



A PRELIMINARY STUDY OF A PLACE-BASED EDUCATION PROJECT IN AN URBAN PLACE OF GREECE

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Abstract:

This paper outlines the activities of an environmental education program, in which 26 students participated. The pupils were from the 4th grade of the Greek section and 4th and 5th grades of the English section of a primary school. The activities were aimed at strengthening the awareness of pupils on issues related to the place in which they live, with special emphasis on the study of the coastal and marine ecosystem in the area. The program was based on the Place-Based Education (P.B.E.) approach, a new pedagogical approach in the field of Environmental Education, which in Greece seems to be yet unknown. P.B.E. is education which is oriented towards the place where the students live. Although the program was designed to be implemented during the school year 2014 - 2015, the need arose for it to be continued into the school year 2015-2016. The program primarily focused on the local environment and on the need for a connection of the school with the local community, through which students develop a strong sense of place and an environmentally responsible behavior towards it.

Keywords: Place-Based Education, local environment, coastal and marine ecosystem

1. Introduction

1.1 Implementation Framework for Environmental Education Program through Place Based Education

As teachers at the School of European Education in Heraklion, Crete for the last five years (2010-2015), we had frequently noted the lack of historical, cultural and social relevance between the school and the local community of Heraklion city. Many of the students, who were enrolled in the school, lived in areas outside the city and they

seemed to have no interest and no involvement in what was happening in the city in which the school is located.

That is exactly the main problem mentioned the recent years leaving in the cities: the young people do not have developed a strong *sense of place*. While there are multiple conceptualizations of sense of place, in this paper we define sense of place as a combination of *place attachment* and *place meaning* (Stedman 2000a, 2002, Stedman 2003b, Farnum et al. 2005, Smaldone et al. 2005, Van Patten and Williams 2008, Semken and Brandt 2010). “Place attachment” is the bond between people and places (Jorgensen & Stedman 2001, Stedman 2003a, Davenport & Anderson 2005). “Place meaning” refers to the symbolic meanings that people ascribe to places (Stedman 2000b, 2002, 2008, Smaldone et al. 2008), which may reflect the physical, natural, social, cultural, familial, political, economic or other aspects of places (Ardoin 2006, Semken & Brandt, 2010). In sum, place attachment reflects how strongly people gravitate towards places, while place meaning describes the reason for place attachment (Stedman 2008). As the most people currently live in cities, we consider how essential goal could be the development of the place meaning among young people. Kudryavtsev et. al. (2012) consider natural or environmental dimension in their perception of cities, defining the dimension of ecological place meaning. Further, understanding how ecological place meanings develop in cities is important given environmental education’s growing focus on local environments (Gruenewald, 2003; Semken & Brandt, 2010; G. A. Smith, 2002; Sobel, 2005) including in cities (Kudryavtsev, 2012), and that urban environmental education programs have been shown to significantly strengthen ecological place meaning among urban participants (Kudryavtsev et al, 2012).

Moreover, in our study we mentioned the doors of the school had essentially remained closed to the local community and teachers did not seem willing to open the doors of their classrooms and go outside with their students in order to establish bridges of communication and cooperation with the local community.

Upon reviewing the Environmental Education (E.E.) programs which had been implemented at that time, we concluded that few of them were oriented towards the local environment and the local community. Almost all programs were related to global environmental problems, with no emphasis on the local environment. As a result, the opportunity for students to deal with problems related to the local environment and to work together with the local community in solving them was not often given. Consequently, the school continued to be separate from the city and the city was simply the hosting site of the school.

Moreover, we had noticed that the distance between the Greek-speaking and English-speaking students remained significant despite the efforts that had been made to eliminate this problem. Although numerous Environmental Education programs had been previously implemented, there were no instances of E.E. programs whose participants were students of two different language sections.

