

Integrating Multiple Intelligence Theory in Primary Education: An Environmental Learning Scenario

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Abstract: Gardner's Theory of Multiple Intelligence constitutes an innovative approach in comparison to traditional theories concerning intelligence. It brought a revolution in education supporting that there is not only one type of intelligence that determines people's happiness, but eight different types located in different parts of the brain. The positive educational effects of the integration of multiple intelligence theory show that all students do not learn in the same way and also, prove that this theory can contribute to new and innovative teaching methods, which leverage each student's individual characteristics, talents and interests.

The present paper describes the environmental learning scenario "Planet Earth in despair!", which was implemented according to Gardner's Theory of Multiple Intelligence. It formulates, in detail, the theoretical background, the objectives, the methodology and all stages of the implementation in the classroom. Finally, it presents the results of the scenario as well as the difficulties and the challenges through its preparation and implementation.

Key words: multiple intelligence, environmental education, innovation

1. Introduction

Gardner's Theory of Multiple Intelligence constitutes a radical and innovative approach in comparison to traditional theories concerning intelligence. It created new visions and brought a revolution in education (Vasala, 2016), supporting that there is not only one type of intelligence that determines people's happiness and prosperity, but eight different types located in different parts of the brain (Gardner, 1983). More specifically, the eight types of intelligence according to Gardner are the linguistic, the logical-mathematical, the musical, the spatial, the bodily-kinesthetic, the interpersonal, the intrapersonal and the naturalistic intelligence. More specifically, the linguistic intelligence includes all linguistic skills (talking, reading, listening and writing) which help a person use written and oral speech (Vasala, 2014). A person with logic-mathematical intelligence is good with numbers, have above-average reasoning skills and a good understanding of logical concepts, enjoys experiments, solving puzzles and mysteries and understands easily scientific principles (Safran, 2016). According to Mills (2001), musical intelligence includes the abilities to produce and appreciate rhythm, pitch and timbre and also, the appreciation of the forms of musical expressiveness. Spatial intelligence is described as the capacities to perceive the spatial world accurately and re-create aspects of one's visual experience (Mills, 2001). The bodily-kinesthetic intelligence refers to two basic skills: a) a person's ability to control body movement and b) a person's ability to handle objects in a

skillful way. Interpersonal intelligence is connected to the way we understand ourselves, our feelings, desires, and emotions and react accordingly, while intrapersonal intelligence is related to the way we communicate and interact with others (Vasala, 2016). Last but not least, the basic characteristics of the naturalistic intelligence is a person's interest about nature and the protection of our planet, as well as, one's interest and ability to describe the interaction between biotic and abiotic elements (Vasala, 2014). According to Filliozat (2001), Gardner wanted to find the types of intelligence that every person can cultivate and develop in combination with the pivotal influence of the environment. Therefore, intelligence is not an inflexible mental power but a psychobiological dynamic connected to a person's environmental and biological background, experiences and culture (Gardner, 1983; Alahiotis, 2004). All of the above feature the importance of the multiple intelligence theory in education, as long as educators feed themselves and their students with new stimuli and experiences (Vasala, 2014). The results of lot of surveys, which were conducted in order to study the impact of multiple intelligence theory in education, showed that integrating teaching methods oriented to students' talents and interests has a positive impact on their confidence and self-esteem (Brown, 2003). According to Kornhaber (2004), applying the basic principles of multiple intelligence theory in their teaching methods and creating interesting activities based on it, educators enhance their skills and offer more learning opportunities for their students. Moreover, Haley (2004) notices that the relationship between students and teachers improves conspicuously when teachers enrich their methods based on Gardner's theory. Taking into consideration the benefits of the multiple intelligence theory, it is obvious that educators have a useful and flexible "tool" in order to encourage their students explore their talents, needs and interests.

2. Creation and Implementation of the Learning Scenario

The following learning scenario was implanted by the students of the 4th grade of Kanalia Primary School of Corfu during the academic year 2019-2020 and was completed within four months.

