

PRİZMALAR KONUSUNDA DRAMA YÖNTEMİNİN UYGULANMASI**THE APPLICATION OF DRAMA METHOD ON PRISMS SUBJECT****Berna CANTÜRK GÜNHAN*, Deniz ÖZEN****

ÖZET: Bu araştırmada, geometri öğretiminde drama yönteminin uygulanmasının öğrencilerin bu yönetime bakış açılarını ve geometriye yönelik özyeterlik inançlarına etkisini belirlemek amaçlanmıştır. Araştırmaya ilişkin denel işlem 2006–2007 öğretim yılı bahar döneminde İzmir’de bir ilköğretim okulunda gerçekleştirilmiştir. Çalışma grubunu altıncı sınıftan 20 öğrenci oluşturmaktadır. Araştırmada ilköğretim altıncı sınıf “Dik Prizmaların Yüzey Alanları ve Hacimleri” konusunda drama yöntemi kullanılmıştır. Veri toplama araçları olarak öğrencilerin özyeterlik inançlarını belirlemek için “Geometriye Yönelik Özyeterlik Ölçeği” ve “Görüşme Formu” kullanılmıştır. Araştırma verileri normal dağılıma uyduğu için verilerin analizinde ilişkili ortalamalar t testi kullanılmıştır. Araştırmanın sonucunda elde edilen verilere dayanarak, öğrencilerin bu yöntemi eğlenceli ve yararlı bulduklarını ifade ettikleri ayrıca öğrencilerin geometriye yönelik özyeterlik inançlarında beklenen düzeyde bir etki yapmadığı yargısına ulaşılmıştır.

Anahtar Kelimeler: Geometri Öğretimi, Drama, Özyeterlik İnançları.

ABSTRACT: The purpose of this study is to determine the students’ views as to the fact that drama method be used in teaching geometry and also to establish their viewpoints concerning this method and its effect on their self-efficacy towards geometry. The procedure relating to the research was implemented at a primary school in Izmir during the 2006-2007 academic years’ spring term. The participants of the study were composed 20 sixth grade students. In the study, drama method was used on the subject of the surface areas and volumes of vertical prisms in mathematics of sixth grade. As for data collection tools, “Self-Efficacy toward Geometry Scale” and “Interview Form” were used to determine the students’ beliefs of self-efficacy. In the analysis of the data, Paired Samples t-Test was used as the data of the research were compatible with normal distribution. Based on the data obtained from the investigation, it was found that the students said that the creative method was entertaining and useful. Besides, it was seen that there was no meaningful differences in favor of using drama method in Mathematics lessons.

Key Words: Teaching Geometry, Drama, Self-efficacy Beliefs.

1. INTRODUCTION

The purpose of education, first of all, is to increase the students’ knowledge and experiences, to develop their thinking creatively and make it possible for them to become aware of their moral values, and secondly is to enable the individual to study independently as much as s/he can after they received education, to take responsibility and join the society as an active person (Warnock, 1978 cited in Orton, 1994). Suitable learning environments should be formed for students in carrying out these objectives. Contemporary learning methods should be applied in order for the suitable learning environments to be constituted. One of these methods is drama.

*Öğr. Gör. Dr. DEÜ Buca Eğitim Fakültesi İlköğretim Matematik ABD. berna.gunhan@deu.edu.tr

** Arş.Gör. ADÜ Eğitim Fakültesi İlköğretim Matematik ABD. deniz.ozen@adu.edu.tr

Drama, the method of learning based on the theory of constructivist learning, is the interpretation and animation of a word, concept, attitude, sentence, idea experience and event by making use of the theatre techniques and game-like processes (San, 1996). The studies of drama are composed of the applications in which the individual's sensual, intellectual and cognitive fields are in integrity and the learning is made experimental (Adıgüzel, 1993).

Drama is important in terms of presenting learning in life, abstracting it from external factors, making subjective child's knowledge, making functional knowledge and learning, making learning active and activating the students' progressive characteristics in learning (Adıgüzel, 2002). According to O'Neill and Lambert (1990), is a method of learning, because the events and situations with the connections between them can easily be learned by means of drama. In this context, in literature it is observed that Dewey as well suggests that the method of drama be used in the course of teaching (Bolton, 1985).