Through review and study of the literature in the field of Environmental Education (E.E.) and Place-Based Education (P.B.E.), we considered that this educational approach would bring about improvement in the following:

- a) the relations between the students of the two language sections
- b) the opinions and attitudes of teachers participating in the program, towards this approach
- c) the connection of the pupils with the local environment and their environmental behavior towards it

1.2 Theoretical Framework of P.B.E

The term Place-Based Education (P.B.E.) is a relatively new term in the literature of Environmental Education, as it has evolved in the last twenty years in the international literature. In Greek literature, the term "Place-Based Education" first appeared in 1998 in the Journal of the Greek National Union of Teachers in Environmental Education (Papadimitriou, 1998).

Orr (1994) argues that PBE is a term broader than environmental education, which can be defined as teaching oriented towards the development of a society well-prepared to live in a place without destroying it. To achieve this goal, teachers need to cultivate the students' knowledge of the causal relevance of all environmental aspects, as well as the long- term effects of their actions on the balance of these parameters. An important reason for a teacher to adopt PBE is the aim to provide students with the knowledge and experience needed to be able to actively participate in a democratic process.

Sobel (2004), one of the main supporters of this educational approach, gives a more comprehensive definition of the concept of Place-Based Education, according to which: *"Place-Based Education is the process of utilization of the local community and the local environment as a reference point in teaching concepts in many subjects of the curriculum, such as: language, mathematics, social sciences, natural sciences, etc. Emphasizing experiential and authentic learning experiences, this educational approach enhances the academic performance of students and helps them to develop stronger connections with the community, enhancing their respect for the natural environment and creating a strong commitment to work as active and participatory citizens"*.

A few years later, Gruenewald & Smith (2008), both major supporters of the P.B.E. approach, note that it is difficult to give a precise definition, as it is a very broad term which not only refers to teaching methods, but it is an effort to redefine the concept of school and a theory about how we can see education as a whole. They claim that *"When place-based education is implemented in ways that truly conjoin school with community and provide opportunities for democratic participation and leadership, children are given the chance to partake in the collective process of creating the sustainable and just world that must come to replace the world of discrimination and waste that has begun to unravel us now."*

In conclusion, Place-Based Education is a progressive form of education through which students utilize the local community as a place for research and as a learning resource, having opportunities to explore geographical, ecological, sociological and political dimensions of their community in an intergenerational and multicultural context (Williams, 2004; Woodhouse & Knapp, 2000).

Woodhouse & Knapp (2000) completed an extensive study of the literature on P.B.E in order to discover what it is that distinguishes PBE as a separate pedagogical approach. This resulted in the following distinct characteristics of P.B.E.:

- P.B.E. results from the specific characteristics of a particular place. Its content directly relates with the geography, ecology, sociology, politics and other dynamics of a specific place. This fundamental characteristic defines its conceptual basis.
- It is inherently an interdisciplinary pedagogical approach
- It is inherently experiential. It requires participatory action as a basic component. Indeed, some supporters insist that action should be the key component if ecological and cultural sustainability is the desired result.
- It reflects an educational philosophy broader than "learn to earn".
- It connects the place with the individual and the community. Due to the ecological perspective which the supporters of P.B.E. have envisioned, such a connection is widespread in its philosophy. This philosophy includes intergenerational and multicultural dimensions due to the interface with a variety of stakeholders in the local community.

Smith (2002b) claims that P.B.E. can take on a wide range of different forms. However, in this variety of forms, there are some common characteristics that distinguish P.B.E. as a special pedagogical approach. These characteristics are:

- a) Teachers and students turn to their close environment by treating it as the basis for curriculum development. By utilizing their direct experience as the basis, they are able to explore more distant and abstract concepts.
- b) Emphasis is placed on learning experiences that allow students to become creators of knowledge rather than consumers of knowledge which is provided ready by others.
- c) The students' concerns and questions play a major role in determining what will be taught. When students participate in the creation of the learning agenda, they will more likely form a responsible and participative attitude as future citizens.
- d) Teachers in such a framework act as experienced mentors, and mediators of learning opportunities and learning resources offered by the community. Their specialization is found not so much in existing knowledge (although this is important), but in their ability to help students acquire active learning skills.
- e) The wall between the school and the community becomes more permeable. Members of the community can play an active role in the classroom and students have an active role in the community. Children, in any case, tend to learn things that foster in them a genuine feeling of satisfaction by assisting others. So it is important that the students' work is evaluated on the basis of their contribution to the welfare of the community.

