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AN EVALUATION OF THE CREATIVE DRAMA METHOD USED IN THIRD- AND FOURTH- GRADE CLASSES ON ENVIRONMENTAL TOPICS BY TEACHING METHOD AND TEACHER EFFECT

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Abstract. *This study deals with the effects of applying drama method in the teaching of environmental issues in science courses on the achievement, retention of learning, student interest and attitudes of primary school students and also whether these effects are dependent on teachers. The study was designed on the basis of the Solomon Four-Group Design. The study is a two group pre- and post-test experiment in two parts, each part having an experimental and control group. The courses were delivered to both groups by the researcher in the first part and drama teacher in the second. The experimental groups received 144 hours of teaching for six weeks, during which a drama course outline was employed, while in the control groups the courses followed the course outlines covered in the curricula. The data were collected using the Environmental Achievement Test, Interest Scale towards the Environment and Attitude Scale towards Science. The findings suggest that the teachers had some effects on the methods, but the significant differences in scores were due to the drama method, which was found to improve the achievement of the third-grade students and the interest towards environment and attitudes towards science of both third- and fourth-grade students.*

Keywords: *environmental education, creative drama method, science education, teacher effect*

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Introduction

Environmental problems have increased in recent years, suggesting that information on the environment is incomplete (Erten, 2006; NEETF, 2005; Yılmaz, 2006) and human actions are not environmentally benign. Therefore, it is important to improve environmental information and activities. Thus, an environmental education program should be developed to teach people about the effects of their acts on the environment (WCED, 1987) and positively change these acts (Kıyıcı, 2009; Yıldırım, 2015). Environmental issues are a very important subject area for students because of their significant effect on their present and future lives. However, environmental education is considered only in science courses. Instead, it should be an independent part of educational programs (Chepesiuk, 2007) taught using active teaching methods, not through information transmission (Gautreau & Binns, 2012; Leeming, 1997).

Studies suggest that, in Turkey environmental education is not considered a priority field, that the curricula are not sufficient to improve either environmental sensitivity or environmental awareness, and that students' information about interest and sensitivity towards the environment are not at a desired level (Erten, 2006; Yılmaz, 2006). Alp et. al. (2006) argue that environmental issues are not much more emphasized in Turkish education programs than other subjects and that the environmental education offered is not action-oriented. However, it has been argued that environmental education should be in an applied form and should focus the students' immediate environment, suggesting that otherwise it would not be meaningful for students (Sobel, 1996, cited in Louv, 2010). Furthermore, the class hours devoted to environmental education should be extended and teachers should pay greater attention to environmental education.

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Given that environmental sensitivity begins to develop from the years 9-10, the period of primary education is very important for environmental education (Kıyıcı, 2009). However, primary school students are still at the age of play (Davis, 1998; Willson, 1996) and therefore instructional activities for them cannot be separated from games. In this period, playing games is one of the most important needs of children and they could acquire many significant skills through games. It is well known that, for effective teaching, relevant methods and techniques should be applied to encourage activity among students at the age of play (MEB, 2018) and that art activities improve students' achievement (Louv, 2010). When students actively participate in their courses, their knowledge becomes permanent and meaningful. Therefore, more student-centred activities should take place in the teaching process (MEB, 2018). It is important to organize learning environments in which students will actively learn environmental issues through doing and experiencing in primary school (Tilbury, 1994). Environmental education addresses students' cognitive, affective, and psychomotor learning areas (Erten, 2006). Creative drama is an effective method of improving cognitive, affective, and psychomotor skills in environmental education (Alrutz, 2004; Arieli, 2007; Bailey, 1994; David et al., 2013; Kaaland-Wells, 1994; McNaughton, 2004; Ødegaard, 2003; Vargas, 1995). When students learn environmental issues through drama, they may develop a connection between daily life and the topics of environmental education and their learning will be longer-lasting, being based on using their own observation and experience through games and improvisations. Such learning creates an interest in environmental issues in students and improves their achievement (Forgasz, 2013). It also improves their attitudes towards the environment. The creative drama method makes learning both enjoyable and concrete and therefore makes the topic much more interesting.

The creative drama method has been used in contemporary teaching at almost all levels of education and at every grade level with desirable results on student achievement, student interest, and attitudes in different courses and subject matters (Abed, 2016; Arieli, 2007; Bailey, 1994; David et al., 2013; Fleming, Merrel ve Tymms, 2004, Greenwood, 2001; Kaaland-Wells, 1994; McNaughton, 2004; Vargas, 1995). However, there is still a need to analyse it from different perspectives. İn particular, teacher effects are significant in various teaching methods and such effects should be determined for the creative drama method (Kaba & Özdemir, 2012; Özdemir & Çıkla, 2005). It has been demonstrated in some studies that the realization of the intended achievements in creative drama mostly depends on the attitude and character of drama teachers (Kaba & Özdemir, 2012; Özdemir & Çıkla, 2005). It is known that teachers' inadequacy in the drama method, their inability to plan the process, and their negative beliefs about the method adversely affect the implementation. Isenberg and Jalango stated that teachers have a strong impact on drama studies with children (cited in Köksal, 2012). Moreover, the creative drama method is highly influenced by teacher characteristics (Kaba & Özdemir, 2012; Özdemir & Çıkla, 2005). More specifically, its success is highly dependent on teachers' perspectives on the method, their desire to employ it, and their competency in using it. Teachers should have information about the drama methods and techniques. Most drama teachers have an insufficient knowledgebase (Adıgüzel, 2002). If the teachers do not have the necessary knowledge and skills for creative drama, the effects of the drama activities will not reach the desired level. Teachers should therefore improve their knowledge and skills in creative drama (Köksal, 2012), and the creative drama method should be employed by teachers who know it well. This study is original in that it included a sample of third-grade students and dealt with the teacher effect of the creative drama method.

Research Aim and Research Questions

Besides the methodology, based on the importance of teacher effect on experimental studies and use of a new discipline; creative drama as a methodology, the aim of this research is to reveal the effects of using the creative drama method in teaching environmental problems on the science achievement, attitudes towards science, environmental interest scores and their retention of primary school third and fourth grade students. Another important aim of the research is to reveal whether the practitioner has an effect on the results obtained after the experimental procedure. These aims were operationalized through the following research questions: 1) What is the effect of applying the creative drama method in teaching environmental issues on the achievement, science attitude, retention, and environmental interest scores of the third- and fourth-grade students in the experimental group? 2) Do the scores of the experimental group students differ according to whether the researcher or the teacher is in the classroom?"

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Research Methodology

General Background

In this study, an experimental method was used. The study was based on the Solomon Four-Group Research Design. The research consisted of a combination of two pre-test-post-test control groups. The model was developed to test the effect of the teachers implementing the drama method on the experimental process (Figure 2).

Figure 1
The Model Employed in the Study

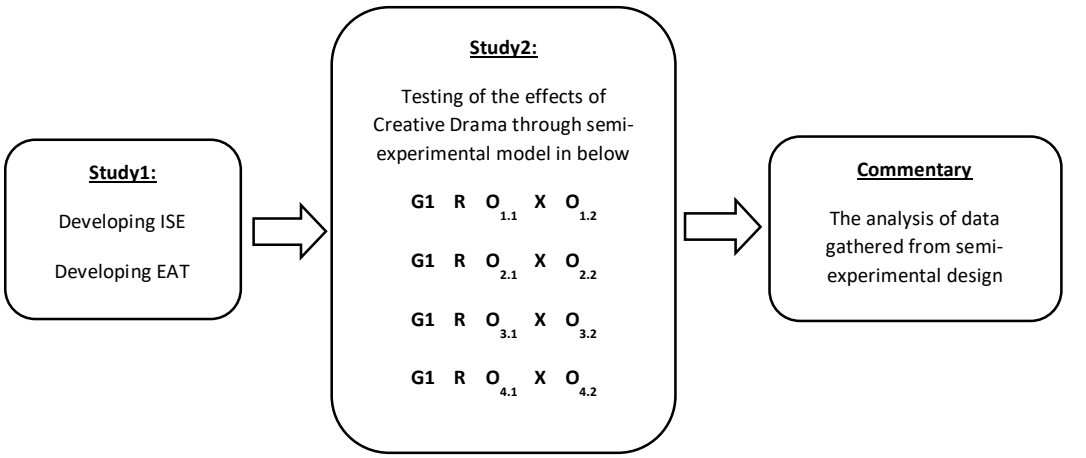
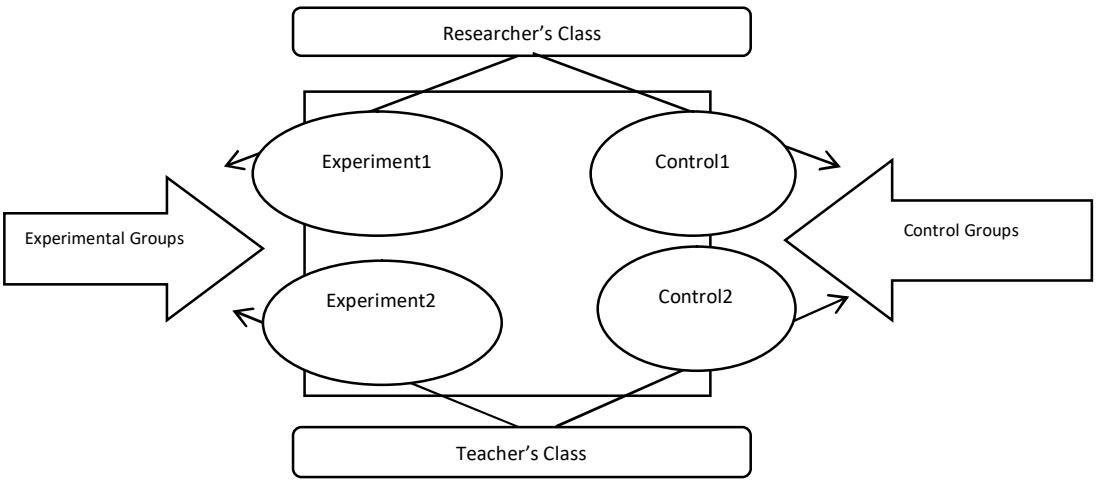


