim & Simsek, 2006; Zanovello, 1999).

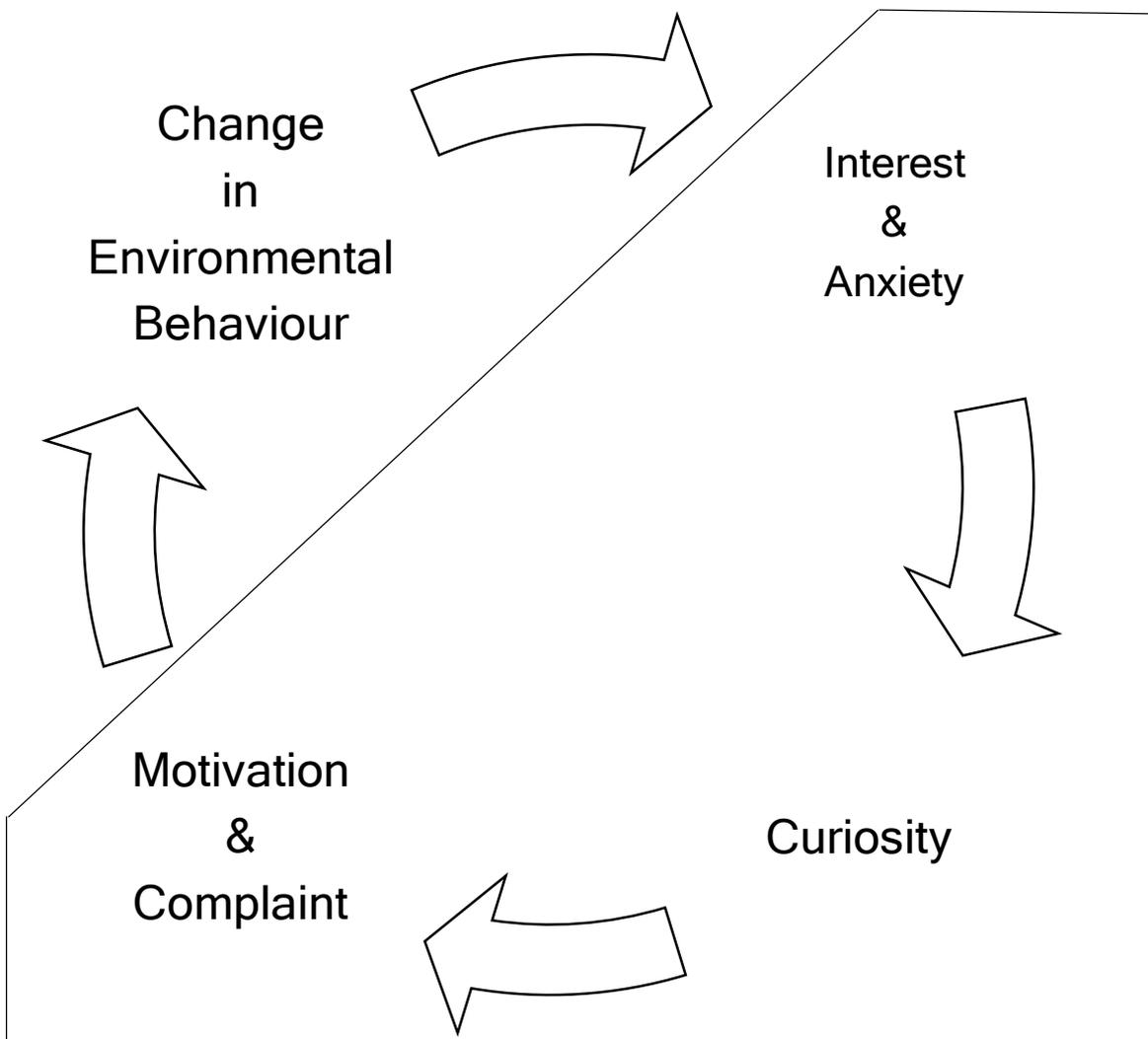


Figure 1. Theoretical framework of research area

### *The Roles of the Researcher*

The researcher was assigned three roles within the project:

- a. *Designer of the OEEE programme:* The EE programme was based on ecology, and the researcher determined four themes related to the subject. These were: physical environment (PE), population and community ecology (PCE), ecosystem ecology (EcE) and human ecology (HE) (Molles, 2008) (App. 1). Output constitute an important part of an educational programme and can be foreseen. However, it is possible to encounter unforeseen outputs as well (Ozcelik, 2010). Although the perspective of the research if based on the humanistic view, the researcher did determine some outputs before the application of the programme. This was due to the need to identify aims, plan, instructions, methods and outputs in educational programmes (Ozcelik, 2010; Martin, 1997; McNeil, 1996).
- b. *Facilitator:* The researcher carried out concrete experience and reflective observation stages, as identified in Kolb's experiential learning cycle, with all participating groups.
- c. *Non-participant observer:* The researcher was an observer throughout the project and did not join any of the activities directly. In order to enhance the observation of participants, activities were recorded by a video camera and the footage obtained later viewed by the researcher for data collection. The researcher compared her own observation notes with participant expressions recorded by the video camera. A trained psychologist assisted the researcher when observing video camera data related to the psychodrama activities.

### *Psychodrama*

Influenced by Lazarus and Cohen's (1977:121) recommendations on the need for environmental research designs to include psychodynamic material, psychodrama was integrated into the project in order to better observe the developments in the affective domains of participant in-service teachers. Psychodrama is a group psychotherapy method which is related to human interaction, creativity and spontaneity. The technique helps develop awareness of other people, and facilitates self-reflection of feelings and opinions (Bona, 2003; Gershoni, 2003). Psychodrama is based on psychology and focuses on the workings of participants' inner worlds (Bona, 2003; Gershoni, 2003; Oflaz, Meri, Yuksel & Ozcan, 2011). The researcher, therefore, acquired the help of a psychologist during the project, who had specialized in the psychodrama technique (App 2&3).

Psychodrama is a technique that has recently been noticed by those conducting educational research in the last decade. There are many examples of psychodrama being used in nursing education (Oflaz et. al., 2011), adolescent education (Fong, 2006), and even as a social work modality (Konopik & Cheung, 2013). Despite the above examples, psychodrama has yet to be integrated with any EE or outdoor education application. The researcher hopes that this project will serve as an example for the integration of the psychodrama technique within environmental education.

During the design of an appropriate psychodrama technique for the project, the researcher discussed the stated aims and expectations with the psychologist, who recommended a series of activities. The activities had titles such as: 'life in the forest', 'the creatures of the sea', 'ongoing story' and 'short scenario'. During the "life in the forest" suggested activity, for example, the psychologist asked participants to choose an animal or plant that exists in the forest. After each participant had settled what s/he wanted to be, they were asked to think about and act out features related to their living organism from the forest - e.g. the participant who wanted to be a bird from the forest

was expected to flap his/her arms and tweet. The psychologist later introduced scenarios taking place in the forest (such as a raging fire or deforestation due to human activity) and asked participants to join a discussion on how their living organism would be affected by the conditions described in each scenario.