1.3 Our Project

Within the framework of an Environmental Education project based on the place (Place-Based Education), we focused on activities aimed towards student involvement in

issues related to the place where they live. Our aim was to promote their environmental awareness, so that as responsible citizens they would become actively involved and work towards the improvement of their local environment, in cooperation with local stakeholders.

The selection criteria for this project were:

A. General criteria:

- It had lively interest;
- It was ideal for many experiential activities, providing students opportunities for education mainly outside of the classroom;
- It allowed for teamwork, through which a sense of respect, cooperation and the development of free and critical thinking could be cultivated;
- It provided opportunities for research and connection between theory and practice;

B. Specific criteria (on the involvement of children who have a culture different from the mainstream culture):

- It allowed for the children's experiential participation;
- It enabled the children to have direct contact with the local natural and social environment;
- It met psychomotor, cognitive and emotional objectives related to education of these children (listed below).

2. How students participated in choosing the project content

Due to the fact that the students were mostly taught in the limited space of a classroom, with few opportunities to go outdoors, they felt trapped and often complained. They would ask to go outside the classroom and in the rare case that this occurred; the positive change in their mental state was noticeable.

Thus, when we discussed the possibility of the implementation of an Environmental Education project, which would include activities outside the classroom, the students' enthusiasm was evident. Indeed, the students would express themselves more freely and more creatively in a place that was of greater interest to them: the coastal and marine ecosystem of the city.

2.1 Brief Project Description

During the project implementation, we sought to perceive the place where students live as part of our school life and furthermore to open the doors of the school to the local community so that communication would be bidirectional. We sought to contribute to the improvement of the place where we live in partnership with local stakeholders, such as the Cultural Association of the area where the school is located, the Social Services Centre, the local Church, the Architects' Initiative Group, etc.

2.2 Initial Preparation

At the initial stage of preparation, we detected and evaluated the needs of our students in order to design not only the objectives of the P.B.E. program with flexibility and accuracy but also the techniques towards achievement of those objectives. More specifically:

- We divided the tasks based on the students' skills and we produced alternative support material.
- We tried to familiarize the students with the necessary scientific vocabulary.
- We informed the parents of both the need for implementation of such a project and its objectives.

3. Purpose and Objectives

3.1 Purpose

As mentioned above, the purpose of the project implementation was the strengthening of our students' environmental consciousness so that they would act as responsible citizens and contribute to improving the local environment, in cooperation with the local community.

3.2 Objectives

Generally, we sought to:

- apply various teaching methods. We sought alternative teaching methods in the classroom and attempted to find the most appropriate framework to apply some simple and well known concepts. The teacher gradually becomes a consultant, a coordinator for the students' attempt to discover experience and knowledge outside of the classroom.
- provide the children with the chance to utilize any of their abilities to know, feel and reflect on.
- discover their talents and aptitude in learning areas outside of mainstream education.
- develop their communication skills, foster their understanding of others and intensify feelings of solidarity.
- help students to learn that cooperation and voicing of differing opinions is more useful than competition.
- to help students achieve self-organization in order to learn and create, to accept differences and to be aware that cooperation requires acceptance of diversity.

Specific learning objectives of the project listed by category are the following:

A. Cognitive:

- Understanding that our neighborhood is a part of the greater world, with a great deal to discover
- The development of critical thinking through inquiry, research, observation and the process of evaluation.
- Improvement of linguistic expression.