2.1 Description of the Students' Multiple Intelligence Profile

In the beginning of the school year I ascertained my students' multiple intelligence profile. From the 17 students that participated in the implementation of the scenario, 3 students had developed bodily-kinesthetic intelligence, 3 students linguistic, 2 students the musical, 3 students logic-mathematical, 2 students the spatial, 2 students interpersonal and 2 students naturalistic. At this point, I would like to clarify that all students had developed other types of intelligence too, but excelled at the ones listed above. In order to ascertain their profiles, I gave them a questionnaire concerning their habits and interests based on the characteristics of every type of intelligence. Consequently, I asked them to express their ideas, preferences and opinion about the activities they would like to do in the classroom. Moreover, I was observing their behavior and the way they played together and interact during other lessons, such as gymnastics and music, and also during the school break. I also asked them to work in groups, in order to see how they cooperate and deal with disagreement. Finally, I took into consideration their reactions and their emotional expressions through crafts, singing, theatrical activities, problem solving and creative writing.

2.2 Choice and Introduction of the Subject

The learning scenario was designed according to the theory of multiple intelligence and in a way that fosters a multidisciplinary approach encouraging different types of activities for all types of intelligence. My students came up with the idea of the scenario because of the garbage accumulation in Corfu. Discussing about the natural environment of the island students expressed their opinion about the unbearable situation with the garbage

accumulation and the unpleasant smell outside their houses and their school. Soon, through the discussion they started putting questions concerning our planet's problems and the attitude we should have towards these problems. The subject caught their attention and all agreed to implement a project about it. The title came from an answer to the question "How would our planet feel if it was a human?". Our planet would probably be in despair!"

2.3 Interdisciplinary Approach of the Project and Teaching Techniques

The interdisciplinary approach of the topic was achieved through the subjects of language (reading and producing written texts activities), mathematics (organizing data and information), environmental education (pollution problems and consequences), drama (dramatization and role-playing), music (song creation), visual arts (paintings, posters and crafts) and gymnastics (dancing and kinesthetic activities). In order to discuss the topic thoroughly it was important to mention and explain some environmental concepts such as environment protection, soil, water, soil and sound pollution and waste management. Students were separated into groups sitting in a way in which they could see and listen to each other. During the project implementation the techniques which were used were brainstorming, case study (using the educational pack of Action Aid "Send my Friend to School"), discussion, role-playing and problem solving. Students had the chance to cooperate, cultivate critical thinking and work in a scientific and inquiry-based learning environment.

2.4 Group Formation, Questions and Objectives of the Project

Given the fact that it was the first time I was working with my students and in the beginning we were going through an adaptation-phase period, I encouraged them to participate in some meeting-each-other games in order to empower their relationship and share their ideas and experiences. In the first game they had to talk about themselves and choose something special, that made them feel nice, and share it with the entire group. In the second game they had to imagine that they were a natural element or creature and describe what and where they would be and how they would feel. The third game included pantomime so they would all "unlock" their body and feel comfortable. After that, we discussed about the rules and agreed to the following: a) we help each other and ask for help when we need it, b) we respect others' ideas and opinion and we do not interrupt our fellow students when they talk, c) we are polite to each other, d) we do not bother each other, and we complete our assignments and e) we respect the fact that we are all different and unique. The groups were formed so that in each one there were students with different types of intelligence. The objective of this formation was to encourage students work on activities using other types of intelligence apart from the one they excelled at. Therefore, all students implemented all kind of activities and shared their experience in the end. Finally, we agreed that the formation of the groups is flexible, and it can change in case it is necessary for working different activities. More specifically, in case of creating a school newspaper, students with language intelligence might want to write and work on the texts, while students with spatial intelligence might want to edit the images of the newspaper.

Afterwards, students concluded in the questions they would like to investigate and work on through this project. These questions were:

- 1) What environmental problems are related to our planet's pollution?
- 2) Which are the causes?
- 3) What can we do in order to protect and rescue our planet?

The objectives of the project were formed in three levels, knowledge, skills and attitudes (Courau, 2000), in order to support activities which enhance all types of intelligence, and are listed below:

Knowledge

- To learn and describe the environmental problems concerning our planet's pollution.
- To categorize them in one of the four forms of pollution.
- To understand and explain the causes of pollution and how it affects humans.
- To relate pollutions' consequences to solutions for managing the problem.

Skills

- To read and comment on texts concerning environmental pollution.
- To organize their data for easier use in the project's activities.
- To use different kind of arts in order to express these environmental problems and their feelings.
- To cooperate properly for the completion of the project.