Figure 2
Groups Taught by the Researcher and Teacher



As can be seen in Figure 2, the courses for the Experimental and Control groups were delivered by the researcher-classroom teacher, and those for the Experiment2 and Control2 groups by a drama teacher. The courses were taught by different teachers to test the effect of the teachers on the experiment and the students, if any. The goal here was to test the effect of the method on the experimental process and the students without the influence the teacher makes. Therefore, the teacher effect was controlled. Thus, it can be said that the result in the experiment emerged independently from the teacher's influence. To clarify whether the differences in results were the effect

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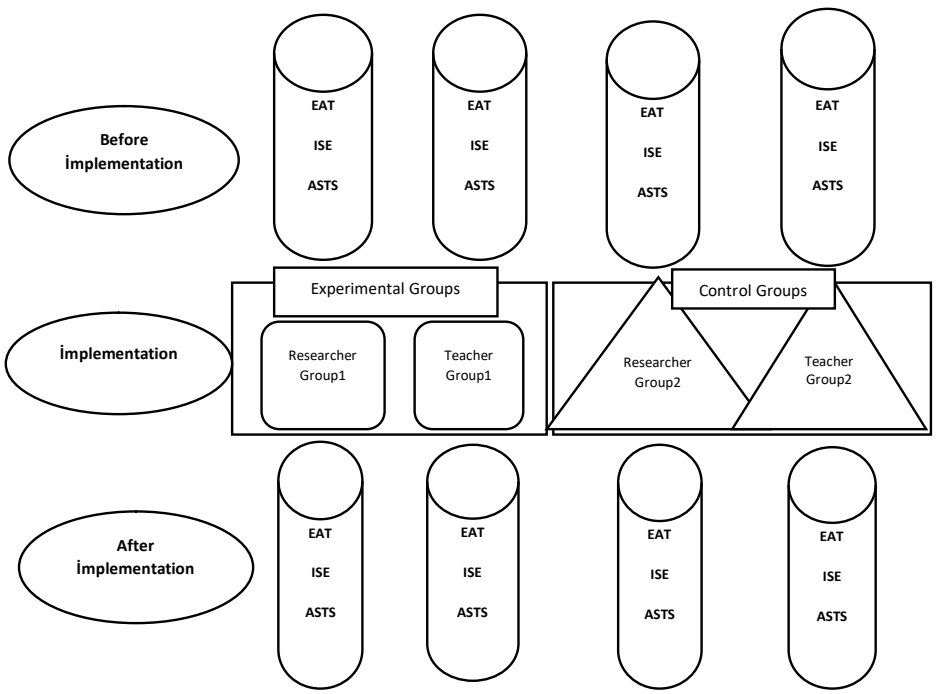
of the teacher, the method employed, or both the teacher and the method. Since one of the teachers who taught the courses was also the researcher, it was thought that bias of the independent variable might affect the research. It may also be that bias in the independent variable may affect the study because one of the teachers was also the researcher. Thus, the difference of the teacher could be clearly controlled. The difficulty of the model is that any study carried out with four groups simultaneously requires a significant amount of energy and effort from the researcher (Fraenkel & Wallen, 1996). Another difficulty specific to this research is that both teachers needed to be an expert in drama. Table 1 summarizes the experimental design of the study.

Table 1
Experimental Design of the Study

Group Label	Pre-test	Activity	Practitioner	Post-test	Retention Test
$Experiment_1$ 3E-4B	EAT,ISE,ASTS $O_{1.1}$	Drama Method	Researcher	EAT,ISE,ASTS $O_{1.2}$	EAT $O_{1.3}$
$Control_1$ 3I-4H	EAT,ISE,ASTS $O_{2.1}$	Non	Researcher	EAT,ISE,ASTS $O_{2.2}$	EAT $O_{2.3}$
$Experiment_2$ 3C-4E	EAT,ISE,ASTS $O_{3.1}$	Drama Method	Teacher	EAT,ISE,ASTS $O_{3.2}$	EAT $O_{3.3}$
$Control_2$ 3G-4G	EAT,ISE,ASTS $O_{4.1}$	Non	Teacher	EAT, SE,ASTS $O_{4.2}$	EAT $O_{4.3}$

Figure 3
The Order of the Data Collection Tools



The courses given to the $Experiment_1$ and $Experiment_2$ groups were delivered using the drama course outlines and those to Control1 and Control2 groups using the course outlines given in the education program. The administration of the data collection tools is given in Figure 3.

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Participants

The participants were third- and fourth-grade primary school students attending a public school in the Mamak District of Ankara during the 2015-2016 school year. The participants were selected through random sampling (Balcı, 2005). More specifically, 231 third- and fourth-grade students who did not take a drama course participated in the study. There were four third-grade (3E, 3C, 3G, and 3I) and four fourth-grade (4E, 4B, 4G, and 4H) branches. Given that the students were similar in terms of age and socio-economic status, there was no special process to match the students. The experiment and control groups were selected randomly. Therefore, in the study a semi-experimental design was employed. Table 2 shows the distribution of the participants.

Table 2
Distribution of the Participants

Groups	Grades	Female	Male	*N*	Total	Total
Experiment 1	3-E	14	9	23	43	89
	4-B	9	11	20		
Experiment 2	3-C	18	5	23	46	
	4-E	12	11	23		
Control 1	3-I	15	15	30	72	142
	4-H	28	14	42		
Control 2	3-G	19	14	33	70	
	4-G	20	17	37		
Total						231

The quantitative data of the study were collected through the administration of the following instruments: Environmental Achievement Test (EAT), Interest Scale towards the Environment (ISE), and Attitude Scale towards Science (ASTS; Geban et. al., 1994). All these instruments were employed as both pre- and post-test. In addition, the EAT was administered to all groups five weeks after the study as a retention test.

Instrument and Procedures

Environmental Achievement Test (EAT): The EAT has versions for third- and fourth- grade students. It was developed to measure the current knowledge and retention of students. It was used as pre-test, post-test, and retention test in the study. The items of the test were based on related studies and textbooks, and then revised. On the basis of expert feedback, the test was used in a pilot study with a sample of 489 third- and fourth-grade students. The mean difficulties for the third-grade and fourth-grade versions were found to be 0.64 and 0.54, respectively. Item discrimination was found to range between 0.16 and 0.68. In the interpretation of the discrimination of items, only those items with a discrimination greater than 0.30 and those with a discrimination of 0.20-0.29 were included in the test. The others were excluded (Atılgan et al., 2009). For the third-grade version, the KR-20 internal consistency coefficient was found to be 0.773. As a result, item 2 was excluded, resulting in a 20-item test. For the fourth-grade version, item 11 was excluded, yielding a KR-20 internal consistency of 0.827. It consisted of 24 items.

Interest Scale towards The Environment (ISE): The Interest Scale towards the Environment (ISE) was developed by the author. At the beginning of the development of the scale, a group of 40 students were asked to write essays on the environment which then were analysed using content analysis. Then the science curricula of the third- and fourth- grades and those gains on environment were reviewed. Next the related studies (Erdogan & Marcinkowski, 2015; Maskan et al., 2005) were reviewed before the draft was developed. To test its understandability and duration, a study was carried out on a sample of 50 students. On the basis of expert feedback and the results of the study, a second draft version with 50 items was constructed. A pilot study was carried out on a sample of 545 third- and fourth-grade students. Exploratory factor analysis was carried out to determine the factor structure and validity of the scale, revealing that it had a single factor. In the scale development process, the criterion that the factor load should be at least 0.45 was used (Büyüköztürk, 2012). The test includes 11 items on 5-point Likert scale. Table 4 gives the variance values, factor loads, and item-total correlations.