Young learners discover their (inner) world thanks to the ways similar to each other. They use all of their emotions so as to disclose their own world (McCaslin, 1996). In this context, the use of drama in education will be of great use. As Sağlam (2004) mentioned, the fact that drama be used in education will provide the participant with the opportunity of coming into existence in a dramatic atmosphere thanks to the ways of mental, physical and emotional participation. In this environment, the individual will be able to realize his/her potential, to express himself/herself, to develop empathy and to be happy.

According to Güneysu (1991), drama is a method of teaching which enables individual to develop in a multiple way by putting himself/herself in place of others and to take an active part in teaching, and which increases his/her motivation (cited in Can, Dere and Turan, 1998). This method aims to have individuals acquire the talents such as language and communication, problem solving skills, creativity, the designation of positive personality, the enlightenment of values and attitudes, social awareness and empathy (Ömeroğlu, 1990). Therefore, it is thought that the fact that the method of drama be used in mathematics teaching, the subject which the students have difficulty understanding, will make it possible for students to learn many concepts in mathematics by imagining and allow them to solve the problems they encounter in their daily lives more creatively.

It is necessary to take advantage of real situations in the course of teaching activities in order for students to establish the connection of mathematics with daily life. Because it may not always be possible to create real situations or to go to the places where this situation exists, in such situations, both the subjects hard to understand are made to be understood by making use of drama applications and the subject is made attractive by varying the teaching facilities. Thus, students reach a conclusion through learning by doing, experiencing and playing game (Hatipoğlu, 2006).

In literature, one can encounter lots of studies as to the fact that drama enables students to gain many skills in mathematics. It has been determined in some of this studies that drama improves success (Duatepe, 2004; Fleming, Merrel and Tymms, 2004; Hatipoğlu, 2006; Özsoy, 2003; Soner, 2005), retention (Duatepe, 2004; Soner, 2005) and the attitude towards mathematics (Soner, 2005; Duatepe, 2004; Fleming, Merrel and Tymms, 2004) in a positive way. Hipsky (2007) stated that there have been some developments in the beliefs of students' self-efficacy in a positive way when the method of drama is used. Self-efficacy has been defined by Bandura (1997) as individual's judgment regarding himself/herself as to his/her ability to organize the activities necessary to show a certain performance and to perform it successfully. Self-efficacy has indicated that individuals whose beliefs are high exhibit a great effort to be successful in a task, do not give up easily when facing negative events and are insistent and patient (Pajares, 1996). Additionally, it has been stated by Erkin and Ader (2004) that the fact that the belief of self-efficacy should be high increases the success in mathematics as well. Woolfok and Hoy (2002) have stated in a study they carried out that

there is a strong relation between the students' self-efficacy and the materials used in the lessons (cited in Zengin. 2003). Thanks to this study, it is thought that the effect of drama method on the self-efficacy beliefs toward geometry and determining students' views will have functional value in terms of guiding the studies to be carried out later.

The aim of this research is to examine the effects of teaching the sixth grade students the subject of "the surface areas and volumes of vertical prisms" thanks to the drama method on the students' beliefs aimed at self-efficacy and to investigate their views about this method.

2. METHOD

In this study, both experimental and survey model were used. In order to determine the effect of using drama method in mathematics teaching on the students' beliefs of self-efficacy aimed at geometry, of the experimental models, pre-test and post-test with one group design was used. In the analysis of the data for "pre-test and post-test with one group design", paired samples t-test is used because there are two separate measurements of both subjects (Balci, 2004).

Survey models are the approaches that aim to describe a situation which exists either in the past or at present in the way it exists (Karasar, 2000). In this study, the students' views regarding this method were assessed after drama method which was applied in the sixth grade mathematics course.

2.1. The Study Group

The study was carried out with 20 students attending the sixth grade at a public primary school in Izmir in the spring term in the academic year of 2006-2007.

2.2. Data Collection Instruments

National and international studies were examined regarding this subject and the views of those who are experts on this matter were conferred in order for the theoretical dimension of the study to be formed. In addition, the investigators were invited to "The Program of Creative Drama Leadership" held by a private institution. In mathematics class, "The Self-Efficacy toward Geometry Scale" developed by Cantürk Günhan (2006) was used in order to determine the beliefs of self-efficacy aimed at geometry.

