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THE EFFECTS OF USING ANIMATED FILMS IN THE ENVIRONMENTAL EDUCATION COURSE ON PROSPECTIVE TEACHERS' BEHAVIOR TOWARDS ENVIRONMENTAL PROBLEMS AND THEIR ATTITUDE TOWARDS SOLID WASTE AND RECYCLING

Research Article

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Abstract

This research aimed to investigate the effect of Wall-E films on prospective teachers' behavior towards environmental problems and attitude towards solid waste and recycling. In the research, one-group pre-test and post-test experimental design was used. The study group consisted of 130 prospective teachers at the Classroom Teacher Department, and the Department of Social Sciences Teaching in a Faculty of Education of a state university in Turkey. where they took Environmental Education course in 2018-2019 academic year. The data collection tools of the study were "Environmental Problems Behavior Scale" and "Solid Waste and Recycling Attitude Scale". After the scales were administered as a pre-test, the participants were invited to watch the movie Wall-E for a period of three weeks. Then the scales were re-administered as the post-test. It was found out that, watching the film, the participants' behavior towards environmental problems and their attitude towards solid waste and recycling increased in a positive way. The findings also revealed that attitude towards solid waste and recycling was a significant predictor of the prospective teachers' behavior towards environmental problems.

Keywords: Environmental education, animated films, recycling, environmental behavior, environmental attitude, prospective teachers

1. Introduction

The natural environment in which all living things live, has been in existence for many years without any problems in interaction with living things. However, factors such as increase in population, unplanned urbanization, industrialization, excessive consumption, damage to the natural environment and reduction of natural resources have caused many environmental problems. As a result of environmental problems becoming uncontrollable, solutions were tried to be found. These efforts to find solutions revealed the concept of environmental education by turning towards the person, who is responsible for the problems (ÇOB, 2007; Çolakođlu, 2010; Dođan, 1997; Yücel & Morgil, 1998).

The concept of environmental education includes educational activities for people, who are the principal cause of environmental problems. Therefore, environmental education includes

all the trainings carried out in order to ensure that every individual in the society understand the environment, develop environmental awareness, gain environmentally friendly behaviors and take an active role in environmental problems (ÇOB, 2004; Öztürk, 2008; Uğurlu & Demirer, 2008).

When the environmental problems and the concept of environmental education are examined, it is seen that both are global. Because the planet and environment we live in is a common area for all living things. For this reason, environmental education has become a common concern worldwide. The first activity on environmental education was the United Nations Conference on the Human Environment held in 1972. The United Nations Environment Program (UNEP) established at the end of this conference. On June 5, the day of the conference, was accepted as the World Environment Day (Akçay, 2006; Doğan, 1997; Simpson, Hungerford, & Volk, 1988; Yıldız, Sipahioğlu, & Yılmaz, 2009). In 1975, an International Environmental Education Program (IEEP) was created in addition to UNEP (Doğan, 1997). The biggest activity related to environmental education was the Intergovernmental Conference on Environmental Education held in 1977 in cooperation with UNESCO-UNEP. This conference is also called as the Tbilisi Conference. Environmental education was examined in many aspects at the conference (Intergovernmental Conference on Environmental Education-Final Report, 1978; Simpson, Hungerford, & Volk, 1988). At Tbilisi Conference, statements such as developing ecological solidarity awareness, providing opportunities for each individual to gain the necessary knowledge and attitude in order to protect the environment, and creating new forms of behavior towards the environment in individuals and society are included as the main aims of environmental education (Intergovernmental Conference on Environmental Education-Final Report, 1978).

When the objectives of environmental education mentioned at the Tbilisi Conference are examined, it is seen that the basis of solving environmental problems is changing people's attitudes, consciousness, behavior. For this reason, it is important for children, whom we entrust our future and environment, to raise awareness about the environment, environmental problems and their solutions (Erentay & Erdoğan, 2009). In this framework, teachers, who are role models and play a guiding role in the structuring of what children learn and transforming what they learn into behavior, have great duties (Ada, Baysal, & Şahenk Erkan, 2017). Therefore, teachers should also be environmentally conscious, environmentally sensitive individuals and behave environmentally friendly. As a matter of fact, attention was drawn to this point with the statement “S/he is sensitive to the protection of the natural environment, and historical and cultural heritage”, which is among the general competencies of the teaching profession (MoNE, 2017). In this context, many studies were conducted to examine and improve the environmental consciousness, environmental sensitivity, environmental attitudes and environmental behavior of teachers and prospective teachers.

