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Out-of-the- school learning environments in values education: science centres and museums

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Abstract

This study focuses on the importance of using out-of –the school learning environments in values education. A case study, one of the qualitative research designs, was employed in this study. A group of 55 students was formed with the second and third year students of the Faculty of Education, and science centres (Feza Gürsey Science Centre) and museums (Rahmi Koç Science Museum, Ataturk's Mausoleum- historical museum) were chosen for application as out-of-the-school learning environments in the application process. Categorical analysis was performed in the analyses of the data. The research results demonstrated that definition category was used most in the value of aesthetics; results category was used most in sensitivity to cultural heritage, and examples category was used most in patriotism category. Besides, scientific, solidarity and aesthetic values were further explained through examples after the application. Following the application, it was observed from students' answers that definitions were usually replaced by results and examples. This showed that out-of-the-school learning environments contributed to the process of students' concretizing their knowledge.

Keywords: Values education, out-of-the-school learning environments, prospective teachers

1. Introduction

Values are the desired goals which function as guiding principles in individuals' or other social creatures' lives and which differ in importance (Schwartz, 1994). They are the things that people consider valuable, and chase to reach; they are the things that people wish to attain. They may be such material things as properties, a big fortune and health or such moral values as love of God, patriotism and liberty (Bolay, 2010). The systems of beliefs, ideas and norms constituting the social culture are all referred to as values (Tural, 1992).

The purpose of education is to cherish students' character development and universal and national values through affective gains, and to guide them in raising them as individuals who can use knowledge accurately and appropriately all through their lives; rather than just to load them with knowledge. When seen from the perspective of a student, the student forms his or her own knowledge, understanding, personal values and identity (Veugelers, 2000). In this sense, it is important that students, the most important component of the system, learn the awareness of their own affective features. In this process, values education and the application of values are conceptualised as one of the most powerful vehicles of school, programmes and socialisation. School, in particular, has always been an issue of concern for

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educators in the role of education and in the formation of values (Bills and Husbands, 2005). On the other hand, it is commonly known that the rules of school, official and religious ceremonies, activities which have become customary are all influential in the acquisition of values. However, teaching the values is not limited only to the application of curriculum in class or in school.

Out-of-the-school learning environments also occupy an important place in the teaching of values. Learning outside the school is important not only in the teaching of values but also in forming the foundation for lifelong learning. In order to be able to use out-of-the-school learning effectively, it should be used in teacher training institutions effectively, and prospective teachers should be taught its importance in values education and in lifelong learning. This study emphasises the importance of science centres and museums, which are among out-of-the-school learning environments and which are included in the study for application.

2. Method

A case study, one of the qualitative research designs, was employed in this study. The use of out-of-the-school learning environments as a distinct approach and its effects on prospective teachers were considered as phenomena in the process, and the research was conducted accordingly.

2.1. Study Group

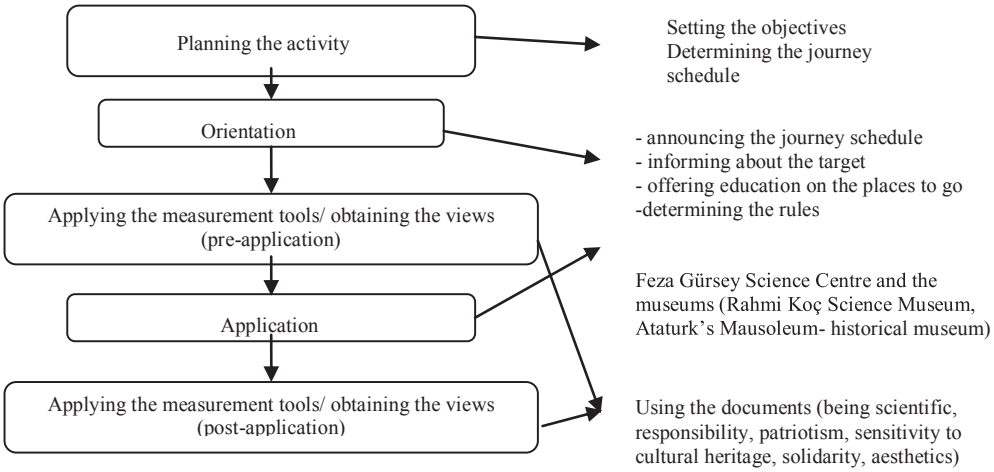
The research group was composed of 55 students attending the Faculty of Education (elementary school teaching social studies teaching, science teaching departments) who were chosen through maximum sampling; and science centres (Feza Gürsey Science Centre) and museums (Rahmi Koç Science Museum, Ataturk's Mausoleum- historical museum) were chosen for application as out-of-the-school learning environments in the application process.