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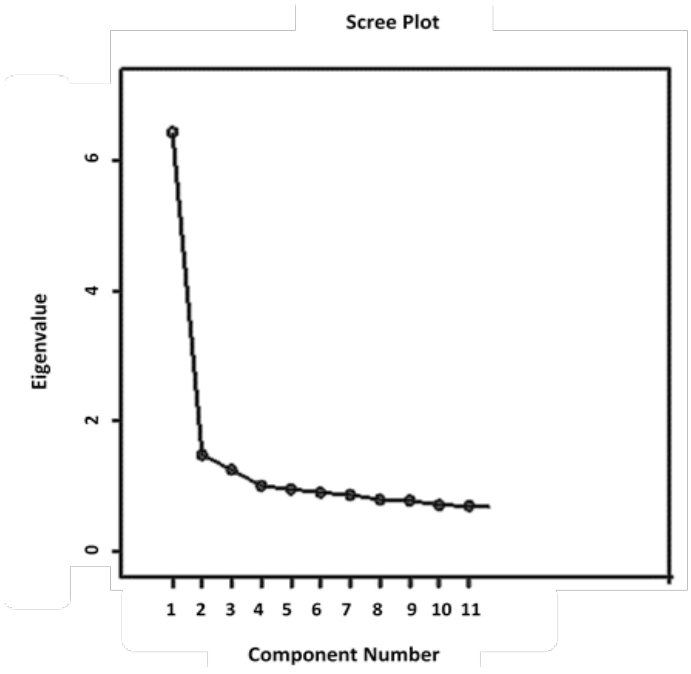
Table 3
Variance Accounted for According to Exploratory Factor Analysis

Factor	Eigenvalues				
	Total	Variance accounted %	Cumulative Variance %	Factor load	Item Total correlation
1	6.43	29.21	29.21	.505	.420
2	1.49	6.76	35.97	.528	.404
3	1.26	5.72	41.69	.505	.426
4	1.01	4.61	46.30	.553	.526
5	0.96	4.37	50.67	.548	.461
6	0.91	4.14	54.81	.483	.417
7	0.87	3.97	58.78	.539	.494
8	0.80	3.65	62.43	.559	.500
9	0.79	3.59	66.02	.555	.499
10	0.72	3.27	69.29	.511	.460
11	0.71	3.21	72.50	.491	.489

Kaiser-Meyer-Olkin sampling adequacy: .920
Chi-square value of the Bartlett's Test of Sphericity = 2860.930, *SD*=231, $p = .001$

The Kaiser-Meyer-Olkin statistic is .920; and a value greater than .50 indicates that the sample is adequate (Kalaycı, 2010). The Bartlett's Test of Sphericity was used to determine whether the data were appropriate for factor analysis. The results showed that the data were proper for the analysis ($p < .05$). It was also found that the factor loads varied between .483 and .559 and that the item-total correlations ranged between .404 and .526. The Cronbach's α for the scale was .877, indicating a high level of reliability. The eigenvalue for the single factor was 6.43, accounting for 29% of the variance. Figure 4 shows the eigenvalues.

Figure 4
Graph of Factor Eigenvalues



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Attitude Scale towards Science (ASTS): This scale, developed by Geban et al. (1994), analyses the student attitudes towards science courses. The scale has 15 items and its value of Cronbach's α was found to be .83 in this study. It was applied as a pre- and a post-test in this study.

Creative Drama Course Outlines: The author developed 14 drama course outlines. These outlines were used in the courses given to the experiment groups. The outlines were developed on the basis of student interests, the developmental characteristics of children, the structure of the method, teachers' guidebooks, annual lesson plans, and various textbooks (Davis & McGregor, 2011; Üstündağ, 2012). The plans were examined by five classroom teachers and three creative drama teachers at the school and modified on the basis of their feedback. The course outlines included three sections: preparation-warming, improvisation, and evaluation. During the first section, the students prepared for the course. In the improvisation section, the roles were distributed to the students prepared for their roles. In evaluation, the students briefly talked about the implementation. A sample course outline is given in the Annex 1.

Pre-İmplementation Activities: The researcher participated in drama teacher training courses before the study to learn about the method. The course plans were examined by five classroom teachers and three creative drama teachers at the school. The plan was employed in a course at the fourth-grade level. The experimental subjects received six hours of a pre-implementation course designed to test the experiments in terms of aims and duration. The findings from these courses were used to improve the course outlines. Before implementation, the researcher and teacher gave information about the creative drama method to the students in the experimental group. They were also informed about what they were expected to do during the implementation and activities.

Implementation: After receiving permission from the Ankara National Education Directorate and Governorship, the study was initiated during the spring semester of the 2015- 2016 school year. Although the study began for both groups simultaneously, the experimental section lasted longer. More specifically, the implementation for the experimental groups lasted six weeks, and a total of 36 hours, 6 per week, were devoted to the study. The total of course hours for the control group was 144. It was limited to 12 hours or four weeks, as covered in the science education program. The school's multi-purpose hall was used as a study area, which was redesigned to facilitate the drama activities. However, in some cases the creative drama method was employed in crowded classes and small areas. Therefore, in the first two sessions classroom rules to guide the student behaviours were identified and hung on the wall of the classroom for reference whenever necessary. In this way, all students were made active participants in the process and became more collaborative (Levey, 2005). At all stages, especially in the most important stage of creative drama, namely the improvisation phase, every student in the class was given a role. They were also made active participants of the drama activities.

Treatment Verification: The researcher observed both the experimental and control groups during implementation in order to monitor the degree of application of the experimental protocols. The observation form created by the researcher was used to ensure that the drama lesson plans were applied only in the experimental groups. The observation data showed that the drama method was not applied to in the control groups, nor was the traditional method employed in the experimental groups. In addition, the observation form was important for comparing the atmosphere in the classrooms. On the observation form, there were 30 items on a 4-point Likert scale: "good, intermediate, bad, not implemented". For the observation form the observation form used by Yılmaz (2007) in the PhD Thesis entitled Finding Anchoring Analogies to Help Student's Misconceptions in Physics was adopted. The Observation Form is given in the Annex 2.

Data Analysis

The quantitative data were statistically analysed with the significance level set at .05. The following statistical methods were applied in this study: SPSS 22 was used.

1. The Kolmogorov-Smirnov and Shapiro-Wilks normality tests were used to examine the distribution of the data obtained in the study and to test whether the data showed normal distributions.
2. Independent- samples t-tests and the Mann- Whitney U test were used for pairwise comparison of classes EAT, ISE, ASTS and ASTS Retention scores.
3. MANCOVA was used to compare the EAT post-test scores of the experimental and control groups.

*Validity and Reliability of the Research***:** The factors that might affect the validity, reliability, and results of the research were all determined and controlled. The study group characteristics that might threaten the internal validity of the study were described in detail, and it was sought to control the different characteristics of the study

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groups as independent variables. The participants were randomly assigned to the groups. The matching of the groups in terms of socio-economic condition and other variables was made with maximum care. The data collection tools were administered in a safe and comfortable environment; each of the scales was administered on a different day; and the data analysis was carried out in a proper environment. The fact that both the researcher and a drama teacher taught the courses is important for determining any teacher effect observable in the research. The research model, study group, data collection tools, data analysis, and interpretation process were all explained in detail to establish the external validity of the study.