Attitudes

- To feel the responsibility, we have for the protection of our planet.
- To adopt an ecological way of life.
- To encourage themselves and their fellow-students to explore new interests through activities they hadn't tried before.
- To accept themselves and their fellow-students and cultivate an encouraging and cooperative classroom environment in order to empower their self-esteem.

2.5 Activities' Implementation

The first part of the project lasted one month and included the collection of data and information concerning environmental pollution. Each group looked for texts, comics, articles, news, paintings, photos or audiovisual material about the four forms of pollution (air, water, soil and sound pollution). After that, we moved to the next phase of our project which was the implementation of the activities, planned and designed according to students' types of intelligence and are described below:

- Activity 1: Reading and comprehension of fairytales and literature texts related to the subject ("The little mermaid living on a garbage island", "Nature and air pollution", "The lake with the paper boats", "Stories for garbage").
- Activity 2: Each group presented a book in anyway they could think of and experiment on. For example, some students preferred writing an article for the school newspaper, while others decided to express themselves through a sketch or by giving an interview to our local radio station.
- Activity 3: Organizing data and information, indicating the percentage of pollution in different countries all over the world.
- Activity 4: Students expressed themselves through body movement, reacting to nature sounds and sound pollution.
- Activity 5: Creating the S.O.S. using their bodies in our school yard.
- Activity 6: All students created crafts with recycling materials and cleaned our school yard from garbage.
- Activity 7: All groups worked on the activities of ActionAid's educational tool kit about environmental pollution (role and card games, problem solving).
- Activity 8: We had a walk in the nature listening natural sounds. Then we listened the song "Colors of the wind" from Disney's movie "Pocahontas" and students created paintings about nature.
- Activity 9: Students created a poster with messages for the protection of our planet and the environment.
- Activity 10: Brainstorming on the protection of the planet (any idea that comes to our mind).
- Activity 11: Students suggested solutions and ecological ways of behavior formulating arguments through

the game “If...then...”.

- Activity 12: Students wrote down all Global Environment Days and created informative leaflets for the students at the whole school.
- Activity 13: Students created a song about our planet’s protection. They were eager to work on the lyrics and I helped with the music part.

Between the activities students had some breaks discussing their progress, giving feedback to each other and sharing their feelings about the problems they face during the implementation.

2.6 Presentation and Evaluation of the Project

The project’s presentation was implemented in various ways (Vassala, 2011), including all the products created by the students. The posters for the protection of the planet were placed on all bulletin boards of the school and the students handed out the leaflets to their fellow students, so that everyone in the school could be informed about the project and the ways we can all contribute to our planet’s protection. Moreover, the students gave an interview to Corfu’s local radio station about their work and, finally, students, all educators of the school and the parents of the students who implemented the project, organized a celebration at school exhibiting all crafts, paintings, book presentations and the song the students had created.

The evaluation of the project was conducted through students’ opinion concerning the enrichment of their knowledge, following the rules set in the beginning, meeting the objectives and if that was an interesting and entertaining project for them. Additionally, the evaluation was completed with my notes concerning their active engagement, their behavior and the cultivation of their types of intelligence.

3. Discussion

The main objective through the design and the implementation of this project was the cultivation of their special and unique types of intelligence, while interacting and collaborating. The project was structured according to Gardner’s theory of multiple intelligence and all activities aimed to fulfill all objectives set in the beginning. One important element of this project was its flexibility which allowed students to work on activities related to their types of intelligence but also to experiment with other activities they were familiar with. The profile of the students’ types of intelligence was described before the final planning of the activities, so that it could be related to them and also the objectives and the ways of presentation. Project implementation is one of the methods suggested by Gardner so that his theory can be applied in education. However, while multiple intelligence’s theory has a lot of benefits, it acquires further research on its proper integration in primary education. It constitutes an alternative learning and teaching approach which contributes to the personal development of each student according to his/her talents and interests. Moreover, it supports children’s capabilities at school and moderates academic failure (Kappas, 1999). In this way students’ self-esteem and confidence are empowered since they learn to accept themselves and others, and respect the fact that each person is unique, like the way he/she gains knowledge, experiences and develops useful skills.

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