2.2. Data Collection Tools

The data collected in qualitative research studies may be in the form of observation notes, interview records, documents, pictures and presentations through graphs (Cohen, Manion and Morrison, 2007; Ritchie and Lewis, 2003); Yıldırım and Şimşek, 2008). In the data collection process, the students were given the six open-ended questions prepared by the researcher in the form of a written text and were asked to answer them; then the students' perception of the values was checked through document analysis. A measurement tool developed by the researcher and containing six values (being scientific, responsibility, patriotism, sensitivity to cultural heritage, solidarity, and aesthetics) was employed in the research as the data collection tool. Here, students were given such questions as "Explain your views concerning the value of being scientific in your own words", and thus their views were obtained prior to and after the application. The compositions in students' their own handwriting and the pictures were used as the basic source of data.

The measurement tool developed was designed as two dimensional. On the first dimension the students were asked to write a composition about what they thought about the value, and on the second dimension they were asked to draw a picture of it. In this way, the students were given the freedom in writing in their own words, in expressing their views as pictures and in choosing and relating them. Besides, the learning outputs which were too complex to measure with other methods were also evaluated.

2.3. The Process of Application



2.4. Data Analysis

The documents obtained were then analysed through categorical analysis, one of the methods of content analysis. In this process, the stages of (1) encoding and selecting, (2) category developing, (3) determining the frequencies, and (4) achieving validity and reliability were taken. The results of document analysis were presented through "data representation according to categories" suggested by Miles and Huberman (1994). At the later stages, the evaluations made by the researchers were interpreted by calculating the number of agreements and disagreements.

3. Findings and Interpretation

Table 1. The distribution of Concepts formed in the pre and post Applications for Values

Values/Categories		Definition		Results		Examples		Σ	Σ	%
		f	%	f	%	f	%			
Patriotism	Ön	75	77,3	12	12,4	10	10,3	97	196	17,5
	Son	87	87,9	2	2,0	10	10,1	99		
Aesthetics	Ön	98	94,2	3	2,9	3	2,9	104	189	16,8
	Son	65	76,5	10	11,8	10	11,8	85		
Scientific	Ön	76	88,4	10	11,6	0	0,0	86	171	15,2
	Son	76	89,4	3	3,5	6	7,1	85		
Solidarity	Ön	92	86,0	15	14,0	0	0,0	107	168	15,0
	Son	49	80,3	6	9,8	6	9,8	61		
Responsibility	Ön	64	79,0	8	9,9	9	11,1	81	143	12,7
	Son	52	83,9	7	11,3	3	4,8	62		
Sensitivity to cultural heritage	Ön	81	58,3	48	34,5	10	7,2	139	255	22,7
	Son	26	22,4	86	74,1	4	3,4	116		
	Σ	846	75,4	210	18,7	66	5,9	1122		

According to Table 1, concepts for sensitivity to cultural heritage are the most (22.7%) but the concepts for responsibility are the least (12.7%) in number. Those concepts clustered most in the definition category (75%), least in the examples category (5.6%).

The students used the category of definition in the value of aesthetics, the category of results in the value of sensitivity to cultural heritage, and the category of examples in the value of patriotism most. Yet, it was found in the pre-applications of the categories of being scientific and of solidarity that concepts related with the category of examples were not formed.

Following the application, the answers given by students in terms of the values of aesthetics, solidarity, responsibility, and sensitivity to cultural heritage were put under the categories of results and examples.