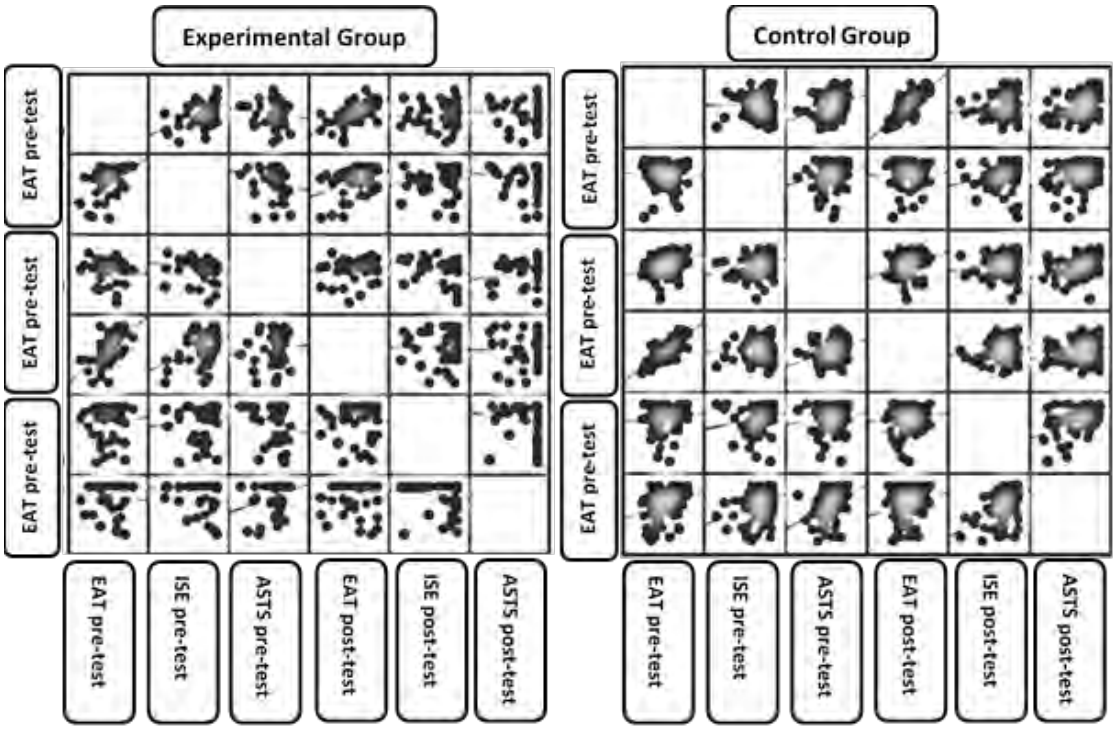
Research Results

Effects of the Method

The normality test was performed to test the assumption of univariate normality, and the skew values were examined. In order to analyse multivariate normality, scatter- plots were investigated. The relationships between the control variables and dependent variables were analysed using the Pearson correlation coefficient. In addition, the relationships among the dependent variables and those between the dependent variables and others were analysed using scatter-plots. To examine the equality of the regression lines, they were analysed by considering the significance of EAT pre-test scores on the "Test of Between Subjects" table.

Third-Grade Students: Before the MANCOVA analysis the normality of the distributions of the control variables (EAT, ISE, and ASTS pre-test) and dependent variables (EAT, ISE, and ASTS post-test) on the groups or independent variables was analysed. The Shapiro- Wilks and Kolmogorov-Smirnov tests were used to analyse the skewness and kurtosis values. The analysis showed that the scores were normally distributed. As stated earlier, multivariate normality was diagrammed as shown in Figure 5.

Figure 5
Distribution Chart of the Control and Dependent Variables for the Third- Grade Students



As can be seen in Figure 5, the control variables and dependent variables show a linear correlation. The distributions are expected to be elliptical, and the figures above seem to be nearly elliptical. When the Pearson

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correlation coefficient of the control and dependent variables of third-year students were examined to analyse the relationship between the common and dependent variables, it was found that all variables showed a significant correlation. In addition, ISE pre-test scores were found to have low correlations with the ASTS pre-test and EAT post-test scores. The ASTS pre-test scores had low correlations with EAT post-test scores, and similarly, EAT post-test scores had low correlations with ISE post-test scores *(r* < .30). The homogeneity of the variance-covariance matrices of the scores of the dependent variables was tested. The results of the Box's M test showed that the variance-covariance matrices were not homogeneous ($p < .05$). According to the results of Levene's test, conducted to test the equality of variances the variances of the EAT post-test and ISE post-test scores were found not to be equal ($p < .05$), while that of the ASTS post-test scores was found to be equal ($p > .05$). The assumption of the equality of the slopes of the regression lines was tested, and it was found that the common effects of the dependent variables by groups were significant ($p < .05$). In other words, the slopes of the regression lines are not equal. According to the results of the analysis, the descriptive statistics of the dependent variables are given in Table 4.

Table 4
Mean and Adjusted Average Values of Dependent Variables by Groups

	Group	Mean	**Corrected mean**	*N*
EAT post-test	Experimental group	12.02	12.26	45
	Control group	11.30	11.13	63
ISE post-test	Experimental group	104.67	105.13	45
	Control group	99.48	99.14	63
ASTS post-test	Experimental group	71.42	71.95	45
	Control group	65.95	65.58	63

Table 4 shows the EAT, ISE, and ASTS post-test score averages and corrected averages of 108 students in the experimental and control groups. The mean scores of the students in the experimental group were higher on all three tests. In terms of common effects, the differences in the post-test scores on the EAT [$F_{(4\text{-}103)} = 4.66$, $p < .05$], ISE [$F_{(4\text{-}103)} = 12.12$, $p < .05$], and ASTS [$F_{(4\text{-}103)} = 31.64$, $p < .05$] by group were significant. On the basis of the partial η^2 values, it is seen that the variance accounted for by the post-test scores of the EAT is 4%; by the ISE, 11%; and by the ASTS, 24%. The Wilks' Lambda values, which demonstrate the significance of the effects of common variables and group variables, are given in Table 5.

Table 5
Wilks' Lambda values on Common Variables and Group Variables

	Wilks' Lambda	*F*	*p*	η_p^2	**Observed power**
EAT pre-test	.71	13.83	.000	.29	1.00
ISE pre-test	.87	4.89	.003	.13	.90
ASTS pre-test	.69	15.31	.000	.31	1.00
Group	.74	11.90	.000	.26	1.00

As can be seen in Table 5, the pre-test scores of the EAT, ISE, and ASTS have basic effects on the group variables ($p < .01$). Partial η^2 values show that the total variance of the dependent variables accounted for by the EAT pre-test scores is 29%; by the ISE pre-test scores, 13%; and by the ASTS pre-test scores, 31%, while the group variable accounts for 26%. The observed power values for whether the null hypothesis is incorrectly rejected are .90 and higher, indicating that the null hypothesis was correctly rejected.

The significance of the difference between the averages was examined by group. It was found that the post-test scores on the EAT, ISE, and ASTS differ significantly by group ($p < .05$). The significance of the difference between the adjusted mean scores was found to be significant ($p < .05$). Accordingly, the EAT, ISE, and ASTS post-test mean

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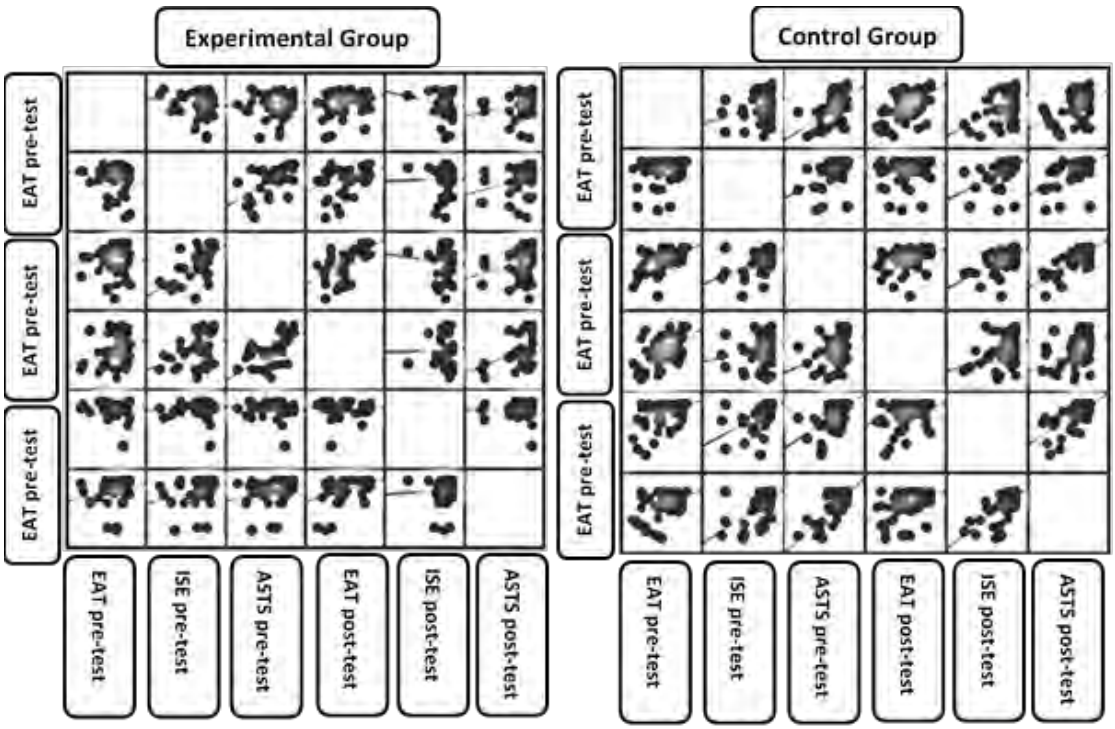
scores of the students in the experimental group were higher than those of the students in the control group. This shows that the experimental procedure is effective.

Fourth-grade Students: Before the MANCOVA analysis, the normality of the distribution of the control variables (EAT, ISE, and ASTS pre-test) and dependent variables (EAT, ISE, and ASTS post-test) on the groups or independent variables was analysed. The results of the normality tests (i.e., Shapiro-Wilks and Kolmogorov-Smirnov) indicated that the scores had a normal distribution without any significant deviation (Field, 2005; Kalaycı, 2010; Tabachnick & Fidel, 2001). The scatter plot drawings for multivariate normality analysis were developed. These figures are given in Figure 6.