At the end of the activity, the psychologist interviewed each participant individually in order to observe the way they expressed their feelings on the subject and to check whether there were any comments hinting at self-reflection. The researcher and psychologist later discussed and evaluated the data collected with particular emphasis towards participants' recorded self-reflections (Ringness, 1975). After each lesson and activity, each of the participant in-service teachers were asked the same open-ended question on how they feel about the environment in light of what they have learned recently.

### *Data Analysis*

This research was based on content analysis. All camera records were transcribed and were used alongside forms containing participants' replies to the open-ended questions at the end of each activity and the notes supplied by non-participant observers. The available literature on data collected in the form of essays argues that each text includes an opinion and/or knowledge (Harkness, Long, Brembach, Patterson, Jordan & Kahn, 2005; Tesch, 1990). Accordingly, all written documents containing data obtained during the project were analysed one-by-one and coded with regard to the stage of the research they correspond to. These codes were used to obtain themes (Harkness et.al., 2005; Shanely, 2006), and to retrieve material relevant to a case study (Yildirim & Simsek, 2006).

### *Sample Groups*

There was no sample-universe selection applied at any point during the project. Sonmez (2006) states that sample-universe selection is not essential in experimental designs. There are studies of a similar nature containing the same (no sample-universe selection) application (Balim, Inel & Evrekli, 2008; Chapman, 2004; Clinch, 2007; Madin & Fenton, 2004).

### *Experimental Group (EG) Selection Process*

The EG was comprised of in-service teachers participating in an OEEE project funded by TUBITAK. A website ([canakkaleekoloji.net](http://canakkaleekoloji.net)) was setup in order to collect applications from in-service teachers willing to take part in the project. An advertisement of the project was made visible on the Google search engine, and also e-mailed to all targeted primary and secondary schools.

Those wishing to take part were asked a series of demographic questions along with one open-ended question (*"Please explain in a short essay why you would like to take part in this project."*) designed to retrieve data in the form of a short essay from each applicant. The essays were transferred to the researcher via the website and successful participants were chosen by the researcher according to the content of their essays. Successful applicants' essays were those that contained the terms *"self-development"* and *"professional development"* regarding environmental subjects. In the end, 24 in-service teachers were designated for the EG - the male-to-female ratio was 1:1.

### *Control Groups' (CGs) Selection Process*

The selection of the control groups was different to the EG process described above. TUBITAK projects intended for in-service teachers are very popular in Turkey. The projects are carried out during the summer period, and the expenses are usually all covered by TUBITAK itself except for travel allowances. Hence, a significant number of

in-service teachers tend to see these projects as a free summer holiday. Similar concerns were also identified in research conducted in other countries as well. Emmons (1997), for example, mentions the same participant view on research projects. However, she especially selected those students whose reason for applying to her project was because they considered it as 'a cheap holiday opportunity'. Hence, while those applying for the experimental group were asked a specific, open-ended, question as part of the selection process; the researcher did not ask any question to those in-service teachers applying for the control groups.

An official application was made during the 2011 spring-summer semester periods explaining the project's aims and the content of the environmental education programme to the National Education Principalship of Canakkale Province. The timing of the application was arranged so as to invite participants for an EE programme that would take place during the summer break period. A number of teachers applied to the programme on a voluntary basis, and a few even sent official petitions to the university where the researcher was employed. However, the number of total applications, including petitions and volunteer applications, were very limited so the researcher did not apply any selection criteria and accepted all submissions.

The applicants were separated randomly into two control groups by the researcher via the method of drawing lots among them. There were 23 in-service teachers in Control Group 1 (CG1) - 11 males and 12 females. Control Group 2 was comprised of 19 teachers - 9 males and 10 females. The total number of in-service teachers participating in the project was 66.

The teacher-participants who attended all of the programmes came from 13 different specialist teaching fields. Starting from primary school teachers (who cover all major education topics for the same class during a child's first five years of schooling), the participants' fields of specialty were: biology, chemistry, computer science (or information science), geography, history, mathematics, music, philosophy, physics, pre-school (early childhood education) and social sciences. The participants' age, teaching experience or age did not contribute to factors taken into consideration during the selection process. According to rules set out by TUBITAK, all primary and secondary school teachers working in the public education sector have the right to apply to TUBITAK projects. The only limitations were that participants need to be employed in the public education sector and that they should not have participated in a TUBITAK project before. Participants' names were not mentioned anywhere in the project documentation due to rules around confidentiality. Codes were used instead, where A was selected for teachers in the experimental group (EG), and B and C used for control groups 1 and 2 respectively (CG1 and CG2). So a teacher participant with the code A.8 designated an individual from the experimental group who was given the line number 8.

#### *Education Programme*

The activities in both the indoor and outdoor programmes were designed in accordance with Kolb's experiential learning theory. This theory was previously used in research in a variety of disciplines such as: education, law, management and pharmacology (Healey & Jenkins, 2000; Kayes, 2002; Miller, Kovacs, Wright, Corcoran & Rosenblum, 2005). According to Kolb's theory, learning is a cycle that is constructed by experience, and knowledge gets constructed and reconstructed in this cyclical process (Kolb, 1984; Kolb, Boyatzis & Mainemelis, 2000). The experiential learning theory can be used to develop both the affective and cognitive domains (Boyatzis & Kolb, 1991:279, Kolb, 1984: 31). Kolb states that, as humans, we should be aware of those moments when we feel and others when we think, and that, as a result, we should also be aware of when our behaviour is directed by either our thoughts or our

feelings (Kolb, 1984: 32). Based on Kolb's emphasis about learning being not only cognitive but also affective in that it includes thinking, feeling, perceiving and behaving (Kolb, 1984: 31); the researcher used the experiential learning theory with the goal of observing development in participants' affective domains.

Kolb's experiential learning theory is also based on Dewey's experiential learning model (Kolb, 1984), and Dewey emphasizes that learners should be expected to have self-responsibility for their learning processes (Dewey, 2010). This is also in line with the main concern of the humanistic position of describing change in humans' affective domains: self-actualization. Anxiety, curiosity and motivation, along with self-responsibility and self-development (Lazarus & Cohen, 1977; Ringness, 1975) are important factors in the development of self-actualization.