- Clearer perception that each student is an integral part of the local environment and should develop a harmonious relationship with it.

B. Emotional:

- To develop positive attitudes towards the local environment.
- Develop a spirit of cooperation and responsibility.
- Development of positive emotions (joy, satisfaction, self-esteem, etc.), through taking initiatives and achieving personal targets.
- To accept the diversity of others.

C. Psychological and physical:

- To develop a sense of respect for the local environment.
- To develop initiatives and plan specific actions.
- To develop communication skills through common activities, games, etc.

4. Project Implementation – Activities

Among the activities which were implemented in this program were: theatrical play, photography, an outdoor municipal council, a study of the marine ecosystem, a meeting with the elderly residents of the area, etc.

More specifically:

A. Theatrical Play

In our first activity outside of the classroom, we explored our immediate environment through dramatic play. Beginning with a bottle which contained a "secret map" of the area around the school, the students went outside to discover "a hidden treasure". Their first stop was in the schoolyard, a familiar area for the students. The next stop was outside the school playground, where only two students from the neighborhood were able to recognize the landmark: the parish church. Most students had never stood in front of the church in their 5 years of being at the school. Then, by following the map, we went down several narrow streets which led to the sea.

We had chosen the sea, as we believed that it was familiar to all the children, regardless of their cultural identity. Indeed, all the students seemed to feel somewhat more comfortable there. We thought of the sea as an imaginary connective web between most countries in Europe. The children of the English section stood on the edge of the water and cried aloud so as to be heard by their relatives and friends in their home countries.

The aim of the first activity was to meet a need expressed by the students, themselves, to leave the confines of the classroom and, at the same time, to provide them with the opportunity to gradually discover what is out there in the neighborhood. When outdoors, we discovered that the students were surprised to encounter signs of deterioration and abandonment. They witnessed dilapidated homes in which families and children lived, many of the children being the same age as themselves. Moreover, they expressed feelings of disgust when they discovered debris, garbage, broken facilities and neglected infrastructure.

Assessment of the 1st Activity

Upon returning to the classroom, and discussing the first visit to the neighborhood, some students expressed the opinion that they would not want to encounter the harsh reality of the neighborhood again as that they did not like at all. In the discussion which followed, we asked the students some questions, such as: Do you often take walks around different parts of the city and notice what's around you? Is only our neighborhood in this condition or are other neighborhoods in the city in the same state? In general, is our city a city that we know well?

Their answers showed that most students, when not in school or at home, participate in organized activities to which they usually go to by car, or they visit private recreational areas such as playgrounds, shopping centers and amusement parks. Very few students said that they have walked through the city streets or feel that they know the city well. Everyone agreed that the area where the school is located may be a deprived area but largely represents the overall image of the city of Heraklion. Many children mentioned the same neglect and images of degradation that they have encountered in many areas of the city, even in the city center. Thus, we concluded that the local environment where the school is located is representative of the city of Heraklion.

The discussion continued with questions such as: Who is responsible for this neglect? Who is responsible for all the garbage that we encountered everywhere? What could we do? How could we change the place around us?

The students had a lot to say: We are all at fault! Everyone has his share of the responsibility! The Municipality should help more!

Consequently, we decided to accept our share of the responsibility and try to improve the environment which exists outside the school grounds. However, we decided to try to change what we do not like in our immediate environment first. We would begin with a small area and gradually expand to broader areas of the city. In any case, the small place that we chose to work on at that point would represent the city of Heraklion as a broader concept of place.

The second activity that was planned with the students was to leave the confines of the classroom once again and walk along the same route, but this time to carefully record the negative images of what we would like to change. The students would bring cameras with them to record what they observed.

B. Taking photos

We followed the same path leading back to the sea. The students, excited by their new mission, spent about two hours photographing the area. Most students, in the role of professional photographers, recorded with enthusiasm what they did not like and would like to change. Apart from the images of abandonment, some students discovered and photographed incredible images which are not easily noticeable through simple observation.

