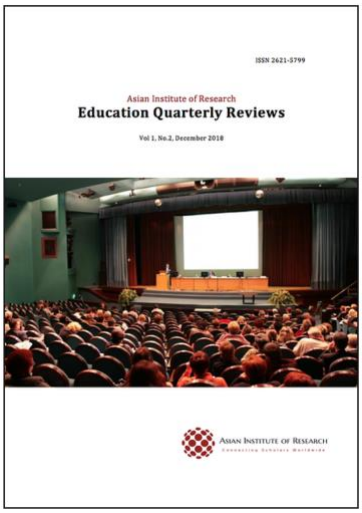

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Environmental Education through Art: A Creative Teaching Approach

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Abstract
The present study describes a creative teaching approach utilizing two works of art in environmental education teaching, making the teaching of material recycling and reuse more experiential, participatory, and original. The third work of art, selected and presented by the learners themselves, "completed the picture" of this innovative approach. Therefore, as the study proves to have the right encouragement, the learners can broaden their cognitive capacities, while through discovery learning they can come in contact with artworks that they did not even know that existed until recently

Key Words: Environmental Education, Art, Teaching Approach, Creativity

Introduction

Nowadays, the use of artworks in teaching is an innovative and creative approach, which is becoming more and more popular worldwide (Burnham & Kai-Kee, 2011). According to studies (Barnes, 2015; Kleiner, 2015), teachers and learners believe that the use of artworks can enhance a learning process and contribute to the complete achievement of the learning objectives specified by the teacher.

Therefore, through the use of artworks, the teacher can overcome the hackneyed teaching approaches and trigger the learners so that to actively participate in the learning process (Phillips & Fragoulis, 2012). Through their active participation, the learners initially familiarise themselves with art and learn to explore the aspects of a topic through the systematic observation and analysis of works of art (Anderson, 1993). More specifically, the systematic observation and the attempt to interpret works of art, fosters analytical thinking skills, critical thinking and an interpretive approach towards reality (Efland, 2002).

At the same time, the aesthetic experience of observing and studying works of art offers to the learners the possibility to process symbols that are not only related to linguistic and mathematical intelligence, as well as to express meanings and emotional states (Kokkos, 2011). In this sense, the use of art in the educational process promotes both the versatile empowerment of learners' intelligence and the integrated development of their personalities (Lawrence, 2008).

In recent years, the use of artworks in the learning process is an innovative teaching approach for the environmental sciences (Koutsoukos & Fragoulis, 2017). Several works of art have been created from time to time, the themes of which include the natural environment and its elements, which can become excellent teaching tools in explaining environmental issues (Neperud, 1997). According to relevant literature, education through the use of art involves the introduction of artworks in the teaching process – the ones related to the subject of teaching in the context of processing a learning objective (Eisner, 2002). Thus, through the processing of these artworks, the meaning they carry gets revealed, and then it can be used as a pretext for undertaking a deeper approach towards the subjects under consideration (Barnes, 2015; Kokkos, 2011; Efland, 2002).

Teaching approach

The present study presents the use and utilisation of two artworks in environmental education teaching in adult learners. In particular, the said teaching approach was applied as part of the course "Environment and Agriculture" in the second grade of an Evening Lyceum in the individual disciplines of recycling and reuse of materials and the prudent management of natural resources. Therefore, in teaching the above thematic units, Italian-Finish Marco Casagrande's environmental art creation "Sandworm" (Table 1), and the sculpture entitled "Earth Tear" created by the American Marta Thomas (Table 1) were used.

In more detail, Casagrande's artwork "Sandworm" was constructed in 2012 on the dunes of the Wenduine coastline, Belgium. Its length is 45 metres, its maximum width 9 metres, and its maximum height 10 metres, and it is made out of branches, dried leaves and willow bark, knitted in a masterly way. Looking at this artwork from far away, it seems like a worm emerging out of the ground (Picture 1). When coming close by, the visitor can touch the outer surface of the artwork and also interact with it by entering and walking in the interior, while apart from walks space is also suitable for picnics (Picture 2). According to the artist, the "sandworm" is a construction made exclusively using natural materials (branches and plant debris from willow trees) aiming at being part of the natural landscape through its interaction with the habitat.