There are 4 stages in Kolb's theory: concrete experience (experiencing), reflective observation (reflecting), abstract conceptualisation (thinking) and active experiment (doing) (Kolb, 1984; Kolb et.al., 2000). Concrete experience is directed at the human senses where the learner tries to perceive reality through an emotional experience (Kolb et.al., 2000). During this research, for example, participants were shown video footage from several YouTube channels that had content of a disturbing nature - content usually censored out of mainstream media coverage. Among the topics of the video footage were: Canadian seal slaughter, effects of the Chernobyl disaster and images showing the oil leak from BP's Deepwater Horizon platform after the accident of 2013. The material shown during this application was selected with the intention of showing how humans as well as nature are equally exposed to the effects of environmental stressors. A discussion was initiated after participants viewed the footage and it was designed to encourage them to express themselves as much as they needed when reflecting upon the scenes they just witnessed. These concrete experience and reflective observation phases were carried out for all three groups of participants observed during the research.

The two other stages of Kolb's theory (namely, abstract conceptualisation and active experiment) were carried out with the help of 19 lecturers from 19 different disciplines. In the abstract conceptualisation phase, detailed knowledge on the activity subjects were given to the participants, and the following activities formed the active experiment stage. The same two lecturers carried out the abstract conceptualisation phases for all three groups. There were 19 different environmental subjects covered by the research programme (see App. 1), and 19 lecturers with a doctorate-level knowledge in each of the environmental subject areas contributed to the design. All three groups' educational frameworks and environmental subjects covered were the same (see Apps. 2 & 3). However, the active experiment stage was left out of control group 2's (CG2's) research programme since their educational programme's methodology followed a different type of active learning.

### *Programme Application*

The programme's educators taught participants in the experimental group (EG) the environmental subjects covered by the research through outdoor experiential activities between July 15<sup>th</sup> and 24<sup>th</sup>, 2011 (see App. 2). Among the experiential activities were: observing the microclimatic area of the Ida Mountain Forest as part of the forest ecosystem lesson, finding out where the micro and macro vertebrates of a stream live, measuring the physical and chemical features of stream water, observing the biodiversity of marine life along the Canakkale coast via joining a snorkel diving expedition and catching insects to observe the specimens used for biological combat and control of pests.

During the deep ecology lesson, participants were shown two videos with the titles: "Canadian seal slaughter" and "We won't give up Anatolia". "We won't give up Anatolia"

(Turkish: “Anadolu’yu vermeyeceğiz”) shows the establishment of hydroelectric power stations as part of the government’s 2023 vision of having more than 100 such stations on rivers across Turkey. The video also shows the locals’ struggle to stop the construction of these power stations. A discussion was initiated after the video was shown to the participants that encouraged their reflective output.

Control group 1 (CG1) were assigned indoor experiential activities. Due to the limitations of the indoor environment, it was not possible for CG1 to experience the some of the outdoor experiential activities - such as diving. For similar constraints, some outdoor experiential activities were modified for CG1’s indoor environment. The stream ecology activity EG took part in was applied to CG1 in a laboratory setting where the researcher had the participants observe stream water and sediment samples under the microscope. CG1’s indoor experiential education programme took place between June 20<sup>th</sup> and 26<sup>th</sup>, 2011 (see App. 3).

No experiential activities were included in control group 2’s (CG2’s) education programme. Instead, traditional teaching methods such as: lectures, question and answer sessions and discussions were chosen (Armstrong, 2005; Gercek & Soran, 2005; Sunbul & Yilmaz, 2003). CG2’s programme took place between June 27<sup>th</sup> and July 1<sup>st</sup>, 2011 (see App. 3).

### **Findings**

At the end of the research, some key affective domain concepts were observed in all three groups (Table 1). These concepts were: interest, anxiety, curiosity, motivation and complaint. Data suggested that the most developed affective domain concepts were those of the experimental group (EG). Control group 1’s (CG1’s) affective domain concepts were more developed compared to the participants of CG2.

#### *Key Affective Domain Concept: ‘Interest’*

CG1 was the only group where the affective domain concept ‘interest’ was observed (Table 1). Participant B.1, a 42 year old female primary school teacher, reflected on her experiences of the programme’s June 20<sup>th</sup> activities with the below statement:

“Astrophysics is my area of interest so I listened to the lesson very carefully. I can use my knowledge anytime in life, and share it with my students- knowledge increases by sharing- Astrophysics - Awesome!”

Participant B.6, a 28 year old female science teacher, expressed the following at the end of the activities on June 21<sup>st</sup>:

“The stream ecology activity was very interesting. I think I can use this activity with my own students.”

Participant B.22, a 54 year old male primary school teacher, gave his reflection as below at the end of the June 21<sup>st</sup> activities:

“...the stream ecology activity was especially very effective. I learned about life in a stream. (...) the life of the eel (*Anguilla anguilla*) was very interesting - it was all brand new knowledge for me.

”Table 1.

Frequency and percentage of participant expressions related to the affective area

	<i>EG/24</i>		<i>CG 1/23</i>		<i>CG 2/19</i>	
	f	%	f	%	f	%
Interest	-	-	4	17.4	-	-
Anxiety	2	8.3	1	4.3	-	-
Curiosity	8	33.3	3	13	-	-
Motivation	1	4.2	-	-	-	-
Complaint	-	-	-	-	4	21.1
Total	11	45.8	8	34.8	4	21.1

Participant B.4, a 49-year-old female primary school teacher, expressed her opinions below following the completion of the activities of June 22<sup>nd</sup>:

“The lizard looked to me like a snake; it was all very interesting.”

The reflections of the four participants mentioned above were all recorded following the conclusion of activities on astrophysics, stream ecology and the vertebrates of Canakkale. There were no activities in the astrophysics lesson, but the participant had a special interest in the topic and she mentioned it in her reflections. During the stream ecology activity, the instructor collected water and benthic sediment specimens from a local stream called the Kepez. Stations were setup in the laboratory and participants tried to identify micro and macro vertebrates under the microscopes at each station. During the stream ecology activity, participants were shown the life cycle of eels. In the vertebrates of Canakkale activity, the instructor showed some fixed vertebrate specimens to the participants. One of the specimens was a blind lizard which had the resemblance of a snake. Participants especially found this activity interesting as none had seen such a creature up close before. They were also interested by the instructor’s comments about the lizard being mistook for a snake by local farmers and killed as a result.

*Key Affective Domain Concept: ‘Anxiety’*

Both the experimental group (EG) and control group 1 (CG1) participants’ reflections contained data referring to the key affective domain concept of anxiety. CG2 participants had no data related to anxiety (Table 1).

During the psychodrama activity with the EG, the participants and instructors were all inside a seminar room in the local university. Participants were asked to take turns writing their feelings on the board in front of the others before, during and after the activity.

Participant A.2, a 33 year old male primary school teacher, stood up and wrote “I have stomach pain” on the board, describing his anxiety about the very first day’s activity even before it started. The instructor then asked the participant why he used this metaphoric expression (stomach pain), and the participant replied:

“To be honest, I know environmental subjects are very complicated - although people tend to think the opposite. I know our activity will involve lots of information that will get me thinking of many things - which makes me anticipate a difficult experience and have stomach pain as a result.”