Table 2. The Distribution of Concepts Formed in Relation to the Value of Patriotism according to Categories

Application	Definition/process	Results	Examples
Pre-	Loving and protecting one's homeland (18), protecting the country's values (18), working to improve the country/nation (12), sacrificing his life and all belongings for his country (10), other (13)	Educational, scientific and military contributions (5), we should mind unity and solidarity (3), other (3)	Ottomans are our ancestors (1), not polluting the environment (1), working for one's country, sometimes unpaid, just like the Japanese (1)knowing that we gwon our homeland with difficulty (1), representing the country with the flag in every field (1), other (3)
Post-	Working for one's country/making contributions to her development (14), love of one's country/nation (13), being able to give up everything for one's country (13), defending the country (13), protecting the homeland(7), protecting the traditions, customs and the culture (7), fulfilling one's task in the best way (4), other (11)	Homeland means liberty (1), our national feelings arouse at Ataturk's Mausoleum (1)	We lived Ataturk's life again (1), trips to Ataturk's Mausoleum should be organised (1),an individual's feelings towards homeland are similar to a mother's feelings for her child (1), the right of electing/being elected (1), feeling the national feelings at Ataturk's Mausoleum (1), other (4)

In Table 2, the students described the value of patriotism with the concepts of loving and protecting (18), defending (18), and working (12) in the pre-application whereas they described it with the concepts of working for and making contributions to her development (14), loving (13), giving up everything for the country(13), and defending it (13) in the post-application. In the results category, educational, scientific and military contributions (5) and minding unity and solidarity (3) were emphasised in the pre-application while such answers as homeland means liberty (1), and our feelings arouse at Ataturk's Mausoleum were given in the post-application.

Table 3. The Distribution of Concepts Formed in Relation to the Value of Aesthetics according to Categories

Application	Definition/process	Results	Examples
Pre-	It is beauty (23), changes from person to person-relative- subjective (23), nice, pleasant-looking (23), beauty of Works of art (69, gives people pleasure(4), unique order of things in nature (3), beauty appealing to eyes and heart (2), having nice thoughts (2), other (12)	Being enjoyed by society (1), something needs to be aecthetic so that it is enjoyed (1), the aesthetic one catches attention (1)	
Post-	Beauty (17), relative-subjective(11), looking and sounding good (14), artistic value (3), finding beautiful (3), other (22)	Man's looking at life better (2), important (1), makes remembering easier (1), aesthetic is possible through travelling and seeing (1) adds meaning into life (1), increases value (1), everything we see in museums (1), aesthetics is beyond the concept of beauty (1)	Works and toys in Rahmi Koç museum (5)

According to Table 3, the value of aesthetics was described as beauty (23), changing from person to person-relative- subjective (23), nice (23) in the pre-application; yet it was described as beauty (17), relative-subjective (11), looking and sounding good (14) in the post-application. However, in the post-application, examples concerning the value of aesthetic increased.

Table 4. The Distribution of Concepts Formed in Relation to the Value of Being Scientific according to Categories

Application	Definition/process	Results	Examples
Pre-	Knowledge whose accuracy was proven through experiments and observations(19), objectivity (5), generally valid knowledge (5), cause-effect relationship (4), being universal (4), being provable (4), making the abstract thoughts into concrete ones (4), everything to do with science (4), other (28)	Bringing benefits to humans (2), the validity of scientific knowledge was refuted (2), other (6)	
Post-	Knowledge whose accuracy was proven(17), knowledge based on experiments-observations (7), accepted by everybody (5), knowledge useful to man (5), demonstrating the cause of an event by using scientific methods (3), thought based on scientific methods (3), other (36)	The tangible products in consequence of work (2), related with science and technology and astronomy (1)	What I felt in Feza Gürsey Science Centre (4), we reached the truths by experimenting in Feza Gürsey (1), Newton's discovery of gravity (1)

According to Table 4 , the value of being scientific was described as knowledge whose accuracy was proven through experiments and observations(19), objectivity (5), generally valid knowledge (5) in the pre-application but it was described as knowledge whose accuracy was proven(17), knowledge based on experiments- observations (7) in the post-application. Besides, the students did not use examples in the pre-application, but they used examples in the post-application.

Table 5. The Distribution of Concepts Formed in Relation to the Value of Solidarity according to Categories

Application	Definition/process	Results	Examples
Pre-	People's helping each other (22), unity and togetherness, acting together (21), doing jointly, cooperation (21), helping with no payment (3), being next to people in hard times (3), other (20)	People should be in solidarity (4), unless there is solidarity, there is no respect, and then society is disintegrated (4), work becomes easier (2), living in peace (2), other (4)	
Post-	Unity between individuals/unity-togetherness (17), helping people in need (6), being in peace and cooperation (3)gathering for the same purpose (3), other (19)	Unity and solidarity emerge in consequence (1), if there is no solidarity, there is no integration (1), contributes to order in society (1), other (3)	Turkish nation's togetherness at wars (1), we see solidarity at Ataturk's Mausoleum (1), help when earthquake happens (1), other (3)

According to Table 5 , the value of solidarity was described as people's helping each other (22), unity and togetherness, acting together (21), doing jointly, cooperation (21) in the pre-application; but it was described with the concept of unity-togetherness (17) in the post-application. In the examples category, wars dramatised at Ataturk's Mausoleum (historical museum) were commonly given in the post-application.