Figure 6
Distribution Chart of the Control and Dependent Variables for the Fourth- Grade Students



As can be seen in Figure 6, the relationship between control variables and dependent variables is linear. The distributions are expected to be elliptical, and the analysis showed that the distributions are indeed close to the elliptical. The Pearson correlation coefficients for the control and dependent variables of the fourth- grade students were calculated to investigate the relationship between common and dependent variables, showing that the EAT pre-test scores have significant correlations with the ASTS pre-test, EAT post-test and ASTS post-test scores ($p < .05$). In addition, the ISE pre-test scores are significantly correlated with the ASTS pre-test, ISE post-test, and ASTS post-test scores ($p < .05$). Furthermore, the EAT post-test scores are significantly correlated with the ASTS post-test scores ($p < .05$). However, the EAT pre-test scores have no significant correlations with the ISE pre-test and post-test scores ($p > .05$). In addition, the ISE pre-test and post-test scores are not significantly correlated ($p > .05$). Furthermore, the EAT post-test scores have no significant correlation with the ISE post-test scores ($p > .05$).

The homogeneity of the variance-covariance matrices of scores related to dependent variables was tested. The covariance matrices are not homogeneous according to Box's M test ($p < .05$). According to the results of Levene's test, conducted to test the equivalence of variances, the variances of the EAT, ISE and ASTS post-test scores are not equal ($p < .05$). The assumption of the equality of the slopes of the regression lines was tested, showing that the common effects of the dependent variables were significant by group ($p < .05$). In other words, the slopes of the regression lines are not equal. The descriptive statistics of the dependent variables in the MANCOVA analysis are given in Table 6.

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Table 6
Mean and Adjusted Average Values of Dependent Variables by Group

	Group	Mean	Corrected mean	*N*
EAT pre-test	Experimental group	15.00	13.19	43
	Control group	12.68	13.67	79
ISE pre-test	Experimental group	104.81	104.01	43
	Control group	98.59	99.03	79
ASTS pre-test	Experimental group	71.53	69.75	43
	Control group	65.35	66.33	79

Table 6 shows the mean scores and corrected averages of the EAT, ISE, and ASTS post-test scores for 122 students in the experimental and control groups. Therefore, the EAT post-test scores do not vary significantly by group [$F_{(4\text{-}117)} = .36$, $p > .05$]. However, the post-test scores of the ISE [$F_{(4\text{-}103)} = 6.50$, $p < .05$] and ASTS [$F_{(4\text{-}103)} = 7.17$, $p < .05$] show significant variance by group. On the basis of the partial η^2 values, it can be stated that the post-test score of the EAT accounts for 0.3% of the variance; this figure is 5.3% for the ISE post-test and 5.8% for the ASTS post-test. As can be seen, the variance accounted for by the EAT post-test is very low. The Wilks' Lambda values, which test the significance of differences in common variables by group, are given in Table 7.

Table 7
Wilks' Lambda Values for Common Variables by Group

	Wilks' Lambda	*F*	*p*	η_p^2	Observed power
EAT pre-test	.65	20.26	.0001	.35	1.00
ISE pre-test	.93	3.01	.033	.07	.70
ASTS pre-test	.85	6.84	.000	.15	.97
Group	.92	3.29	.023	.08	.74

As can be seen in Table 7, the pre-test scores of the EAT, ISE, and ASTS show a main effect of group ($p < .05$). The partial η^2 values indicate that the total variance of the dependent variables accounted for is 35% for the EAT pre-test scores, 7% for the ISE pre-test scores, 15% for the ASTS pre-test scores, and 8% by group. The observed power values for whether the null hypothesis is incorrectly rejected were less than .90 for the ISE pre-test, but higher than .90 for the EAT pre-test and ASTS pre-test. Given that this value is .90 or greater, it indicates that the hypothesis of absence of effect is correctly rejected.

The significance of the difference between the mean scores was examined by group. It was found that the post-test scores of EAT did not significantly vary by group ($p > .05$). However, the post-test scores of the ISE and ASTS significantly differed based on groups ($p < .05$). A significant difference between the adjusted mean scores ($p < .05$) was found. Therefore, it can be argued that the ISE and ASTS post-test mean scores of the students in the experimental group were higher than the students' mean scores in the control group. Hence, this shows that the experimental procedure was effective.

The pre-test and post-test scores of the third- and fourth- grade students were compared. It was found that for the third- grade students the post-test scores of the EAT, ISE, and ASTS differ significantly in favour of the experimental group. For the fourth- grade students, the post-test scores of the ISE and ASTS differ significantly in favour of the experimental group. It may be stated that the use of the drama method in teaching environmental topics improved the academic achievement of the third- grade students and the student interest and attitudes of both third- and fourth- grade students.

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The Teacher Effect

The groups were then compared to answer the following research question: Do the scores of the experimental group students differ according to whether the researcher or the teacher is in the classroom? The teacher effect was analysed on the basis of the results of the EAT, ISE, and ASTS and on the results of the ASTS as a retention test by a comparison of the Experiment$_1$ and Experiment$_2$ groups whose lessons the researcher and the teacher led, respectively, for a significant in results. The t-test was used to analyse the significance of the differences of the gains in EAT scores of the Experiment$_1$ and Experiment$_2$ groups of third- grade students, while the U test was used to analyse the significance of the differences of the gains in EAT scores of the Experiment$_1$ and Experiment$_2$ groups of fourth- grade students. The results of the t-test and U test are given in Table 8.

Table 8
T-Test and U-Test Results for the Gain in EAT Scores of Third- and Fourth- Grade Students by Group (Experiment$_1$ and Experiment$_2$)

	Group	*N*	$\overline{X}$	*SD*	*df*	*t*	*p*
Third grade	Experiment$_1$	23	.65	2.29	44	−1.17	.248
	Experiment$_2$	23	1.52	2.78			
	Group	*N*	Mean Rank		Rank Sum	*U*	*p*
Fourth grade	Experiment$_1$	20	13.43		268.50	58.50	.0001
	Experiment$_2$	23	29.46		677.50		

As Table 8 shows, the gains in the scores of the third- grade students in the Experiment$_1$ and Experiment$_2$ groups did not differ significantly [$t_{(44)} = -1.17$, $p > .05$]. In other words, they obtained similar gains in scores. The experimental process similarly influenced the students of both groups. However, the gains in scores of the fourth-grade students in the Experiment$_1$ and Experiment$_2$ groups significantly differed ($U = 58.50$, $p < .05$). More specifically, on the basis of the mean ranks, the achievement of the students in Experiment$_2$ was higher. These findings indicate that there was no teacher effect for the third- grade students for either the experimental or the control group. However, this effect was observed for fourth- grade students. The reason for this finding can be stated as follows: Both teachers are proficient in drama, and the drama teacher is more experienced than the researcher in the drama method. The t-test was used to analyse the significance of the differences in gains in the EAT scores of the Control$_1$ and Control$_2$ groups of third- grade students. The U test was used to analyse the significance of the differences of the gains in EAT scores of Control$_1$ and Control$_2$ groups for the fourth- grade students. The results of the t-test and U test are given in Table 9.

Table 9
T-Test and U-Test Results of Gains in EAT Scores of Third- and Fourth- Grade Students by Group (Control$_1$ and Control$_2$)

	Group	*N*	$\overline{X}$	*SD*	*df*	*t*	*p*
Third grade	Control$_1$	30	.17	2.98	61	1.28	.205
	Control$_2$	33	−.88	3.45			
	Group	*N*	Mean Rank		Rank Sum	*U*	*p*
Fourth grade	Control$_1$	42	45.57		1914.00	543.00	.019
	Control$_2$	37	33.68		1246.00		

Table 9 indicates that the EAT gain scores of the control groups (Control$_1$ and Control$_2$) do not vary significantly by group [$t_{(61)} = 1.28$, $p > .05$] among the third- grade students. More specifically, those in Control$_1$ had similar gains in EAT scores as those in Control$_2$. However, among the fourth- grade students, the EAT gain scores of the control

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subjects (Control$_1$ and Control$_2$) differ significantly by group (U = 543.00, p < .05). The mean ranks show that the academic achievement of the fourth- grade students in Control$_1$ was higher than that in the other control group. These findings indicate that there was no teacher effect in the third- grade students regardless of the group. However, there was a teacher effect for the fourth- grade control groups. The reason for that can be the fact that both teachers had a competency in delivering the courses using the traditional teaching method. The Mann- Whitney U test was used to analyse the significance of the differences in the gains in ISE scores of the Experiment$_1$ and Experiment$_2$ groups of third- grade students. The U test was used to analyse the significance of the differences of the ISE gain scores of Experiment$_1$ and Experiment$_2$ groups of fourth- grade students. The results of the U test are given in Table 10.