The Self-Efficacy toward Geometry Scale is composed of 25 items. The validity and reliability studies of this scale were performed by Cantürk Günhan (2006). The testing of concept validity and the structure validity was carried out to determine the validity. An expert was conferred for the concept validity, for the structure validity, on the other hand, factor analysis was carried out. The scale, the five-point Likert type, is made up of 25 items and the items have been distributed as 12 in the dimension of Positive Self-Efficacy Beliefs, 6 in the dimension of the Use of the Knowledge of Geometry and 7 in the dimension of Negative Self-Efficacy Beliefs. Cronbach alpha reliability coefficients of the dimensions were calculated respectively as 0.88, 0.70 and 0.70. On the other hand, it has been observed that Cronbach alpha reliability coefficient is 0.90 at the scale on the whole. Few items of the scale have been provided in the Appendix-1. It has been noticed that Cronbach alpha reliability coefficient of the scale is 0.89 in the study group in this study. Additionally, in the study the data were collected with interview because the thoughts regarding in-class observation and teaching method were asked to be expressed.

2.3. Procedure

The lesson plans regarding the subject of "The Surface Areas and Volumes of Vertical Prisms" of the mathematics course were prepared before starting the application in the study. The studies concerning the drama applications in literature were carefully examined while

these lesson plans were being prepared. The two lesson plans prepared were studied by an expert instructor in the area of drama, a mathematics instructor and a mathematics teacher. The drama plans* were formed as in Table 1 and Table 2 after the necessary arrangements had been made.

Table 1. Drama Plan about Geometrical Objects and Vertical Prisms

Subject:	Geometrical Objects, Vertical Prisms
Acquisitions	<ol style="list-style-type: none"> 1. It determines the main components/elements of prisms 2. It determines the appearances of the structures formed with equal/pair cubes in different dimensions. 3. It forms the surface areas of rectangular prisms, square prisms and cubes <p>It solves the problems regarding the surface areas of rectangular prisms, square prisms and cubes.</p>
Material:	The boxes in the shape of rectangular prisms, square prisms and cubes.
Duration:	2 teaching periods
Methods and techniques:	Drama method, improvisation, role playing, large group improvisation, small group improvisation.
1. Warm-up	<p>➤ Everybody stands up in a shape of a circle. One of the students in the circle becomes the leader and does some acts. The other students imitate the acts he does. Another student sent out in advance comes in and try to guess who conducts the acts when the leader starts his/her acts and everybody imitates him/her. Meantime, the other students in the group try not to look at the leader. When the student in the middle (coming from out) finds the leader, the former leader goes out, and a new leader is chosen and the game goes on.</p> <p>➤ The students are lined up in the shape of a half circle. The teacher draws a triangle, square and rectangle respectively on the board. Then the teacher asks the students to show these shapes by using their arms and legs. After that, the students are asked to form the same shapes as being by twos, in threes and four each groups. They talk about the characteristics of each shape. The teacher enables the students to discuss by asking them what will be formed when putting these shapes over and over. The main elements of the prisms are determined.</p> <p>Everybody stands up in a shape of a circle. The teacher gives the students names such as “cube”, “rectangle prisms” and “square prisms”. Then, the teacher tells everybody to change his/her place with his/her friend who has the same name when their own name is uttered. All of the students change their places when the word “prisms” is uttered. In the mean time, there is an “it” in the middle. The “it” says the names of the prisms and the “it” also tries to seize a place during changing of the places. The one who is caught in the middle becomes “it”.</p>
2. Actual Study	<p>➤ The students are divided into 4 groups. In House-Building fair, there are the managers (architects, interior architects and civil engineers) of the firms building 3 houses there. It is stated that one of the groups is asked to act as the company building the houses in the shape of “cube”, the other group to act as the company building the houses in the shape of “rectangular prisms”, the third group to act as the company building the houses in the shape of “square vertical prisms”, the last group to act as the buyer. The companies building the houses will present both the characteristics of the houses and the appearances of the sites from the front, behind and sideways to the buyers. The role of the buyer group is to ask and</p>

* Drama plans presented at the Seminar on Creative Drama Practices in Education İzmir, Turkey, March 20, 2010.