Table 6. The Distribution of Concepts Formed in Relation to the Value of Responsibility according to Categories

Application	Definition/process	Results	Examples
Pre-	Fulfilling the tasks expected of him (26), the feeling of obligatory in front of the world, people, nature and parents (4), being aware of one's actions (4), one's tasks in front of the self and others (3), being conscious of things (3), other (22)	Improvement is impossible without responsibility (1), struggling with problems (1), people's thinking about the results of what they have done (1), raising individuals with responsibility (1), impossible without trust (1), man has to live with responsibility (1), fulfilling makes a person happy , makes solution accessible (1), everything becomes regular (1)	We are responsible for our country and nation (3), knowing one's rights and tasks in society (2), fulfilling the tasks (2), other (2)
Post-	Tasks that somebody undertakes(30), task that someone is supposed to do (3), accepting the consequences of an action (3), other (16)	Necessary for the setting or life (1), persona with no responsibilities is not courageous (1), the work of a person with responsibility does not come to a halt (1), other (4)	Arrving in time for a journey (1), conscousness for protecting what is left by Ataturk (1), our tasks for our country (1)

In Table 6, the value of responsibility was described as fulfilling the tasks expected of him (26) in the pre-application whereas it was described as tasks that somebody undertakes(30) in the post-application. In addition, concrete examples were also given for out-of-the school learning environments.

Table 7. The Distribution of Concepts Formed in Relation to the Value of Sensitivity to Cultural Heritage according to Categories

Application	Definition/process	Results	Examples
Pre-	Protecting the culture (18), handing down to next generations (18), materialistic and spiritual cultural values descending from the past (13), protecting historical pieces (4), being aware and teaching (4), other (24)	We should preserve our past (our values) (25), we should be sensitive to the cultural heritage (4), provides information about the past values (3), it sustains the society (2), we can find directions thanks to the past (2), other (11)	Historical things dating from the past, natural beauties, museums (2), social, cultural and economic things made by people (2), other (6)
Post-	Materialistic and moral values such as language, religion, and geography (4), embracing the values of society (3), other (19)	we should embrace the cultural heritage/our past (17), we should hand it down to next generations (13), we should be sensitive (8), other (24)	We saw that Ataturk had lived in harmony with Turkish culture (2) Rahmi Koç Museum (2)

In Table 7, the value of sensitivity to cultural heritage was described as protecting the culture (18), handing down to next generations (18), materialistic and spiritual cultural values descending from the past (13) in the pre-application while it is described as materialistic and moral values such as language, religion, and geography in the post-application.

4. Conclusion

The highest number of concepts was in the value of sensitivity to cultural heritage while the lowest number of concepts was in the value of responsibility in the current study, which examines the effects of science centres and museums (used as out-of-the-school learning environments) on students in developing the values. The students mostly used definitions in explaining the values but the examples they gave were used the least in their explanations.

The research results demonstrated that definition category was used most in the value of aesthetics; results category was used most in sensitivity to cultural heritage, and examples category was used most in patriotism category. Besides, the number of examples for scientific, solidarity and aesthetic values was observed to have increased after the application

Following the application, it was generally observed from students' answers that definitions were usually replaced by results and examples. This situation may be interpreted as the contribution of out-of-the-school learning environments to the process of students' concretizing their knowledge.

With regard to the value of patriotism, students used the concepts of loving and protecting, defending in the pre-application whereas they described it with the concepts of working for and making contributions to her development, loving, giving up everything for the country, and defending it in the post-application.

Following the application, the students mentioned the places they had visited and thus they explained the values of aesthetics, being scientific, and solidarity by giving examples. As to the value of responsibility, they used such

statements as “the tasks that one undertakes” instead of fulfilling what is expected of someone”, which they had used previously.

Based on the findings of the current research, activities related with out-of-the-school learning environments could be included in teaching especially in making the abstract knowledge more concrete. Besides, the goals for out-of-the-school learning environments should implicitly be included in the course content of the faculties of education.

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