Table 10
U-Test Results of the Gains in ISE Scores of Third- and Fourth- Grade Students by Groups (Experiment$_1$ and Experiment$_2$)

	Group	*N*	Mean rank	Mean sum	*U*	*p*
Third grade	Experiment$_1$	22	17.68	389.00	136.00	.008
	Experiment$_2$	23	28.09	646.00		
Fourth grade	Experiment$_1$	20	28.08	561.50	108.50	.003
	Experiment$_2$	23	16.72	384.50		

As can be seen in Table 10, the gains in ISE scores of third- grade students (Experiment$_1$ and Experiment$_2$) showed significant differences by group (U = 136.00, p < .05). The mean rank suggests that the interest of the students in Experiment$_2$ is much higher. The gains in ISE scores of fourth- grade students (Experiment$_1$ and Experiment$_2$) also showed significant differences by group (U = 108.50, p < .05). The mean rank suggests that the interest of the students in Experiment$_1$ is much higher. Therefore, it can be argued that there is a teacher effect for both experimental groups of third- and fourth- grade students. T-tests were used to analyse the significance of the difference in the gains in the ISE scores of the Control$_1$ and Control$_2$ groups of the third- and fourth- grade students. The results of the t-tests are given in Table 11.

Table 11
Results of T-Test of the Gains in ISE Scores of Third- and Fourth- Grade Students by Group (Control$_1$ and Control$_2$)

	Group	*N*	$\overline{X}$	*SD*	*df*	*t*	*p*
Third grade	Control$_1$	30	1.73	17.67	35.26	.52	.607
	Control$_2$	33	−.30	6.11			
Fourth grade	Control$_1$	42	.05	17.50	56.87	−.53	.585
	Control$_2$	37	1.68	7.45			

As can be seen in Table 11, the gains in ISE scores of the third- grade control subjects significantly differed by group (Control$_1$ and Control$_2$) [$t_{(61)}$ = .52, p >.05]. Both groups showed much the same gains in ISE scores. The gains in ISE scores of the fourth- grade control subjects also did not differ significantly by group (Control$_1$ and Control$_2$) [$t_{(56.87)}$ = −.53, p >.05]. More specifically, the fourth- grade students in the Control$_1$ had higher gains in scores than those in Control$_2$. In terms of the control group, there was no significant difference between the third- grade and fourth- grade students. A t-test was used to analyse the significance of the differences in the gains in ASTS scores of the Experiment$_1$ and Experiment$_2$ groups of third- and fourth- grade students. The results of the t-tests are given in Table 12.

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Table 12
Results of T-Test of the Gains in ASTS Scores of Third- and Fourth- Grade Students by Group (Experiment$_1$ and Experiment$_2$)

	Group	*N*	$\overline{X}$	*SD*	*df*	*t*	*p*
Third grade	Experiment$_1$	23	7.39	5.40	44	−.43	.670
	Experiment$_2$	23	8.39	9.80			
Fourth grade	Experiment$_1$	20	7.40	5.17	41	5.10	.001
	Experiment$_2$	23	−.13	4.51			

Table 12 indicates that the gains in ASTS scores did not significantly differ for the experimental groups (Experiment$_1$ and Experiment$_2$) of the third- grade [$t_{(44)} = -.43$, $p > .05$], suggesting that the experimental process had similar effects on both experiment groups. The gains in ASTS scores did, however, significantly differ for the experimental groups (Experiment$_1$ and Experiment$_2$) of the fourth grade [$t_{(41)} = 5.10$, $p < .05$]. More specifically, the students in Experiment$_1$ had much higher gains in scores on the ASTS than did students in Experiment$_2$, suggesting that the experimental process had much more positive effects on Experiment$_1$. The findings indicate that the effect of teacher was not found in the experimental groups at the third- grade level, but the teacher effect was observed at the fourth- grade level. A t-test was used to analyse the significance of the difference in the gains in ASTS scores of the Control$_1$ and Control$_2$ groups of third- grade students. For the fourth- grade students, the Whitney-Mann U test was employed. The results of the t-test and U test are given in Table 13.

Table 13
Results of T-Test and U tests of the Gains in ASTS Scores of Third- and Fourth- Grade Students by Group (Control$_1$ and Control$_2$)

	Group	*N*	$\overline{X}$	*SD*	*df*	*t*	*p*
Third grade	Control$_1$	30	.73	6.46	61	−.02	.988
	Control$_2$	33	.76	6.14			
	Group	*N*	Mean Rank		Rank Sum	*U*	*p*
Fourth grade	Control$_1$	42	36.58		1536.50	633.50	.158
	Control$_2$	37	43.88		1623.50		

As can be seen in Table 13, the gains in ASTS scores did not significantly differ for the control groups (Control$_1$ and Control$_2$) of the third- grade [$t_{(61)} = -.02$, $p > .05$]. The gains in ASTS scores of the third- grade control subjects are similar. Moreover, the gains in ASTS scores did not significantly differ for the control groups (Control$_1$ and Control$_2$) of the fourth grade ($U = 633.50$, $p > .05$). The gains in ASTS scores of the fourth- grade control subjects are similar. There is no teacher effect for the control groups of either third- or fourth- grade. The U test was used to analyse the significance of the difference in the EAT retention scores of the Experiment$_1$ and Experiment$_2$ groups of third- grade students. For the fourth- grade students, t-test was employed. The results of the U test and t-test are given in Table 14.

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Table 14
Results of T-Test and U Test on the EAT Retention Scores of Third- and Fourth- Grade Students by Group (Experiment$_1$ and Experiment$_2$)

	Group	*N*	Mean Rank		Rank Sum	*U*	*p*
Third grade	Experiment$_1$	23	23.41		538.50	262.50	.965
	Experiment$_2$	23	23.59		542.50		
	Group	*N*	$\overline{X}$	*SD*	*df*	*t*	*p*
Fourth grade	Experiment$_1$	20	13.65	5.26	41	−.02	.981
	Experiment$_2$	23	13.70	7.15			

Table 14 shows that the EAT retention scores did not significantly differ for the experimental groups (Experiment$_1$ and Experiment$_2$) of the third- grade ($U = 262.50$, $p > .05$). In other words, the EAT retention scores of the third- grade control subjects are similar. The EAT retention scores do not significantly differ for the experimental groups (Experiment$_1$ and Experiment$_2$) of the fourth grade [$t_{(41)} = -.02$, $p > .05$] either. Therefore, it can be stated that the experimental process equally affected the experimental groups. The U test was used to analyse the significance of the difference in the EAT retention scores of the Control$_1$ and Control$_2$ groups of the third- grade students. For the fourth- grade students, a t-test was employed. The results of U test and t-test are given in Table 15.

Table 15
Results of T-Test and U Test on the EAT Retention Scores of Third- and Fourth-Grade Students by Group (Control$_1$ and Control$_2$)

	Group	*N*	Mean Rank		Rank Sum	*U*	*p*
Third grade	Control$_1$	30	30.33		910.00	445.00	.489
	Control$_2$	33	33.52		1106.00		
	Group	*N*	$\overline{X}$	*SD*	*df*	*t*	*p*
Fourth grade	Control$_1$	42	9.00	6.03	68.41	−2.25	.028
	Control$_2$	37	12.51	7.62			

As can be seen in Table 15, the EAT retention scores do not significantly differ for the control groups (Control$_1$ and Control$_2$) of the third grade ($U = 445.00$, $p > .05$). Students' being in Control$_1$ versus Control$_2$ did not have a significant effect on their EAT retention scores. The EAT retention scores significantly differed for the control groups (Control$_1$ and Control$_2$) of the fourth grade [$t_{(68.41)} = -2.25$, $p < .05$] such that the EAT retention scores of the students in Control$_2$ were much higher than those of the students in Control$_1$. It can be stated that there was a teacher effect for the Control$_2$ group.

Discussion

Research suggests that drama method has various effects on student achievement, interest and attitudes in different courses and subject matters (Abed, 2016; Arieli, 2007; Bailey, 1994; David et al., 2013; Fleming, Merrel ve Tymms, 2004, Greenwood, 2001; Kaaland-Wells, 1994; McNaughton, 2004; Vargas, 1995). The drama method is highly influenced by the teacher who practices the method. The research model is designed to test whether the teacher had an impact on the experiment. It is important to investigate the effect of teachers especially in methods such as drama where achieving the intended objectives depends on teacher characteristics and it has been suggested that should be analysed (Kaba & Özdemir, 2012; Özdemir & Çıkla, 2005). For this purpose, with this study the effect of the drama method and the different teachers who employed the method on the students were investigated. To analyse the teacher effect, a comparison was made on the basis of the data gathered from the EAT, ISE, ASTS and EAT as a

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retention test. There were two experimental and two control groups in the study. In order to test the teacher effect, the experimental groups (Experiment$_1$ and Experiment$_2$) were compared, and the control groups (Control$_1$ and Control$_2$) were compared. The goal here was to test the effect of the teachers on the experimental process and the students.