In the literature, some studies investigated the attitudes of teachers and prospective teachers towards the environment and environmental problems (Gürbüz, Kışoğlu, & Erkol, 2007; Gürbüzöğlü Yalmancı, & Gözüm, 2011; Güven, 2013; Kayalı, 2010; Larijani & Yeshodhara, 2008). Some studies examining the environmental behavior of teachers and prospective teachers are also included in the literature (Erten, 2005; Güven & Aydoğdu, 2012). In some other studies, different variables were examined together. For instance, Keleş, Uzun and Varnacı Uzun (2010) investigated the prospective teachers' environmental awareness, environmental attitude, thoughts and behaviors. Adejoke, Mji and Mukhola (2014) investigated teachers' attitudes and awareness of environmental pollution. According to the literature, in addition to examining the environmental attitudes, behaviors and awareness of teachers and prospective teachers, some researches were conducted to develop these variables through experimental studies.

When the literature is examined, it was seen that films were used as environmental education tools in some studies (e.g. Benzer, Güven Yıldırım, & Önder, 2019; Göktepe Duran, 2019; Janpol & Dilts, 2016; Liu, 2018; Leeds et al., 2017; Skanavis & Sakellari, 2006). It was found that most of these studies were not carried out with prospective teachers and the studies conducted with prospective teachers examined different variables. In this context, this research aims to investigate the effect of Wall-E film on the prospective teachers' behavior towards environmental problems and attitudes towards solid waste and recycling. In addition, the study aims to examine the relationship between prospective teachers' behavior towards environmental problems and attitude towards solid waste and recycling.

The study focuses on the main research problem; ***“What are the effects of using animated films in the Environmental Education Course on prospective teachers' behavior towards environmental problems and their attitude towards solid waste and recycling?”***

Based on this main research problem the sub-research problems can be stated as follows:

1. What is the prospective teachers' behavior like towards environmental problems?
2. What is the prospective teachers' attitude like towards solid waste and recycling?
3. Is there a significant elation ship between the prospective teachers' behavior and attitude towards environmental problems and the solid waste and recycling?

2. Method

2.1. Research Design

In the research, one-group pre-test and post-test experimental design, one of the quantitative research models, was utilized (Fraenkel, Wallen, & Hyun, 2012). This design, which aims to analyze the behavior of a single group instead of comparing multiple groups, is an effective way to influence a specified variable and to test hypotheses about cause-effect relationships (Creswell, 2012).

2.2. Participants

The institution of the participants was selected through convenience sampling methods in the study. In this sampling, the researcher selects individuals or groups that are easy to access (Fraenkel, Wallen, & Hyun, 2012). In line with the purpose of the research, criterion sampling method was adopted while determining the study group. The criterion was to take the environmental education course. In this regard, the research was carried out with students teachers who took environmental education course in the 2018-2019 academic year in Classroom Teaching Department and the Department of Social Sciences Teaching in the Faculty of Education of a state university in Turkey. Accordingly, 60 students from the Classroom Teaching Department and 70 students from the Department of Social Sciences Teaching participated in the study. Demographic information of the study group is given in Table 1.

Table 1. *Demographic information of the study group*

Department	Female (n)	Male (n)	Total (n)
Social Sciences Teaching	35	25	60
Classroom Teaching	57	13	70
Total	92	38	130

2.3. Data Collection Tools

In the research, two scales were used as data collection tools.

2.3.1. Environmental problems behavior scale

“Environmental Problems Behavior Scale” is a three-point Likert-type scale with six factors and 40 items which was developed for prospective teachers. Cronbach Alpha reliability coefficient of the scale was calculated as 0.85 (Güven & Aydoğdu, 2012). In order to use the scale in the research, necessary written permission was obtained from the authors.

2.3.2. Solid waste and recycling attitude scale

“Solid Waste and Recycling Attitude Scale” is a five-point Likert-type scale with three factors and 33 items which was developed for prospective teachers. Cronbach Alpha reliability coefficients for all factors of the scale were found to be above 0.85 (Karatekin, 2013). The necessary written permission was obtained from the author to use the scale.