Participant A.5, a 29 year old male social science teacher, reflected on the organic farming activity of July 20<sup>th</sup> as follows:

(referring to the topic of soil pollution) “My awareness is raised. People have to be conscious of their actions. We don’t have another world - we have to protect it.”

Among the members of CG1, participant B.9, a 30 year old female science teacher, reflected on her feelings after the activities of June 21<sup>st</sup> as:

“I learned that there’s no legislation protecting plant species affected by mining activity in Turkey. Everybody seems to be waiting for someone else to do the job. Our future is in danger. Let’s wake up and be aware...”

Participant A.2 was reflecting on what he learned after the deep ecology lesson. This lesson was setup in the form of a discussion about the Turkish government’s 2023 vision policy, which involves selling the usage rights of streams to local and global water companies. The policy’s already being implemented and, as a result, there are serious issues of water scarcity in rural Turkey. Locals affected by the sale of streams in their areas are forced to migrate - causing further problems such as housing, unemployment and crime. Participant B.9’s comments came after an activity looking into the ecosystem and endemic plants of Canakkale. There was only one activity related to this lesson - similar to the outdoor stream ecology activity of the EG - the instructors invited participants to observe stream water and sediment samples in a laboratory environment. This activity was later supplemented with discussion on the topic mentioned above. All in all, three participants mentioned anxiety about the future in their reflections.

*Key Affective Domain Concept: ‘Curiosity’*

The outdoor and indoor education programmes were effective in terms of stimulating the affective domain concept of curiosity among participants, while the traditional education methods did not yield any results in this domain. The EG’s outdoor experiential education programme proved to be more effective than the indoor version. 8 participants from EG and 3 from CG1 reflected themselves with data referring to curiosity about the environmental subjects they were taught (Table 1).

Participant A.20, a 32 year old female physics teacher, reflected on the activities of July 20<sup>th</sup> below:

“I learned that we need to immediately setup a seed bank in order to preserve and reproduce them properly. I remember watching something about this on TV earlier. Learning new things on the matter today has inspired me to look into this subject further.”

Participant A.11, a 43 year old female music teacher, reflected on her feelings about the July 17<sup>th</sup> activities below:

“I will make sure I research which plant comes from which region, and I will share this knowledge with my students.”

The same participant had this to say after taking part in the activities of July 19<sup>th</sup>:

“I had heard about the term ‘ecotourism’, but I didn’t know anything about it until today. This activity has really inspired me to learn more. I will make sure I develop my knowledge and awareness of this topic further.”

Participant A.2, a 33 year old male primary school teacher, expressed his opinions on the activities of July 19<sup>th</sup> below:

“This activity raised my awareness and set off my curiosity.”

In CG1, participant B.3, a 40 year old female science teacher, had this to say about the indoor activities of June 20<sup>th</sup>:

“I learned how important it is for educators to be thinking about learning and empathy together. I hope to share my knowledge at class in the first opportunity I get. I may even look into doing research on these subjects further as I have an interest in them.”

Participant B.1, a 47 year old male primary school teacher, reflected his feelings below after an activity where he measured the electromagnetism of common devices (cell phones, hair dryers, computers etc.):

“I learned about the negative effects of electromagnetic fields on our health. Our lives are made easier with these devices, but they are also dangerous for us. I will research this subject at a deeper level.”

Participants in the EG were referring to outdoor activities such as: forest and stream ecology, marine ecosystem, marine algae, scuba diving, and plant improvement and biological combat against pests when reflecting on their feelings at the end of each day. In CG1, participants' reflections were recorded following indoor activities involving the measurement of electromagnetic fields using a Gauss meter. Participant B.3's reflection was recorded after the deep ecology lesson.

*Key Affective Domain Concept: 'Motivation'*

Motivation was observed only in one participant who was a member of the EG (Table 1). Participant A.20, a 32 year old female physics teacher, reflected on the activities of July 17<sup>th</sup> below:

“I want to teach physics in the outdoors. I came to this decision as a result of my participation in this programme.

*Key Affective Domain Concept: 'Complaint'*

The researchers did not expect to observe this concept anywhere in the participant reflections. Two participants from CG2, however, did submit reflections referring to the concept of complaint. There were no instances of this affective domain concept in either the EG or CG1 (Table 1).

Participant C.2, a 49 year old female primary school teacher, reflected on her feelings after participating in the activities of June 20<sup>th</sup> below:

“The syllabus we are given (during the teaching year) is very intensive. I don't have time for environmental education - my concern is covering the whole syllabus within the given timeframe.”

Participant C.8, a 39 year old female science teacher, had the below reflective comments:

“Environmental activities are not supported (by public school principals). I am a volunteer with TEMA (Turkish Foundation for Combating Soil Erosion for the Reforestation and Protection of Natural Habitats). I prepared a project with an environmental focus. There was a competition in Kocaeli where my project was invited to participate in, but I wasn't allowed to attend. I was told that I could only take students with me if each was accompanied by their parents. Later, I found out that this rule wasn't applied to students coming from other municipalities. In fact, the mayors of a few municipalities actually accompanied the teachers and students to this competition.”

All of the above point towards issues rising from an intensive syllabus and non-uniform management philosophies across the public education system.

As represented in Table 1, an OEEE programme is effective in terms of activating such key affective domain concepts as: curiosity and anxiety. OEEE was also observed to be stronger due to the outdoor nature of its applications. Some of the lessons in the indoor experiential education programme activated affective domain concepts such as: interest and anxiety among participants. The reason for coming across the theme of complaint in CG2 may be due to its usage of traditional teaching methods. The researcher observed shortcomings during the application of the education programme for CG2, where participants looked bored, yawned often and even could be seen to be napping in class.

## **Results and Discussion**

The themes 'interest', 'anxiety', 'curiosity', 'motivation' and 'complaint' were identified at the end of the research. 11 participants from the EG had reflective comments relating to the affective domain, while this figure was 8 for participants from CG1 and 4 for those from CG2 (Table 1). In numerical terms, EG proved to be the most successful among the groups. As a result, OEEE is considered to be better designed in terms of developing participants' affective domains when compared to other education programmes.

### *Anxiety & Interest*

The theoretical framework of the research expected participants to express anxiety about the future and consider the environmental subjects presented to them as interesting (Figure 1). Especially participant A.2's expression of his anxiety in terms of physical pain has similarities with identifiers of emotional stress. Lazarus and Cohen (1977: 89-90), describe humans' feeling of emotional stress (such as anxiety) as evidence of an imminent important interaction about to unfold between themselves and their environments. The researcher used video footage containing environmental stressors with the hope of facilitating anxiety early at the concrete experience stage of Kolb's theory.