The experimental and control groups were compared in terms of the student achievement scores. The findings suggest that there was no teacher effect for the third-grade students in improving achievement [$t_{(44)} = -1.17$, $p > .05$]. However, for the experimental groups of the fourth grade, there was a positive effect of the drama teacher [$U = 58.50$, $p < .05$], while for the control groups there was a positive effect of the researcher [$U = 543.00$, $p < .05$]. However, the fact that the same teachers did not make any difference on the experimental and control groups of either grade level shows that there was no teacher effect on the experimental process. In other words, the teachers made a difference in the experimental groups but not in the control groups, which shows that the teacher is competent in the methods but not influential on the experimental process. In order to have a real influence on the method, a teacher effect should have been observed in both groups.

The experimental and control groups were compared in terms of the students' interest scores in relation to the environment. The scores of the experimental groups on the ISE were higher than the control groups' scores. This method increased students' interest in the environment. In addition to the effect of the method, teacher influence was also observed in the increasing interest of the students. The findings suggest that, for the third-grade students, the increase in their interest was significantly related to the drama teacher [$U = 136.00$, $p < .05$], while for the fourth grade it was related to the researcher [$U = 108.50$, $p < .05$]. The effects of the drama teachers who taught the third-grade students involved increased interest in the environment. However, for the fourth-grade students, the effect came from the researcher, not from the drama teacher, which may be a result of the fact that at this grade level examinations and an exam-centred atmosphere were much more dominant. However, this effect of the teachers in the teachers was not observed in the control groups. Therefore, the existence of a complete teacher effect cannot be confirmed, as there was no significant difference between the scores of Control1 and Control2 groups.

The data analysis showed that the experimental groups had higher attitude scores than the control groups. It can be argued that when the drama method is employed in science courses, students' attitudes towards science are improved. In order to analyse the potential teacher effect, the Experiment1 and Experiment2 groups were compared with each other, as were the Control1 and Control2 groups. When the experimental and control groups were compared to see whether the attitude scores of the students were affected by the teachers, and no such effect was found for the experimental groups of the third grade [$t(44) = -.43$, $p > .05$]. However, for the fourth grade, a teacher effect was observed for Experiment1, which was taught by the researcher [$t(41) = 5.10$, $p < .05$]. There was no such effect for the control groups of the third grade [$t(61) = -.02$, $p > .05$] or the fourth grade [$U = 633.50$, $p > .05$]. It was also found that there was no teacher effect on the significant differences observed in the science attitude scores of the third-grade students. However, the same effect was not observed for the control groups. Therefore, it can be stated that there was no genuine teacher effect on the experimental process; rather, the teacher effect influenced the research through the method employed. This result, which was also observed in student achievement, shows that both teachers had the same effect on the experiment. The drama method was influential in increasing student attitudes, but a teacher effect was not observed. However, for the fourth-grade students, the science attitude scores of the class taught by the researcher were higher than for the other experimental group, which may indicate a teacher effect. The students knew the researcher as a teacher at the school. Therefore, they might have considered the activities much more seriously and thus shown much more interest and participation in the activities.

The experimental and control groups were compared among themselves to determine whether there was a teacher effect on the retention of environmental information. The results showed that both the third-grade experimental subjects [$U = 262.50$, $p > .05$] and the fourth-grade experimental subjects [$t_{(41)} = -.02$, $p > .05$] did not significantly differ. There is a meaningful difference between the control groups of the fourth grade in favour of the Control$_2$ group, in which the drama teacher taught the classes [$t_{(68.41)} = -2.25$, $p < .05$]. Therefore, it can be said that a teacher effect was found in the delivery of the traditional lesson plans at the fourth-grade level. However, it is not possible to talk about the effect of the teacher on the experimental environment, since there was no such difference in the experimental group where the drama teacher taught the classes. It can be said that the teacher factor made a difference in the students' retention scores.

In terms of the teacher effect, it can be stated that there is no teacher effect by method in the third and fourth grade. The researcher was influential in employing the drama method to increase the science achievement scores and science attitude scores of fourth- grade students. The drama teacher seems to play a significant role in increasing the retention scores of fourth- grade students over the traditional method of application. For the third- grade

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students, the creative drama method and creative drama teacher were effective in increasing their scores on interest in the environment.

The success of the drama method includes the teacher's approach to the method, teacher willingness and competency to employing the method. If teachers have the adequate information and skills for drama method, the effects of the drama activities will be so great. Negative attitudes and beliefs about the method, inadequacy of planning and using the method may adversely affect drama applications. McNaughton (2004) concluded that the students learned much new knowledge through the creative drama method and had fun at the same time. McNaughton (2004) found that the students defined creative drama as an educational activity that teaches them while entertaining them. David et al. (2013) concluded that the creative drama method facilitates student participation and makes them interested in the topic. Levey (2005) states that as a teacher who used it throughout the curriculum, he found the creative drama method particularly useful in environmental education. He further states the advantages of the method in learning environments as follows:

> "The use of creative drama in environmental education can make a huge difference in learning environmental issues. When students dramatize a topic, they begin to discover it from different perspectives and to develop relationships with it in a creative way. In doing this, students not only provide profound learning and retention in knowledge, but also gain a deep insight into themselves, other people, and even other creatures. Drama empowers students to expand their world experiences by empathizing with their surroundings to protect the environment (p.35)."

Conclusions and Implications

In short, it can be said that there are many factors affecting the success of the drama method such as an exam-oriented education system, student-teacher relationships, the socio-economic environment, and family demands. In this research, the effect of the teacher on the success of the method was studied. In general, the method had a positive effect on the students' attitudes towards science, their attitudes towards the science course, and their knowledge. Whether one of the teachers had an impact on this positive effect was also examined. It was found that the teacher was more effective in the methods but had no effect on the experimental procedure as a whole. More specifically, a teacher effect on the method was observed for the third-grade students, but a researcher effect was found for the fourth grade. However, the effects of the method cannot be neglected.

The achievement of the third-grade students participating in the study who were taught science education through the creative drama method for the first time was improved, and this positive effect was not a result of the teacher effect. The creative drama method was effective for students' achievement, interest, and attitudes in both experimental groups (Experiment$_1$ and Experiment$_2$). Given that the third-grade students were being taught science education for the first time, they had no expectations, which had positive effects on their results.

The findings of the study indicate that the achievements, interest towards the environment, and attitudes towards the science course of the third-grade students who received the course through the creative drama method were higher than for the control group students who were taught using the traditional method. This situation shows us that the drama method, which is one of the cornerstones of constructivist theory, should be used at all levels of education, starting from pre-school education.

Recommendations for Practitioners and Future Researchers

Discussions of environmental issues cover some environmental problems that seem to make students pessimistic. Therefore, environmental education should be taught to younger students using such methods as creative drama, which can positively affect the attitudes of students towards environment. Environmental issues should be taught using those methods that will enable the student to be active in daily life starting from the students' immediate surroundings and cultivating students' love of plants and animals. As environmental issues can be covered in almost any course, it is suggested that these issues be given in relation to all topics. Given that the success of the drama method depends on the teacher's success, teachers should participate in in-service training activities and other workshops organized to improve their knowledge and skills regarding the drama method. The drama method should be frequently included in the activities in textbooks and the recommended activities in teachers' guidebooks. Thus, teachers can become more interested in the subject. Increasing the number of hours devoted to teaching environmental issues will allow teachers to devote time to the methods that require more time to apply, such as creative drama. If the drama

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method is to be implemented for the first time in a group, the first few sessions should be planned to introduce the method. Having a hall or class specifically devoted to creative drama in schools will make the implementation easier and more practical. Classes with fewer students should be chosen for the implementation of the method, as creative drama practices will be difficult in crowded classes.

The results of the implementation of environmental education among younger students can be investigated and compared with the results of previous studies of samples of students from different age groups. The teaching methods and environmental attitudes of the teachers in primary schools regarding environmental issues can be investigated.

Limitations of the Study

This research has some limitations: This study, with 2015-2016 academic year; with a public primary school where the application will be carried out, with the 3rd and 4th year students who took creative drama method; with the environmental objectives and creative drama method in the 3rd and 4th grade curriculum; with pre-test, post-test, pre-interest, post-interest, pre-attitude, post-attitude and retention test scores was limited.

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Declaration of Interest

Authors declare no competing interest.