When the activity was completed, we asked the students to view the pictures again at home with their parents, to choose the most representative photos and send them to a common platform to which all students would have access.

Assessment of the 2nd Activity

During the discussion in the classroom after the 2nd activity, we spoke of how we could change the negative images which we had recorded with our cameras, so that by the end of the school year we would be able to photograph more pleasing images. These images would be indicative of the positive intervention which we had made in the immediate environment.

During the discussion, some questions were raised such as: What could we do? What ideas and what proposals do we have? How far could we get? Need we ask for cooperation from someone else?

After the discussion, we concluded that the students did not feel as if they could change many things. They felt that there is so much to be done and, at the same time, they believed that they were so few in number and powerless that they were not able to accomplish much before the end of the school year. In an attempt to moderate the feeling of dejection felt by students, we proposed to work on an even smaller scale: to "adopt" a specific place by the sea and to implement our interventions there - to study and to reform a portion of the coastal and marine ecosystem. The sea is a trademark of the island of Crete, as it is surrounded by the Mediterranean waters. Additionally, the sea is a trademark of Heraklion city as it is located by the sea, even though only recently has the municipality begun to appreciate and accentuate this prime location. Thus, during our first activity (theatrical play) the children came to realize that the sea is the same for Europe and for the rest of the world. Therefore, it is somehow an invisible path of communication. If a paper boat with a message on it were to be sent from the seaside in our neighborhood, in an imaginary way it could reach Portugal, England, France, Sweden, etc. These countries are reported indicatively since students from these countries study in the English section.

In this manner, the topic of our project came to be: *"From abandonment to creation.... A sea connecting our neighborhood with Europe"*

The class discussion extended to other subjects such as "Discovery of the World" and "Ethics". Some dimensions of the discussion included: a) What responsibilities do we have regarding respect for and protection of the local environment? b) What could we do on our own to improve the situation? c) What are our limits? d) Whom could we ask for help? e) With whom could we cooperate? etc.

The students believed that they were not capable of carrying out all the tasks that were important in changing the image of the area which they had adopted by themselves. For example, it would be difficult for the students to remove large stones, soil and mud that had become dislodged due to the waves beating on the shore all winter. Discarded items such as debris and rusted metal beds also needed to be removed and they knew that under no circumstances were they to touch the carcasses of a few small animals which were found at the site. The result of our prolonged

discussion was to plan our next task: to request help from the municipality, as we had discovered that the area is within its jurisdiction.

C. Outdoor City Council

Thus, we called an outdoor City Council at the place that we had adopted. The students felt empowered when they found that almost everyone (each for their own reasons) had responded to the call. Those present were: the Deputy Mayor of Cleanliness; the Deputy Mayor of Sports and Youth; the Head of the Green Service of the Municipality of Heraklion; the Mayor's wife, as Head of the Volunteer and Culture Group of the Municipality; and 5 volunteers - members of the group.

The students expressed their concerns and requested that some changes be made. The students showed the council members some of the photos that they had taken as proof of the dilapidation of the area. Finally, they handed over two lists (in Greek and English), written documentation of their proposals. In the end, the students received a promise of commitment from the council members, that they would assist them in their project.

Assessment of the 3rd Activity

Upon returning to the classroom, the students evaluated the meeting with the members of City Council. Most students were not convinced that all the representatives of the Municipality would, in fact, help. However, we arrived at the conclusion that, even if one out of the 10 things which were promised could be implemented, it would still be to our advantage. Moreover, it would be a result of the collective effort of the students, themselves. The students were convinced that at least it had been worthwhile to express their concerns to our representatives in the local government. It had been a unique experience for the pupils to realize that, as citizens and residents of the country, they have a voice and should expect their voice to be heard. They had learned that they have the ability and power to demand change and improvement and had realized that this power is strengthened when it is expressed collectively.