	<p>question the characteristics of each site. The opinions of all groups are listened to by the teacher and the accuracy of the dialogue between the buyer groups and the other groups are discussed.</p> <p>There were the stands of a firm which covers the exterior sides of the houses in one part of this fair. Each group performs an improvisation with a view to learning what the expenditures would be in the event that the exterior sides of the houses are covered.</p>
3. The Evaluation:	<p>What students have learned is formulated by generalizing them.</p> <p>They are asked to express what they have experienced and felt.</p>

Table 2. Drama Plan about Volume of Vertical Prisms

Subject:	Volume of Vertical Prisms
Acquisitions	<p>1. It composes correlations belonging to volume of cube, square prisms and rectangular prisms.</p> <p>2. It estimates the volume of cube, square prisms and rectangular prisms by employing strategy.</p> <p>3. It solves the problems regarding the volume of cube, square prisms and rectangular prisms.</p>
Material:	The boxes in the shape of rectangular prisms, square prisms and cubes.
Duration:	2 teaching periods
Methods and techniques:	Drama method, improvisation, role playing, large group improvisation, small group improvisation.
1. Warm-up:	<p>➤ The students are lined up in order one after another by holding each other's waists behind. Then they gently hold the waist of the one in the front by stretching their arms. Then, the group starts walking by drawing circles. The students in the foremost makes some acts. He bends his head to right and left, holds up and brings down his shoulders, kneels down... The students behind him exactly try to imitate his acts. After taking a stroll in the class, the student leading the acts moves backmost and the students after him starts to lead the acts.</p> <p>➤ By asking the students to close their eyes and giving them some prisms, they are asked to recognize these.</p> <p>The students are lined up in the shape of a circle. The game named "Nesi Var?" is played together with the students. One student becomes "it" and goes out. In the mean time, the group chooses the prism. When "it" comes in the middle, "it" tries to estimate the prism.</p>
2. Actual Study:	The students are divided into 3 groups. Then, they are told that they work at the packaging department of a chocolate factory. There are 3 sections in this department. At one section, the chocolates are placed to the boxes in the shape of cube. At the other section, they are placed to the boxes in the shape of rectangular prisms. At another section, they are placed to the boxes in the shape of square prisms. After that, the students are asked to discuss which box takes the most chocolates and to constitute an improvisation. They are expected to bring out under what conditions the volume of the boxes will change.
3. The Evaluation:	<p>What students have learned is formulated by generalizing them.</p> <p>They are asked to express what they have experienced and felt.</p>

The fact that the students be made to comprehend the calculation of rectangular prism, square vertical prism, and the characteristics of cube, the cube's surface areas and volumes was targeted thanks to the subject taught by means of drama. First of all, the pre-test was

applied to the group of the Self-Efficacy toward Geometry Scale. After the students were provided with brief information about the system, the teaching application lasting for two weeks on the basis of four hours per week was launched. The lesson plans are formed of three levels including the warm-up, actual study and evaluation. In the first week, the implementations were carried out in order to enable the group dynamic of the students to be provided and to make the students relieved in the warm-up level which is the first stage of the lesson. In the mean time, some activities were carried out to make the students remember their background knowledge and to prepare them for continuation of the lesson. At the level of actual study, on the other hand, the students were given a number of materials and firstly they were told that there were the firms' managers building 3 houses in House-Building Fair and they were asked to adopt some roles (architects, interior architects and civil engineers) by dividing into 4 groups. One of the groups was asked to act as the company building the houses in the shape of cube, the other group to act as the company building the houses in the shape of rectangular prisms, the other group to act as the company building the houses in the shape of square vertical prisms, the last group to act as the buyer (Table 1). At the second week; both group dynamic was achieved and the students were made to get used to the concepts thanks to several games in the warm-up stage. At the actual study stage, the students were told to work at a chocolate factory that has 3 types of packaging department. It was stated that at one department, the chocolates were placed to the boxes in the shape of cube, at the other department they were placed to the boxes in the shape of rectangular prisms and at the other department they were placed to the boxes in the shape of square vertical prisms, and then the students were asked to animate this environment (Table 2). At the evaluation stage, on the, some questions were raised at the students about how they were feeling, then they were asked to discuss the things they learned about the prisms and finally were asked to formulate how they calculated the surface areas and volumes of the prisms. "Self-Efficacy toward Geometry Scale" was applied to the group as end test on the day when the experimental process finished. Additionally, the opinions of the students regarding the method were received after the application.