1. Sandworm, view from outside

2. Sandworm, interior view

The second work of art is Marta Thoma's sculpture entitled "Earth Tear," which was created in 1993 and is installed in San Francisco, USA. It is made of recyclable glass bottles joined together to create the shape of a tear (Picture 3). The characteristic is that the artist used bottles found in the beaches of California after the beach cleaning operations to create the sculpture.

3. The sculpture entitled “Earth Tear”

These two works of art were considered as useful tools in the field of environmental education. Therefore, the teacher developed a strategy for the utilisation of the artworks during teaching in the classroom, interconnecting them with the corresponding thematic units of the school book, and transforming these two artworks into teaching tools for environmental education.

In particular, the “Sandworm” was associated with the critical question: “how can nature’s materials be utilised in their eternal cycle on the earth?". Within this framework, the teacher initially presented the said artwork briefly to the learners, and asked them, using the brainstorming technique, to record the first words that come spontaneously to their minds the first time they see the artwork. The words heard were the following: beach, sand, sea, environment, branches, originality, construction. The teacher wrote the works on the board and then discussed with all students, in an attempt to combine the words mentioned with the work of art and draw the first conclusions.

Then, the teacher divided the learners into two working groups of 6 people, and asked each group to answer the following three questions: "What is the topic of the artwork?", "Which are the possible messages of the artwork?", and "Which elements compose the natural landscape in the area surrounding the artwork?". Each group had 10-15 minutes so that its members could discuss the above questions, after which each group presented to the class its views on the questions.

According to the learners, the topic of the artwork concerns a sandworm, a living organism of that beach that is inextricably linked with this particular habitat. The messages conveyed by the artwork creator focus on the interaction between the natural environment and this work of art, which highlights that it is possible to create an aesthetically nice construction using simple and natural materials that fits harmoniously with the landscape and can also have functional value when used as a recreation area. As far as the natural landscape surrounding the artwork is concerned, the learners were impressed by the large sandy beach with its herbaceous vegetation, together with the vastness of the sea.

Deepening the observation of the artwork, given that Casagrande created the “Sandworm” with branches and plant debris from willow trees exclusively, the teacher raised the question “how can natural materials found in the environment be utilised and transformed into an impressive work of art?”. Then, the learners worked again in groups and wrote down the benefits of using plant materials.

After a break, the environmental education course continued, and the teacher presented to the learners the second work of art, Marta Thoma’s "earth tear." This work of art, which is made of recyclable glass bottles, was an excellent teaching tool in the individual topics of material recycling and reuse. Initially, the teacher showed the artwork to the learners and asked them for initial comment. The learners stated their first impressions and expressed their initial feelings after looking at the work of art. As they stated, they were impressed by the fact

that the sculpture is made of bottles that are not useful anymore, which were utilised by the artist as a cheap and original material.

Following this, the teacher divided the learners into three working groups of 4 people, and asked each group to answer the following three questions: "What is the topic of the artwork?", "Which is its possible message?", and "What materials are used in its construction?". Each group had 15 minutes so that its members could discuss the above questions, and then each group presented to the class its views on the questions.

After this, the teacher associated this particular artwork with the environmental education topics under study and raised a critical question to all learners of the class: "Which are the main advantages of bottle recycling and reuse?». The learners had 10 minutes to think, and then the teacher started writing their answers on the board. According to the learners, recycling is a process, which contributes to the sustainable development from an economic, environmental and social point of view. It is a beneficial approach to waste management because it accomplishes significant environmental, economic and social benefits.