However, that which had been promised was just concerning the coastal area. What about the sea, itself? Was the condition of the sea as bad, with the same amount of pollution and degradation? And how could this be determined? Was a simple observation or a photograph enough? Through the discussion, the students expressed the view that some things are not visible to the naked eye and require more research. One student proudly declared that his mother was a biologist, specializing in marine biology. The student had recently moved from America, where he was born and had lived with his family. He proposed to ask his mother to come and assist us. As his mother is a native English-speaker, she would inform the English section students. For the Greek students, we invited Mrs. Kate Siakavaras, a marine biologist who has worked for many years at the Hellenic Center for Marine Research (HCMR) and now is employed as a teacher in Secondary Education.

D. Study of the marine ecosystem

For our fourth activity, the students visited the coastal area, which we had adopted, wearing appropriate clothing and waterproof boots. When we arrived, we asked the pupils to sit in groups. We gave them poster board and markers and asked them to make a mind map of the concept of "sea". They wrote the word sea in the middle, and then drew lines, at the ends of which they wrote whatever words came to mind when thinking about the sea. It is interesting to note that the words which occurred more frequently were words such as: summer, diving, sunbathing and generally anything that had to do with summer vacation. There was no reference to the meaning of the sea as an ecosystem.

A few minutes later, the two scientists whom we had invited arrived. They explained how we could determine by simple observation if a marine ecosystem is degraded. They then asked the students to wade a little in the sea and to gather any living organisms which can be seen with the naked eye, such as algae. It was interesting that in such a protected part of the sea, the students discovered striking species of seaweed. As the marine biologists explained to us, one of the species was called "Posidonia" and another, which resembled grapes, had "immigrated" from the Persian Gulf.

We then returned to the classroom where we had set up three stereoscopes so that the students had the opportunity to see up close what they had collected. The pupils were impressed by some invertebrate animals that they had found among the algae. Some children were shocked, others felt uncomfortable and some others were in awe. Mrs. Siakavaras explained that no living being should cause aversion. She then took a sample of sea water which students had collected to transfer to a HCMR laboratory in order have a biochemical analysis done. She promised that she would inform us about the results of the analysis as soon as possible.

Assessment of the 4th Activity

This time, apart from a simple evaluation of the fourth activity, we engaged in a comprehensive review of what had been done to date. The question which arose was: What could we do next? We had ascertained that the place where we live had many negative aspects. We had decided that we wanted to change it, so what could be done? The students themselves took the initiative! There was a flood of ideas and proposals. They believed that they, themselves, could work towards changing the place where they live and improve it.

It was significant that in an effort to raise student awareness regarding the place in which they live, the students, themselves, had come to the point to make specific proposals in order to improve the place in which they lived, both in terms of the social and natural environment.

Some students brought to school old photographs of Heraklion city. After a discussion, the students concluded that the city of Heraklion at that time (about the 1950's) was a much more attractive city. There were squares, green areas with gardens, courtyards, etc. One student even brought in a film about the old city of Heraklion. The students watched it with great interest. They watched elderly residents telling stories

about their lives in the city, when they were young children playing in the streets long ago. The students wondered whether they could meet with some of the residents. We enquired and learned that some of the residents still lived in the area. We contacted one of the residents, known by the name Pikes. He suggested that we meet at a well-known café in the neighborhood, a favorite of his from when he was a boy. The café had been founded by someone from the "Aivali" area of Asia Minor: hence, the café "Aivaliotis". At the meeting, other elderly residents of the area were present, as well.