2.4. Data Analysis

The data obtained as the result of the application of the scale used in the course of the study were analyzed thanks to the use of SPSS 11.0 packet program. When the distribution of the data obtained from the study group in the study was examined, it was seen that it indicated a normal distribution. The Table-3 has been devoted to the results of the Shapiro-Wilks test applied to test whether the data showed normal distribution or not. It has been observed that the data exhibited a normal distribution when the Table-3 is studied.

Table 3. Shapiro-Wilks normality tests results belonging to the study group

Self-Efficacy toward Geometry Scale		N	\bar{x}	Sd	Shapiro-Wilks	p
Pre-test	The Dimension of Positive Self-Efficacy	20	44,1	6,95	0,920	0,101
	The Dimension of the Knowledge of Geometry	20	20,75	4,35	0,958	0,502
	The Dimension of Negative Self-Efficacy	20	23,85	5,23	0,958	0,499
	Total Scale	20	88,7	13,84	0,907	0,056
Post-test	The Dimension of Positive Self-Efficacy	20	47,35	7,86	0,943	0,271
	The Dimension of the Knowledge of Geometry	20	22,2	4,22	0,986	0,706
	The Dimension of Negative Self-Efficacy	20	26,65	5,89	0,925	0,122
	Total Scale	20	96,2	16,25	0,943	0,270

3. FINDINGS AND COMMENTS

In the study, in order to examine the effect of teaching the subject of “Surface Areas and Volumes of Vertical Prisms” through creative drama at the sixth grade on the students’ beliefs in the “Self-Efficacy aimed at Geometry”, the arithmetic mean and standard deviation of the scores the group got from the pre-test and post-test of the “Self-Efficacy toward Geometry Scale” were calculated and the difference between the mean averages were tested with the related mean “t” test. The conditions of students in the study group have been indicated in considering the scores they got from “Self-Efficacy toward Geometry Scale” in Table-4.

Table 4. “Self-Efficacy toward Geometry Scale”, the comparison according to the scores of pre-test and post-test

Scale	Tests	N	\bar{x}	sd	t	p
The Dimension of Positive Self-Efficacy	Pre-test	20	44,1	6,95	-1,63	0,12
	Post-test	20	47,35	7,86		
The Dimension of the Knowledge of Geometry	Pre-test	20	20,75	4,35	-1,21	0,24
	Post-test	20	22,2	4,22		
The Dimension of Negative Self-Efficacy	Pre-test	20	23,85	5,23	-1,79	0,09
	Post-test	20	26,65	5,89		
Total Scale	Pre-test	20	88,7	13,84	-1,90	0,07
	Post-test	20	96,2	16,25		

In the Table-4 are the results of the Paired Samples “t” test that was applied to the pre-test and post-test scores which the students in the study group got from “Self-Efficacy toward Geometry Scale”. Even though there are differences in favor of post-test in each dimension and overall of the scale, “t” test was applied to examine whether these differences are meaningful or not. It is observed that the differences between the pre-test and post-test scores were not meaningful.

In order to assess the students’ views regarding drama based on the constructivist learning theory, the students were asked what they thought about this method. Some of the answers the students gave as the result of the interviews carried out are as follows;

“I understand the subject better when we are taught in this way. We learn things with a game. This way gives a person pleasure because it is funny. I would like the other lessons to be taught in this way as well”.

“The fact that mathematics subject be taught in this way enables us both to understand it better and we study together with our friends. If our teachers teach the subject in this way, all of our friends learn the subject”.

“At the beginning, I could not understand lots of things. But, I learned a lot of things in this way. I regained my self-confidence”.

“...I understand better through a game. I find chance to exhibit what I understood. I want the lessons always to be taught in this way”.

“I understood geometry much better in this way. Because, we were continually writing and I fed up with studying what we had written while studying for the exam. But, this time what I had learned stuck in my mind and I did well in the exam”.

The classified form of the sixth grade 20 students' views where the application was performed concerning the method of creative drama has been summarized in Table-5.

Table 5. The students' views regarding drama method

The Views	N	%
A funny learning environment is formed via the method of creative drama.	14	70
The subjects are understood better thanks to the method of creative drama.	11	55
The students learn together with their friends thanks to the method of creative drama.	1	5
The subjects learned with the method of creative drama are permanent.	4	20
The concepts can easily be animated with the method of creative drama.	1	5
The subject becomes interesting thanks to the method of creative drama.	1	5
The students can better exhibit what they learned thanks to the method of creative drama.	1	5
The students' confidence in them increases thanks to the method of creative drama.	1	5

As seen in Table-5, a great majority of the students have stated that this method is funny and facilitates understanding. Furthermore, they have also stated that this method enables what students learned to be permanent and the lesson to be interesting and make it possible for students to learn together, for them to exhibit what they learned and for their confidence in them to increase.