The impacts of these environmental stressors on social, economic, political and ecological life were also discussed during the reflective observation stages in accordance with the multidimensionality of environmental problems (Irwin, 2010). For instance, the effects of people from rural regions migrating to the cities as a result of environmental stressors was put into perspective with the impacts of such changes on the quality of life in urban societies. This was reflected in participant B.9's comments concerning her feeling anxiety after noticing the negative repercussions of wrong environmental policies in Turkey. Lazarus and Cohen (1977) emphasize that environmental stressors may develop due to factors not directly influenced by human activity. Hence, the anxiety theme enjoys a vast array of factors allowing it to develop due to the multidimensionality of environmental issues. Ozdemir (2010), also introduced several different environmental subjects during his research. His findings reflected the participating students exhibited increased fear and a higher level of emotional affinity towards the environment.

The education programmes applied during the research covered 19 different environmental subjects, and each assigned instructor tried to deliver as much material as possible during their lessons. These lessons also served a similar purpose of constituting the research's abstract conceptualisation stage - in accordance with Kolb's theory. Concrete experience, reflective observation and abstract conceptualisation were carried out in the same format for all three groups. Only CG2's education programme did not contain any activities. However, expressions referring to the affective domain theme of "interest" were only observed in CG1. Some of the knowledge conveyed was interesting for the participant teachers (B.4, B.6 and B.22) as

this was the first time they had heard about the subjects taught. The lesson the three participants were referring to was the indoor stream ecology activity, which was conducted inside a university laboratory. Okur et.al. (2013) and Okur-Berberoglu et.al. (2013a) found similar results with students, where the knowledge conveyed was described as “interesting” due to the participants’ not having heard of the subject before. Astrophysics came across as “interesting” to participant B.1 due to her own personal interest in the subject matter. The EG was outside during all lessons and activities. Thomas (2005) warns of participants focusing on things other than the intended activity during outdoor education programmes. It is thought that, with so many distractions around them, participants from the EG may have found it difficult to concentrate on the activity and lesson alone during the programme to describe them as “interesting”.

### *Curiosity*

The affective domain theme curiosity was observed in both the EG (A.2, A.11 and A.20) and CG1 (B.1 and B.3). All of the participants, except B.3 mentioned the activities when referring to the theme of curiosity. Participants in the EG had the chance to go to different places for each activity and better chances of socialization during activities compared to CG1, but both groups carried out similar types of activities. All of the chosen activities were intended for the five senses. These activities and the social interactions offered rich learning areas to the participants. These experiences may support to develop participants’ curiosities on the subjects covered (Crompton & Sellar, 1981; Iozzi, 1989).

The different environmental subjects covered may have activated interests among participants towards things they had kept contained (consciously or unconsciously) until taking part in the programme. The researcher did not collect data on participants’ areas of interest before, during or after the programme. However, participant B.1 spontaneously expressed her interest in astrophysics in her reflective commentary. Similarly, participant A.1 mentioned her intention to buy a telescope as she was keen on learning more about the subject. The relationship between activating interests through affective domain stimulation should be further studied.

Curiosity is also related to the cognitive area (Ringness, 1975). Literature on the affective domain (Okur et. al., 2013; Okur-Berberoglu et.al., 2013a; Ozdemir, 2010; Palmberg & Kuru, 2000) also focus on the cognitive domain. Although the theme of curiosity is not mentioned, it may be helpful to consider the effects of different environmental education programmes on the development of curiosity.

The two components of self-development are identified as curiosity and empathy (Lazarus & Cohen, 1977; Ringness, 1975). The participant B.3 mentioned empathy in her reflective commentaries. Palmberg and Kuru (2000) found similar results and identified empathy at the end of their research. Empathy development, especially the relationship between curiosity and empathy can be researched further as it is an important affective domain concept in establishing a connection with the environment (Haskell, 2000; Lazarus & Cohen, 1977; Martin, 2004; Ozdemir, 2010; Reis & Roth, 2009).

### *Motivation*

The researcher expected to identify motivation among participant reflections as a theme in terms of their interest in further learning, curiosity about the subjects delivered during the programme and having favourable attitude towards taking an active role in seeking solutions to environmental problems (Figure 1). Participant A.20, for example, mentioned her wish to teach physics outdoors. Ford (1986) mentions the available uses of outdoor education in both the natural and social sciences. The participant with

the motivation comment is a physics teacher and her reflections came across as remarkable as the motivations yielding from outdoor education programmes also tend to be exclusively outdoor activities themselves (Ford, 1986; Hanna, 1995; Haskell, 2000; Martin, 2004; Okur et.al, 2013; Okur-Berberoglu et.al., 2013a, Ozdemir, 2010; Palmberg & Kuru; 2000). Designing outdoor education programmes for different teaching disciplines is an area that is likely to yield similarly interesting findings.

Motivation is also an important theme in terms of environmental behaviour change (Lazarus & Cohen, 1977; Ringness, 1975). Participants A.11 and B.3 were the only ones who explicitly mentioned their interest in sharing the knowledge gained during the programme with their students. Both participants mentioned 'indirect action'. Indirect action refers to activities where individuals are keen to share what they have learned and try to influence the actions of others towards environmental problems through indirect, non-personal means. Direct action, on the other hand, is a scenario where an individual takes an active role with the belief that s/he can solve an environmental problem alone (Jensen & Schnack, 1997). Behaviour change was left outside the scope of this research as identifying it took a longer period of time than what the researcher was allocated during this project (Guler, 2009; Hanna, 1995). However, it was observed that participants tended to express their opinions spontaneously during the project so the relationship between the affective domain and direct and indirect action should be studied further.

One last, yet important, point about behaviour is that it is not possible to evaluate it as only cognitive, affective or psychomotor. Each of these types of behaviour category can easily influence, and be equally easily influenced by, the other two (Ringness, 1975). In terms of analysing environmental education outputs, interactions between the domains should be researched rather than trying to identify behavioural changes.

### *Complaint*

The effect of CG2's education programme on the affective domain of its participants can be evaluated as unsuccessful and/or insufficient. Traditional teaching methods were used for CG2's programme, and the output is in accordance with the literature emphasizing the ineffectiveness of traditional methods in realizing environmental outputs (Armstrong, 2005; Gercek & Soran, 2005; Sunbul & Yilmaz, 2003). On the other hand, complaint wasn't a surprise affective domain theme as it is in line with the arguments of Kolb's experiential learning theory.

According to Kolb, our five senses are focused at the concrete experience stage and learners tend to be emotional (Kolb et. al., 2000). The complaint theme was observed only in CG2 although Kolb's stages of concrete experience, reflective observation and abstract conceptualisation were designed in the educational programmes of all groups. The only major difference in CG2's programmes was the lack of activities. This is a strong argument in favour of doing active learning in developing the affective domains of learners as direct experience presents a much richer learning environment (Crompton & Sellar, 1981; Iozzi, 1989).