In particular, having observed the artwork "earth tear", the learners wrote down the main advantages stemming from the bottle recycling and reuse procedures as follows: (a) the volume of waste ending up in the landfills is reduced, and thus the problem concerning the saturation of existing landfills is limited; (b) natural resources are better utilised, and their irrational exploitation is limited; (c) climate change phenomenon associated with waste decomposition in landfills is limited; (d) it is possible to create new jobs in the fields of transport, collection, sorting and dismantling recyclable waste; (e) social conflicts concerning the design and location of new landfills are reduced.

Table 1. Overview of the two works of art used by the teacher

Title	Sandworm	Earth tear
Artist	Marco Casagrande (1971 –)	Marta Thoma (1954-)
Characteristics	Constructed entirely from plant debris from willow trees (45X10 metres)	Constructed from recyclable glass bottles
Year of creation	2012	1993
Website	http://trendland.com/marco-casagrandes-sandworm/#	http://www.mthoma.com/eartht ear3.html
Location	Wenduine, Belgium	San Francisco, California, USA
		

After presenting both the aforementioned works of art, the teacher assigned a relevant project. More specifically, the 12 learners of the class were requested to work as a single working group so as to find a work of art that is associated with environmental education, and present it during the next class, one week later.

The goal of this project was to activate the learners towards discovery learning and familiarise themselves with the approach of environmental issues through art. It was decided to work as a single group so as to enhance their skills, including collaborative learning, solidarity, dialogue and exchange of views. Therefore, during the next class, the learners selected and presented the work of art entitled "Henry the giant fish" that was created by the American artist and teacher Angela Haseltine Pozzi (Table 2).

This is a sculpture located at Oregon, USA, made of waste collected from local coasts, such as bottles, soft drink cans, tins, plastic packaging, etc. As highlighted by the learners while presenting the artwork, this particular sculpture is an excellent example of how seemingly useless products that contaminated the environment can be used to create a work of art. Indeed, in the modern world where the rational management and exploitation of natural resources is more than ever required, the reuse of waste and industrial products is a key component of sustainable development.

Having this sculpture as a trigger, the learners underlined the importance of cleaning urban waste from coasts and the benefits of waste collection for offshore ecosystems. The discussion was actually extended on whether similar works of art could be created for teaching purposes using waste and other useless material found in large amounts in local coasts.

Table 2. The work of art selected by the learners

Title	Henry the giant fish
Artist	Angela Haseltine Pozzi
characteristics	Made of waste collected from the coasts of Oregon, the USA, such as bottles, soft drink cans, tins, plastic packages, etc.
Year of creation	2008
Website	http://www.washedashore.org/fish_ss.php#slideshow
Location	Oregon, USA
	

Conclusions

Utilising works of art for educational purposes is a modern teaching practice offering multiple benefits, apart from the development of critical thinking and aesthetic perception. The learners enhance their stochastic ability through the observation of works of art, interpret messages and recognise relationships, while simultaneously developing their creative thinking through their imagination and inventiveness.

Moreover, according to the relevant literature, it is recommended that teachers request the learners' participation in the process of artwork selection, a practice that can be effective – as long as the proper encouragement and triggering is provided – even if the learners are not familiar with art (Kokkos, 2011). Having the right encouragement, the learners can broaden their cognitive capacities, while through discovery learning they can come in contact with artworks that they did not even know that existed until recently.

The case study discussed in the present article utilises two works of art in environmental education teaching, making the teaching of material recycling and reuse more experiential, participatory, and original. The third work of art, selected and presented by the learners themselves, "completed the picture" of this innovative approach. As far as practical implications are concerned, the present study enriches international literature in this relatively new and interesting field of utilising art in the learning process. This study may be useful for teachers that teach environmental science courses, for learners studying environmental sciences, as well as for any researcher interested in utilising art for pedagogical purposes. In addition, this study can have a considerable impact on existing literature which connects environmental education and use of artworks in teaching.

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