E. Meeting with the elderly residents of the area

We arrived at the historical café "Aivaliotis" and were warmly welcomed by a group of six elderly residents. They soon began to tell us stories from another era. Through their narratives, they succeeded in transporting the students to a Heraklion of the past, with a very different way of life. It was a city where people cared about one another, where doors remained unlocked and where small home and local craft industries existed within the local environment. The city was primarily self-sufficient and most households produced whatever they needed, themselves. Most people had their own gardens, looms, wells and the neighborhoods had bakeries and an abundance of meeting places. But most importantly, there was solidarity between people and a form of barter economy. Anything not needed by one person was given to another.

After the discussion, and despite their advanced age, the elderly residents offered to walk us through the narrow streets of the area and to describe to the students what the area used to be like. The students listened with interest, at each stop catching a glimpse of the past. In places where students now saw apartment buildings, modern buildings or abandoned ruins, they discovered what had formerly stood there through the descriptions of the elderly: "*At the location of this building, there were orchards,*" "*Here, in this parking lot, was the fountain where the girls gathered to fill their water pitchers,*" "*In this abandoned space full of rubble, there was an outdoor stable where horses and carts were left by those who came from the countryside carrying their merchandise.*"

Our last stop was at the sea, where the elderly residents told stories from their childhood regarding their walks on the beach, their games, their trips, and other fond memories of a time when the seaside and the sea itself was a part of their everyday lives.

Assessment of the 5th Activity

Through the guided tour, the students gained inspiration as to how they would like to change the social environment of Heraklion city so that it may become more humane. They contemplated how they could contribute to improving the social environment, transforming it from an estranged environment to a more intimate and friendly one.

It appears that the students had transferred some of their enthusiasm to their parents. They had told their parents all about the tour of the neighborhood with the elderly residents and about experiencing the history of the neighborhood through authentic narratives and mental images. We were pleasantly surprised, therefore, to discover that the children's parents expressed interest in becoming involved. The parents had taken the initiative and organized their children into groups in preparation

for participation in a children's historical treasure hunt in Heraklion city, organized by the Municipality.

The Environmental Place-Based Education project that was implemented during the school year 2014 - 2015 was continued into the next school year with activities even more focused on improvement of the place where the students live.

5. Results

Throughout the duration of the program, the students recorded their observations in a journal upon completion of each outdoor activity. The teachers also kept a record of their own observations and then met to evaluate and critically reflect on each activity. By means of this evaluation procedure (referred to in this paper after each activity) and through indexing and analysis of student journals, it was found that the students gradually developed a perception of place and a unique attachment to it, as many of the experiential activities concerned their city. They developed observation and study skills as well as the ability to identify problems in their attempt to improve the local environment. On several occasions, the students took the initiative to formulate realistic proposals for action to make necessary changes to their environment. Perhaps one of the most important outcomes, however, was that the students found ways to communicate with one another more effectively, despite their cultural and linguistic differences, primarily due to the necessity for collaboration in finding solutions to the problems which they encountered.

On the other hand, the teachers who were involved in the program strengthened the degree of communication and collaboration with one another and overcame any reluctance regarding the transfer of the learning procedure to outside the confines of the classroom. Furthermore, they developed skills in the implementation of outdoor experiential activities as well as skills in critically reflecting on and evaluating the learning procedure. All teachers involved in the program also observed that they underwent a reevaluation of their approach to teaching as a result of this program.

5.1 Discussion and Conclusions

The preliminary implementation of a Place- Based Education project was evaluated as satisfactory. The students studied essential aspects of the local environment and became more sensitive towards it. They observed and located specific problem areas and took positive action towards solving them. Through direct experience, they gained greater knowledge of the coastal and marine ecosystem in their area. The students also developed skills in observation, sample-taking and the study of living organisms.

Finally, we had established early in the project that the students had substantial knowledge gaps regarding the marine ecosystem, even though the school is located at close proximity to the sea. The existing knowledge in school textbooks regarding the marine ecosystem is insufficient and fragmentary (Faraggitakis, et. al, 2012). We therefore consider it essential for teachers to involve their students in experiential

activities regarding the sea and the local environment, in future Environmental Education programs.

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