On the other hand, complaints of the teachers should be considered important by both programme designers as well as policy makers since they point out to deficits in the curriculum, which is heavily based on traditional teaching methods. There are similar complaints in New Zealand and Australi (Skamp & Bergmann, 2001), where in-service teachers seek support from their governments and NGOs about how to learn about ways of teaching environmental subjects better within professional development programmes (Innes, 2012; Pande, 2002; Skamp & Bergmann, 2001). Grayford (2000), Guler (2009) and Young (2001) point out that teachers do not have enough competency and self-confidence to teach environmental subjects. Hence, the governments of Hong Kong (Lee, 1997) and South Africa (Taylor & Janse van

Rensburg, 2002) have prepared handbooks for teachers explaining how to teach environmental subjects. The Turkish government can similarly publish a handbook for teachers on how to teach environmental subjects - they may even add sections on recommended outdoor activities.

The available research on the affective domain in education tends to be limited in nature and almost exclusively applied to students (Haskell, 2000; Martin, 2004; Okur et.al., 2013; Okur-Berberoglu et.al., 2013a; Ozdemir, 2010; Palmberg & Kuru; 2000). More research on adults should be encouraged as individuals' maturity will most obviously have an effect on the way their affective domains function (Ringness, 1975). This study has identified affective outputs, but the researcher cannot clearly determine how or why OEEE is better at achieving these results than the other two education programmes. Similarly, Kolb's experiential learning theory is mostly referred to when explaining developments in the cognitive domain (Healey & Jenkins, 2000; Kayes, 2002; Miller, Kovacs, Wright, Corcoran & Rosenblum, 2005). The impact of Kolb's theory on the affective domain needs to be supported by further research. If research on the affective domain increases, this will also present the opportunity to conduct meta-analyses - further adding to our understanding of the affective domain (Sunbul & Yilmaz, 2003).

During this project, the researcher may have shown limited understanding of participants' expressions and behaviour. It is also possible that participants were unable to properly express changes in their affective domains due to environmental or personal factors. Ringness (1975) emphasizes the difficulty of expressing one's feelings as an adult. Psychodrama was integrated into the programme with the intention of better supporting and understanding participants' affective domains during the project. The use of psychodrama in education isn't new (Fong, 2006; Oflaz et. al., 2011). However, there were no psychodrama applications in any environmental education programme that the researcher is aware of. Psychodrama may not be enough in identifying and evaluating participants' expressions of their emotions. Certain psychodrama activities may have been better suited in developing individuals' affective domains. However, the impact of each psychodrama activity was not recorded separately during the project. Other psychodrama methods may be carried out in different projects with a view towards comparing the results.

One of the limitations of this study was that it had no follow-up procedure. Only the short-term effects of the applied programmes were evaluated. However, Greaves (2002) recommends follow up procedures as some environmental outputs tend to be identified better over the long term. This same project may be repeated with a follow-up procedure with a view towards comparing the short-term and long-term effects of the applied programmes on the affective domain.

The other limitation of this research was programme design. In-service teachers who participated in Csobod's (2002) and Ward's (1996) studies identified the importance of being part of the programme development process as they felt they could adapt to the programme better if they were a part of it. The participant teachers of this project were not in the programme development process, so the researcher does not know how different the outputs of a co-designed programme would have been. Hence, another programme which teachers are part of the development process can be considered. It would be especially interesting to compare the results of such a programme with the findings of this one.

The affective domain is not a new area for environmental educators. On the other hand, limiting our consideration of the affective domain to conducting evaluations of environmental attitudes is not enough in order to have the desired environmental education outputs. Educators and scholars should examine other components that

form the affective domain. If the studies and their corresponding data are varied enough, researcher will be better places to compare outputs and develop more successful environmental education programmes.

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## References

- Armstrong, H. G. (2005). Environmental education in Tobago's Primary Schools: A case study of coral reef education. *Revista de Biologia Tropical*, 53 (1), 229-238.
- Balim, A. G., Inel, D., Evrekli, E (2008). The effects the using of concept cartoons in science education on students' academic achievements and enquiry learning skill perceptions. *Elementary Online*, 7 (1), 188- 202.
- Barker, M.& Rogers, L. (2004). In, about, for: Exploring the foundations of environmental education. *Set 2*, 15- 18. ISSN 0110-6376.
- Bas, T.& Akturan, U. (2008). *Qualitative research methods*. Ankara: Seckin Publication.
- Bichelmeyer, B. A., Marken, J., Haris, T., Misanchuk, M., & Hixon, E. (2009). *Fostering affective development outcomes in instructional- design theories and models*, Volume III, (Edit: Charles M. Reigeluth And Alison A. Carr-Chellman). New York: Routledge Publishing.
- Blair, M. (2008). Community environmental education as a model for effective environmental programmemes. *Australian Journal of Environmental Education*, 24, 45-53.
- Bolstad, R. (2003). Environmental education: Roots in the past, visions of the future, opprtinities in the present. *Set: Research Informations for the Teachers*, 3, 10-14.
- Bolstad, R. & Baker, R. (2004). *Environmental education in New Zealand schools: Research into current practice and future possibilities, Volume 2: A review of national and international research literature on environmental education practices*, Research Report.
- Bozkurt, O.& Kaya, O. N. (2008). Teaching about ozone layer depletion in Turkey: Pedagogical content knowledge of science teachers. *Public Understanding of Science*, 17, 261- 276.
- Bona, A. (2003, December). A literature review of the integration of psychodramatic principles and practices in education. *Australian and New Zealand Psychodrama Association Journal*, 12, 62-84.
- Boyatzis, R. E. & Kolb, D. A. (1991). Assessing individuality in learning: The learning skills profile. *Educational Psychology*, 11 (3-4), 279- 295.
- BP (British Petroleum) (2013). Gulf of Mexico Restoration. Retrieved from <http://www.bp.com/en/global/corporate/gulf-of-mexico-restoration.html>, 23.07.2014.
- Chapman, D. J. (2004). *Education for the environment: Towards teacher empowerment*. Published PhD Thesis, Massey University, New Zealand.
- Clinch, E. (2007). *Scientific literacy and undergraduate education at Rutgers University*, Published Master of Science Thesis, The State University of New Jersey, USA.
- Combs, A. V. (1982). Affective education or none at all. *Educational Leadership*, 39 (7), 494- 497.
- Crompton, J. L. & Sellar, C. (1981). Do outdoor education experiences contribute to positive development in the affective domain?. *The Journal of Environmental Education*, 12 (4), 21-29.