2.4. Intervention

Before starting the research, first, a detailed literature review related to environmental films was conducted. It was decided to use the movie Wall-E, which was found didactic and interesting for the participant students.

The Wall-E movie is a science fiction film that has received the Academy Award for best animated feature film in 2009. The film shows how the utopia of the world emerged when people left and forgot the Earth after excessive environmental pollution. Wall-E portrays people as factors that cause environmental disasters. Therefore, in the film, people’s environmental damage and consumption frenzy were criticized. The film addressed the environmental damage caused by industrialization, excessive consumption, and wasting natural resources (Madureira, 2012; Turhan, 2017). The film focuses on extreme capitalism, the destructive cycle of mass production and consumption, and eventually environmental collapse and environmental apocalypse. The film makes a bold warning to society in the framework of this capitalism and destruction, and calls for protection of our environment before it is too late (Anderson, 2012; Bose, 2017; Chaudhary, 2019). In the film, the subjects are covered within the framework of themes such as environmental awareness, environmental insensitivity, environmental pollution, waste, unconscious consumption (Göktepe Duran, 2019). For this reason, it was decided to get prospective teachers to watch the film within the scope of environmental education course in terms of environmental problems, human behavior and attitudes towards environmental problems and waste.

The scales were administered prospective teachers as a pre-test in their Environmental Education course. Then, they were asked to watch the movie Wall-E in a period of three weeks. While watching the film, the prospective teachers were reminded to pay attention to the following points:

- Environmental concepts in the film,
- Environmental problems in the film,
- Causes of environmental problems in the film,
- The role of people in environmental problems,
- Drawing a conclusion from the film about environmental problems,
- Drawing conclusions from the film about solid waste and recycling.

The scales were re-administered as the post-test four weeks later the pre-test.

2.5. Data Analysis

In the analysis of the data obtained in the research, items with negative statement were reverse coded firstly. Then, the data were analyzed via Statistical Package for the Social Sciences (SPSS) 22.

Before deciding the tests to analyze data, it was examined whether the data showed a normal distribution or not. For this purpose, pre-tests and post-tests were analyzed through Kolmogorov-Smirnov test. As a result of the analysis, it was seen that p value for all tests was above .05 and it was determined that the data showed normal distribution. Accordingly, it was decided to use parametric tests for the analysis (Pallant, 2007).

In the study, the data were analyzed through paired samples t-test in order to examine the effect of Wall-E film on the prospective teachers' behavior towards environmental problems and attitudes towards solid waste and recycling. Simple linear regression analysis was conducted to examine the relationship between prospective teachers' behavior towards environmental problems and attitude towards solid waste and recycling.

3. Findings

3.1. Findings Regarding Behavior Towards Environmental Problems

In the study, paired samples t test was performed on pre-test and post-test data in order to examine the effect of Wall-E film on the prospective teachers' behaviors towards environmental problems. The findings are given in Table 2.

Table 2. Paired samples t-test results regarding behaviors towards environmental problems

Score	Groups	n	\bar{x}	t	df	p
Behavior score towards environmental problems	pre-test	130	96.95	-18.077	129	.00
	post-test	130	99.55			

When Table 2 is examined, it is seen that the prospective teachers' mean behavior score towards environmental problems is 96.95 before watching the Wall-E movie, whereas it is 99.55 after watching the movie. It has been determined that the prospective teachers' mean behavior score towards environmental problems has increased after watching the film. This increase was found statistically significant ($p < .05$).

3.2. Findings Regarding Attitude Towards Solid Waste and Recycling

In the study, paired samples t test was performed on pre-test and post-test data in order to examine the effect of Wall-E film on the prospective teachers' attitudes towards solid waste and recycling. The findings are given in Table 3.

Table 3. Paired samples t test results regarding attitude towards solid waste and recycling

Score	Groups	n	\bar{x}	t	df	p
Attitude score towards solid waste and recycling	pre-test	130	130.47	-4.731	129	.00
	post-test	130	132.06			

When Table 3 is examined, it is seen that the prospective teachers' mean attitude score towards solid waste and recycling is 130.47 before watching the Wall-E movie, while it is 132.06 after watching the movie. It was determined that the prospective teachers' mean attitude score towards solid waste and recycling has increased after watching the film. This increase was found statistically significant ($p < .05$).