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A Sample Creative Drama Course Outline

Plan Label: Blue Lake	
Course: Science **Method:** Creative drama	**Place:** Multi-purpose hall
Topic/Concepts: School and environment, environmental cleaning, environmental pollution, environmental protection and beautification	**Techniques:** Role playing, improvisation, group pantomime, dull image.
	Students: 3rd. and 4th grade students
3rd Grade/Classes: 3E-3C **Unit:** Journey to the World of Living Beings/Living Beings and Life **Topic:** Me and My Environment **Date:**28/04/2016 **Duration:**40+40+40 mins	**4th Grade/Classes:** 4B-4E **Unit:** Microscopic Creatures and Our Environment/Living Beings and Life **Topic:** Human and Environmental Relations **Date:**29/04/2016 **Duration:**40+40+40 mins

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Learning Objectives	
3rd Grade: 1. Students recognize the environment in which they live and take an active role in the cleaning. 2. Students understand the importance of the natural environment for living things and take measures to protect.	**4th Grade:** 1. Students keep their surroundings clean to avoid environmental pollution. 2. Students discusses how environmental pollution can be prevented. 3. Students design a project to protect and beautify the environment.
Creative drama objectives: 1. Students respect the performance of their friends in the improvisation. 2. They could work with others. 3. They can work in a small group. 4. Students can evaluate others' work. 5. Students can take part in whole class improvisation. 6. Students can communicate with their peers. 7. Students can design improvisation according to a given topic.	
Materials: 1. Pictures showing clean days of the lake. Cardboard papers for each group 2. Written sentences on small slips of paper on air and water pollution. Pictures of air and water pollution. 3. CD player; for the 4th activity, Jazz Ensemble, The Taking of Pelham. 4. For the group pantomime, Taraf De Haidouks & Kocani Orkestar, -A la turk is used.	
Preparation: The impact of a clean or dirty immediate environment on human health and development is emphasized. It is also emphasized that a clean and green environment makes people happy. The teacher sounds out the opinions of the students on how dirty air and dirty water adversely affect health.	

Preparation/Warm-up

1ST ACTIVITY: Game of Air-Soil-Water: Children stand in a circle. When the teacher says "air," they act as if they are flying; when s/he says "water," they act as if they are swimming; and when s/he says "soil," they act as if they are digging something.

2ND ACTIVITY: Types of pollution: Children stand in a circle. Each student is given a label of a type of pollution. One student is chosen to be "it" and stands in the middle of the circle while trying to find a place in the circle during the game. Students are reminded not to forget the names they are given. When the game starts, one of the pollution types is called out. Those whose labels are called try to change their places in the circle. If "it" wants all of the children to change their places, "it" says "pollution basket" and tries to take the place of one of the children in the circle. If he can take someone's place he is no longer "it," but remains "it" otherwise. The game continues in this fashion.

3RD ACTIVITY: Mid-Evaluation: They talk about the answers to the following questions: How is air polluted? How is water polluted? What pollutes the air and water? How is the soil polluted? What should we do to avoid contamination of our environment?

4TH ACTIVITY: Find the Sentence—Find Your Pair: The students stand in a circle. Two copies of the sentences are prepared and written on small pieces of papers. These sentences are about either the reasons for air pollution or the ways to avoid air pollution. Then each of these pieces of paper is attached to one student. The students are asked to find the other student with the same sentence as theirs. The pairs stand where they are. Once the pairs of children are formed everybody reads their sentences one by one. The papers of the students having the second sentences are turned down and worn by the students. This time some of the students write the reasons for air pollution and the others the ways to avoid air pollution. Problems are matched with the right solutions.

5TH ACTIVITY: Outdoor Activity: During the previous drama activity, there was a survey questionnaire, "Let's Decorate the Newspaper Building with Flowers." There you were asked to state your favourite outdoor activities. Do you remember? What were these activities? Which activities were voted most highly in the survey questionnaire?

Where do you do during these outdoor activities? Are there any places where you can have a picnic and ride a bike near your home? A picture of the "Blue Lake" is shown to the students, and the teacher may tell them that they all know the Blue Lake. Then the following question is asked: What do people usually do at the Blue Bake? Students list the activities that can be performed at the Blue Lake. Playing ball, skipping rope, fishing, picnic with your family, etc. What else can be done at the Blue Lake? Let's think about it. The activities are then listed on a large cardboard paper.

Role Play/İmprovisations

6TH ACTIVITY: Still Image—I am at the Blue lake: Students are told to draw an activity that they would like to perform at the Blue Lake. They animate this activity through still image techniques. Each student animates the activity he / she wants to do. Some of the students are asked to tell what they want to do. Some students want to fly a kite, some to ride a boat.

• Some of them drew fishing, some having a picnic, some cycling, some traveling, some playing ball, some cooking kebabs. Some of them were visiting the place with their grandfather.

7TH ACTIVITY: Group Pantomime: Students are told to form a group by observing each other. Then the students in pairs or individually begin to animate the still images.

8TH ACTIVITY: Estimation: An estimation task is performed with the rest of the class. The teacher determines the four different activities that are performed by the students and points out four students who perform these activities well; the others are then asked to sit down. The four students are told to stay on the stage and continue their movements. The class is asked to think about which outdoor activities are being performed by these students. For instance, the groups attempted to portray "Look, there is an old man fishing here; who wants to go there?" In this way the other students are also taken to the stage.

• Most of the groups had more spontaneous reunions. For example, the cyclists were tired and stood next to the fishermen, and the kids playing ball were the children of the picnickers, etc.…. The groups were formed in this way and the class was divided into groups of four.

9TH ACTIVITY: A Day at the Blue Lake: How do these four groups spend a day at the clean and orderly Blue Lake? The students are asked to think about it and animate part of it. Then, the students who had roles as picnickers, cyclists, kite-flyers, and fishermen animated how they spent a day at the Blue Lake.

While making the improvisation, relations began to develop among the still images in the sixth activity. All groups performed the improvisation successfully. The teacher wandered among the groups to see whether the students needed help. It was observed that the students were very harmonious and experienced because they had the Blue Lake experience during the improvisation.

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Evaluation

10TH ACTIVITY: Slogan Writing: Students produce slogans describing the effects of fresh air and abundant oxygen on human life. The slogans are turned into banners, and then the slogans with the most votes will be displayed in the school. Some of these slogans are;
"Clean your environment for protecting our planet"
"Clean air means healthy people"
"Cleanliness is happiness"
Assignment: Children paint pictures of the potential activities that may be performed at the Blue Lake.

Attachment 2

Observation Form

Dear Researcher/Practitioner
You involved in the courses of environmental education to the third and fourth grade students. Course outlines used for the experiment groups for which a creative drama method was conducted are given in attachment. Please carefully examine these outlines. Please answer the items below considering that a creative drama approach was used for the experiment groups, and it was not used for the control groups. Your answers should be expressed through one of four options, namely "good", "average", "not good" and "N/A". Put a sign on ( ) which is at the right side to indicate your answer, like (X). If you are asked to give the number of the activity, please give it on the proper box.

No:	Observation Questions	Good	Average	Bad	N/A
1	Did the group make a circle?				
2	Was there a mental preparation?				
3	Was there a physical preparation?				
4	Was the duration of the preparatory work sufficient? For a course duration of 40+40+40, were there preparations for 30 minutes?				
5	Were the warm-up activities made related to the objectives?				
6	Were improvisations performed?				
7	Were the activities made related to one another?				
8	Was the preparation made before the improvisation?				
9	Were the improvisation activities carried out in each lesson related to the objective of the related lesson?				
10	Were dramatic situations in the animations given clear?				
11	Was a dramatic situation used for each objective?				
12	Were the roles in improvisation clear?				
13	Were the purpose, status of and motivation for roles clear?				
14	Were the drama techniques used in the improvisation stage?				
15	Was the duration of the improvisation proper?				
16	Were the components of the dramatic fiction complied with?				
17	Were time and space clearly stated for the improvisations?				
18	Did the teacher play any role in improvisations that did not create conflict situations?				
19	Were the instructions given by the teacher clear and explicit?				
20	Was the intra-group communication sufficient?				
21	Was the duration of the improvisation work sufficient? For a course duration of 40+40+40, were there improvisations for 60 minutes?				
22	Was the role-playing technique used?				
23	Did students stand up during the course?				
24	Did the students sit on the ground from time to time during the course?				
25	Was the space used in a seated order?				
26	Was music used during the course?				

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No:	Observation Questions	Good	Average	Bad	N/A
27	Did students occasionally stand up during the course?				
28	Was the course delivered at the multi-purpose hall?				
29	Was the school yard used during the course?				
30	Were drama course outlines used?				
31	How do you rate the implementation of the daily plan by the teacher? Please choose the statement "the course was delivered exactly as stated in the daily plan" if you have positive views and choose the statement "the course was not delivered as stated in the daily plan" if you have negative views.				
32	Were the body of the students used as a material?				
33	Were there mid-term evaluations?				
34	Was there any evaluation at the end of the course?				
35	Did they play games?				
36	Did the teacher use direct instruction method?				
37	Did the students sit in a row?				
38	Were the students active during the course?				
39	Did the students interact with one another?				
40	Did the students freely walk around the space?				
41	Did the students use all parts of the space?				
42	Did the students move with music?				
43	Was any classroom used for the course?				
44	Were the products of the children developed in the course exhibited?				
45	Was the evaluation associated with achievements?				
46	Was the teacher used a textbook or printed material?				
47	Was any self-evaluation used?				
48	Was any peer evaluation used?				
49	Was any group evaluation used?				
50	Did the students play games from time to time during the course?				
51	Was the teacher warm and friendly?				
52	Was the teacher effective in involving students in activities?				
The points you want to add:					
Positive points:					
Negative points:					
Other:					

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