- Csobod, E. (2002). *Hungary an education initiative for a sustainable future*, Education and Sustainability Responding to the Global Challenge (Ed: Daniella Tilbury, Robert B. Stevenson, John Fien, Danie Schreuder), 99-106.
- Dewey, J. (2010). The need for philosophy of education, 1934. *Schools: Studies in Education*, 7(2), 244- 245.
- Eder, E. (1999). From scepticism to the urge to take action, or from daily frustration to a solo initiative. *Cambridge Journal of Education*, 29 (3), 355-365.
- Emmons, K. M. (1997). Perceptions of the environment while exploring the outdoors: A case study in Belize. *Environmental Education Research*, 3 (3), 327-344.
- Erten, S. (2005). Investigation of pre-service preschool teachers' behaviours related to environmental awareness. *Hacettepe University Journal of Education*, 28, 91-100.
- Eryaman, M. Y., Yalcin-Ozdilek, S., Okur, E., Cetinkaya, Z., & Uygun, S. (2010.) A participatory action research study of nature education in nature: Towards community-based eco-pedagogy. *International Journal of Progressive Education*, 6 (3), 26-38.
- Fong, J. (2006). Psychodrama as a preventive measure: teenage girls confronting violence. *Journal of Group Psychotherapy, Psychodrama, & Sociometry (15453855)*, 59 (3), 99- 108.
- Ford, P. (1986). Outdoor education: Definition and philosophy. *ERIC Information Analyses Products*, RC 015661, pp. 1-15.
- Gagne, R. M. (1985). *The conditions of learning and theory of instruction (4th Edition)*. New York: CBS College Publishing.
- Gayford, C. (2000). Biodiversity education: A teacher's perspective. *Environmental Education Research*, 6 (4), 347- 361.
- Gercek, C. & Soran, H. (2005). Investigation of teachers' use of experimental methods in teaching biology. *Hacettepe University Journal of Education*, 29, 95-102.
- Gershoni, J. (2003). *Psychodrama in the 21<sup>st</sup> century, Clinical and educational applications*. New York: Springer Publishing.
- Greaves, S. K. (2002) *Zimbabwe: Education to sustain the Zambezi*, Education and Sustainability Responding to the Global Challenge (Ed: Daniella Tilbury, Robert B. Stevenson, John Fien, Danie Schreuder), 125-132.
- Guler, T. (2009). The effects of an ecology based environmental education on teachers' opinions about environmental education. *Education and Science*, 34 (151), 30-43.
- Gunter, M. A., Estes, T. H., & Mintz, S. L. (2010). *Instruction, A models approach (5th Edition)*. New York: Pearson Education.
- Hanna, G. (1995). Wilderness- related environmental outcomes of adventure and ecology education programming. *The Journal of Environmental Education*, 27 (1), 21-32.
- Harkness, A. M. B., Long, B. C., Brembach, N., Patterson, K., Jordan, S., & Kahn, H. (2005). Talking about work stress: Discourse analysis and implications for stress interventions, *Work & Stress*, 19 (2), 121- 136.
- Haskell, J. (2000). "The scent of my world": A student's perceptual knowing of outdoor experiencing. *Australian Journal of Outdoor Education*, 4 (2), 40- 47.
- Healey, M. & Jenkins, A. (2000). Kolb's experiential learning theory and its application in geography in higher education. *Journal of Geography*, 99 (5), 185-195.
- Innes, J. (2012). *Towards the re-conceptualization of outdoor education centre experiences for the delivery of integrated environmental education in Ontario*. Published PhD thesis, Royal Road University, Victoria, Canada.
- Irwin, D. (2010). *Weaving the threads of education for sustainability and outdoor education*, Published PhD Thesis, University of Canterbury, Christchurch, New Zealand.

- Iozzi, L. A. (1989). What research says to the educator: Part one: Environmental education and the affective domain. *The Journal of Environmental Education*, 20 (3), 3-9.
- Jensen, B. B. & Schnack, K. (1997). The action competence approach in environmental education. *Environmental Education Research*, 3 (2), 163- 178.
- Joyce, B., Weil, M., & Calhoun, E. (2004). *Models of teaching, (7th Edition)*. New Jersey: Prentice Hall, Pearson Education.
- Kasapoglu, A. & Turan, F. (2008). Attitude behaviour relationship in environmental education: A case study from Turkey. *International Journal of Environmental Studies*, 65 (2), 219-231.
- Kayes, C. (2002). Experiential learning and its critics: Preserving the role of experience in management learning and education. *Academy of Management Learning & Education*, 1 (2), 137-149.
- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. New Jersey: Prentice Hall Inc.
- Kolb, D. A., Boyatzis, R. E., & Mainemelis, C. (2000). *Experiential learning theory: Previous research and new directions 1999*, (The revised paper appears in: R. J. Sternberg and L. F. Zhang (Eds.), *Perspectives on cognitive, learning, and thinking styles*. New Jersey: Lawrence Erlbaum.
- Konopik, D. A. & Cheung, M. (2013). Psychodrama as a social work modality. *ERIC, Oxford University Press*, 58, 9- 20.
- Lazarus, R. & Cohen, J. B. (1977). Environmental stress in Irwin Altman & Joachim F. Wholwil (Eds), *Human Behaviour and Environment, Advances in Theory and Research (2<sup>nd</sup> Edition)* (Volume II. pp. 90- 127). New York: Plenum Press.
- Lee, J. C. K. (1997). Environmental education in schools in Hong Kong. *Environmental Education Research*, 3 (3), 359-371.
- Lucas, A. M. (1972). *Environment and environmental education: Conceptual issues and curriculum implications*, PhD Dissertation, Ohio State University, College of Education,
- Lugg, A. & Slattery, D. (2003). Use of national park for outdoor environmental education: An Australian case study. *Journal of Adventure Education & Outdoor Learning*, 3 (1), 77-92.
- Madin, E. M. P. & Fenton, D. M. (2004). Environmental interpretation in the Great Barrier Reef Marine Park: An assessment of programme effectiveness. *Journal of Sustainable Tourism*, 12 (2), 121- 137.
- Martin, D. J. (1997). *Elementary Science Methods, A Constructivist Approach*. New York/ Albany: Delmar Publishers.
- Martin, P. (2004). Outdoor adventure in promoting relationships in nature. *Australian Journal of Outdoor Education*, 8 (1), 20- 28.
- McNeil, J. D. (1996). *Curriculum: A Comprehensive Introduction (5. Edition)*. New York Harper: Collins College Publishers.
- Meredith, J. E., Fortner, R. W., & Mullins, G. W. (1997). Model of affective learning for nonformal science education facilities. *Journal of Research in Science Teaching*, 34 (8), 805- 818.
- Miller, T. J. (2008). *The Alaska factor: Outdoor education programme design in Alaska*. Master of Education Thesis, University of Alaska, USA.
- Miller, J., Kovacs, P. J., Wright, L., Corcoran, J., & Rosenblu, A. (2005). Field education: Student and field instructor perceptions of the learning process. *Journal of Social Work Education*, 41 (1), 131-145.
- Molles, M. C. (2008). *Ecology*. Boston: McGraw- Hill Higher Education.
- Oflaz, F., Meri, M., Yuksel, C., & Ozcan, C. T. (2011). Psychodrama: an innovative way of improving self-awareness of nurse. *Journal of Psychiatric and Mental Health Nursing*, 18, (7), 569- 575.