3.3. Findings Regarding the Relationship Between Behavior and Attitude

In the research, simple linear regression analysis was conducted to examine whether the prospective teachers' attitude towards solid waste and recycling are a significant predictor of their behavior towards environmental problems. The findings are given in Table 4.

Table 4. *Regression analysis results related to the relationship between behavior and attitude*

Variable	B	Std. Error	β	t	p
Constant	28.870	2.002	-	14.417	.00
Attitude towards solid waste and recycling	.535	.015	0.953	35.494	.00

R=0.953
 $R^2=0.908$
 $F_{(1-130)}=1259.843$
 $p=.00$

As a result of the simple linear regression analysis, a significant relationship was found between the two variables ($R=0.953$; $R^2=0.908$). It was determined that the attitude towards solid waste and recycling is a significant predictor of the prospective teachers' behavior towards environmental problems ($F_{(1-130)}=1259.843$; $p < .05$). When the value of R^2 was examined, it was seen that approximately 91% of the change in the prospective teachers' behavior towards environmental problems can be explained by the attitude towards solid waste and recycling. The significance test for attitude also showed that this variable is a significant predictor. According to the regression analysis result, the regression equation is given below.

Behavior towards environmental problems = (0.535 x Attitude towards solid waste and recycling) + 28.870

4. Conclusion and Discussion

Animated films can be used in Science and Environmental Education. The environment-themed animation films can raise individuals' environmental consciousness, awareness and attitude (Göktepe Duran, 2019; Skanavis & Sakellari, 2006). When the literature on prospective teachers was examined, it was seen that the frequency of prospective teachers to follow environmental programs on television or radio is low, whereas they stated that television and radio are the sources that will contribute most to people's awareness of the environment (Erol, 2005). In this context, it was aimed to investigate the effect of Wall-E film on the prospective teachers' behavior towards environmental problems and attitude towards solid waste and recycling within the framework of environmental education.

In the research, it was found that the prospective teachers' mean behavior score towards environmental problems increased after watching the Wall-E movie. This increase was found statistically significant ($p < .05$). In the study, it was found that the prospective teachers' mean attitude score towards solid waste and recycling increased after watching the Wall-E movie. This increase was also found statistically significant ($p < .05$). As a result, the research shows

that environment-related films can be used in environmental education. In a study conducted by Benzer, Güven Yıldırım and Önder (2019), it was found that educational films did not make a significant difference on the attitudes of prospective classroom teachers towards environmental problems. Nevertheless, it was revealed that educational films had a significant positive effect on the prospective teachers' awareness of environmental issues. In another study, it was realized that the environmental perceptions and behavioral reactions of the students who watched a documentary film *emphasizing* the natural environment were positively affected (Janpol & Dilts, 2016). In a study conducted by Liu (2018), it was revealed that the university students who received environmental education through documentaries developed more positive attitudes towards the environment. (Leeds et al., 2017).

As a result of the research, it was also determined that the attitude towards solid waste and recycling is a significant predictor of prospective teachers' behavior towards environmental problems. It was also revealed that approximately 91% of the change in the prospective teachers' behavior towards environmental problems can be explained by the attitude towards solid waste and recycling. This relationship between behavior and attitude probably results from the fact that both variables are components of environmental literacy. According to the literature, attitude and behavior are among the sub-dimensions of environmental literacy (Akıllı & Genç, 2015; Hollweg et al., 2011; McBeth & Volk, 2010), and environmental attitude is expressed as a strong predictor of ecological behavior (Kaiser, Wölfing, & Fuhrer, 1999).

5. Recommendations

The animated films are found effective in the process of Environmental Education for teacher education. Therefore, the effects of integrating films in teacher education can be investigated by designing similar studies in an extended way for different levels of formal education.

In the research, it was also determined that using films in Environmental Education affected the prospective teachers' behavior towards environmental problems and their attitude towards solid waste and recycling in a positive way. In other studies, the effects of using films on different variables related to environment can also be scrutinized.

As a limitation of the research, only one environment-related animated film was provided for the prospective teachers in a limited period of time. Within this framework, films with a longer duration with different environmental themes can be offered, and their effects can be investigated in a wider perspective.

6. Conflict of Interest

The authors declare that there is no conflict of interest.

7. Ethics Committee Approval

The authors confirm that the study does not need ethics committee approval according to the research integrity rules in their country.

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