- Okur, E. (2012). *Outdoor experiential teaching: Ecology application*. PhD Thesis, Canakkale Onsekiz Mart University, Turkey.
- Okur, E., Sezer, B., Guder, Y., & Yalcin-Ozdilek, S. (2013). An outdoor hydrobiology activity's effect on student's affective perspective, Case study: Canakkale, Science camp. *Kastamonu Education Journal*, 21 (3), 1177-1198.
- Okur- Berberoglu, E., Sezer, B., Guder, Y., & Yalcin-Ozdilek, S. (2013a). The effect of a sheep heart on the cognitive and affective area of the elementary students, Case Study: Canakkale Science Camp. *International Journal of Biology Education*, 3 (1), 1- 23.
- Okur- Beberoglu, E., Yalcin-Ozdilek, S., Eryaman, M. Y., Uygun, S., & Cetinkaya-Edizer, Z. (in press). An Intervention for environmental awareness: Ecopedagogy-based outdoor environmental education, Turkey. *Turkish Journal of Teacher Education*.
- Ozcelik, D. A. (2010). *Programme development & Teaching*. Ankara: Pegem A Publishing.
- Ozdemir, O. (2010). The effects of nature-based environmental education on environmental perception and behaviour of primary school students. *Educational Journal of Pamukkale University*, 27, 125- 138.
- Palmberg, I. E. & Kuru, J. (2000). Outdoor activities as a basis for environmental responsibility. *The Journal of Environmental Education*, 31 (4), 32-36.
- Pande, L. (2002). *India: our land, our life: an innovative approach to environmental education in the Central Himalayas*, Education and Sustainability Responding to the Global Challenge (Ed: Daniella Tilbury, Robert B. Stevenson, John Fien, Danie Schreuder), 65-73.
- Reis, G. & Roth, W. M. (2009). A feeling for the environment: emotion talk in/for the pedagogy of public environmental education. *The Journal of Environmental Education*, 41(2), 71-87.
- Reyes, L. H. (1984). Affective variables and mathematics education. *The Elementary School Journal*, 84 (5), Special Issue: Mathematics Education (May, 1984), 558-581.
- Ringness, T. A. (1975). *The Affective Domain in Education*. Canada: Little, Brown & Company Inc.
- Skamp, K., & Bergmann, I. (2001). Facilitating learns cape development, maintenance and use: teachers' perceptions and self-reported practices. *Environmental Education Research*, 7(4), 333-358.
- Sonmez, V. (2005). Methodological errors in scientific research. *Eurasian Journal of Educational Research*, 5 (18), 150- 170.
- Sunbul, A. M. & Yilmaz, H. (2003). *Planning and Assessment at the teaching*. Konya: Cizgi Publishing.
- Taylor, J., & Janse van Rensburg, E. (2002). *Southern Africa: share-net: environmental education resource networking in a risk society*, Education and Sustainability Responding to the Global Challenge (Ed: Daniella Tilbury, Robert B. Stevenson, John Fien, Danie Schreuder), 113-124.
- Tesch, R. (1990). *Qualitative research analysis type & Software tools*. London: Routledge, Tylor&Francis Group.
- Tilbury, D. (1995). Environmental education for sustainability: Defining the new focus of environmental education in the 1990s. *Environmental Education Research*, 1 (2), 195-212.
- Thomas, G. (2005). Traditional adventure activities in outdoor environmental education. *Australian Journal of Outdoor Education*, 9 (1), 31-39.
- World Nuclear Association (2014a). Fukushima Accident. Retrieved from <http://www.world-nuclear.org/info/safety-and-security/safety-of-plants/fukushima-accident/> 23.07.2014.

- World Nuclear Association (2014b). Chernobyl Accident 1986/ Health Impacts. Retrieved from <http://www.world-nuclear.org/info/Safety-and-Security/Safety-of-Plants/Appendices/Chernobyl-Accident---Appendix-2--Health-Impacts/> 23.07.2014
- Yalcin-Ozdilek, S., Ozdilek, G., Okur, E., & Eryaman, M. Y. (2011). Outdoor environmental education project realized in Canakkale, Turkey: Concept and content. *The International Journal of Educational Researchers*, 3 (1), 33-45.
- Yildirim, A. & Simsek, H. (2006). Qualitative methods for social science. Ankara: Seckin Publication.
- Young J. (2001). Linking Efs (Education for Sustainability) and Biodiversity? A UK-wide survey of the status of education within local biodiversity action plans. *Environmental Education Research*, 7 (4), 439- 444.
- Zanovello, I. (1999). *Outdoor and environmental education centres: A case study of Starthcona Park Lodge and Outdoor Education Centre, British Columbia, Canada*. A Master Degree Thesis, Faculty of Environmental Design, The University of Calgary, Alberta.

# Sınıfdışı Deneyimsel Çevre Eğitimi: Duyuşsal Alana Yönelik Yetişkin-Odaklı Bir Program

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## Özet (Turkish Abstract of Paper)

Bu araştırmanın amacı sınıfdışı deneyimsel çevre eğitimi programının, yetişkinlerin duyuşsal alanı üzerine etkisini değerlendirmektir. Yetişkin katılımcılar, Türkiye’de halen çalışmakta olan öğretmenlerdir. Bir örnek olay çerçevesinde ve nitel bakış açısı kapsamında, veri toplama yöntemi olarak psikodrama, katılımcı olmayan gözlem, açık uçlu sorular ve içerik analizi kullanılmıştır. Sınıfıçi ve sınıfdışı deneyimsel programın etkinlikleri, Kolb’un Deneyimsel Öğrenme Teorisi çerçevesinde tasarlanmıştır. Kontrol 1 grubu için sınıfıçi etkinlik ve Kontrol 2 grubu için gelenkesel öğretim yöntemleri kullanılırken, deney grubu için sınıfdışı etkinlikler kullanılmıştır. Çalışma sonucunda katılımcılarda, ortak olarak şu ifadeler ortaya çıkmıştır: ‘ilginiç, endişe, merak, güdü ve şikayet.’ En göze çarpan ifadelerin, sınıfdışı deneyimsel gruba ait olduğu belirlenmiştir.

**Anahtar Kelimeler:** Sınıfdışı eğitim , çevre eğitimi, duyuşsal alan, deneyimsel eğitim, Kolb’un Deneyimsel Öğrenme Teorisi