It has been determined that all of the students, besides their opinions concerning the method, stated that they would like subjects to be taught in this way.

4. RESULTS AND SUGGESTIONS

It is rather difficult for the students at the primary level to adapt from concrete concepts to abstract concepts. Therefore, it is necessary that the lessons be made more entertaining and it is also essential for the instructor to ensure that they learn with a game. Gesser-Edelsburg ve Guttman (2006) as well stated that educational games are necessary because they identify students with various roles by creating characters and models and they also create creative environments. As it is seen in this investigation, drama, which is one of the learning methods that helps and will help, has positive effects on the students in lots of studies in literature. In this research, drama method was applied in teaching the sixth grade primary school students the subject of “Surface Areas and Volumes of Vertical Prisms” and it was established that the students' views about this method were positive. In addition, in the consequence of the application of drama method in mathematics subject, we can infer from the findings obtained as a result of the statistical analyses of the data gathered before and after the experimental process so as to be able to determine the effect of drama method on the students' beliefs of self-efficacy aimed at geometry that the education carried out with the application of drama method in mathematics lesson has no effect on the students' beliefs of self-efficacy aimed at geometry. The reason of this is that two weeks are not enough for drama course to develop the

individual's beliefs of self-efficacy aimed at geometry in a positive way, and it is thought that this training period of two weeks should be extended.

Based on the results obtained from the research and the students' views, the following can be suggested to the researchers and teachers:

- The applicability of this method, which increases the students' personal skills, enables them to be active and to think independently and make the process more entertaining in the learning process should be investigated in the other subjects of mathematics and in all levels of the primary school.
- Comprehensive studies should be carried out as to what kind of learning products of the students the method has an effect.
- We should have the teachers, students and parents adopt the importance of drama, its place in education and its contributions to mathematics teaching in particular thanks to meetings, seminars and symposiums.
- Drama leadership courses should be taught to teachers and researchers by the Ministry of National Education thanks to in-service training.
- The fact that the prospective teachers being taught at the Schools of Education, in the departments of Mathematics Teaching of Primary School and Secondary School should make use of this method in their professional lives should be made possible by teaching them drama method.

REFERENCES

- Adıgüzel, Ö. (1993). *Oyun ve yaratıcı drama ilişkisi*. Ankara Üniversitesi Eğitim Bilimleri Enstitüsü Eğitim Programları ve Öğretim Anabilim Dalı, Yayınlanmamış Yüksek Lisans Tezi. Ankara.
- Adıgüzel, Ö. (2002). *Yaratıcı drama*. Naturel Yayınları. Ankara.
- Balcı, A., (2004). *Sosyal bilimlerde araştırma*. Pegem A Yayınları. Ankara.
- Bandura, A. (1997). *Self-Efficacy. The exercise of control*. W. H. Freeman and Company. New York.
- Bolton, G. (1985). Changes in thinking about drama in education. *Theory into Practice*, 24(3), 151-157.
- Can, M., Dere, H. ve Turan, E. (1998). *GÜMEF çocuk gelişimi çocuk gelişimi okul öncesi öğretmenliği son sınıf öğrencilerinin empati becerisini kazanmalarına yaratıcı drama eğitimin etkisi*. Selçuk Üniversitesi Eğitim Fakültesi VII. Ulusal Eğitim Bilimleri Kongresi, 9-11 Eylül 1998, Konya.
- Cantürk-Günhan, B. (2006). *İlköğretim II. kademede matematik dersinde probleme dayalı öğrenmenin uygulanabilirliği üzerine bir araştırma*. Yayınlanmamış Doktora Tezi, Dokuz Eylül Üniversitesi Eğitim Bilimleri Enstitüsü, İzmir.
- Duatepe, A. (2004). *The effects of drama based instruction on seventh grade students' geometry achievement, Van Hiele geometric thinking levels, attitude toward mathematics and geometry*. Yayınlanmamış Doktora Tezi, Ortadoğu Üniversitesi, Ankara.
- Erkin, E. ve Ader, E. (2004). Sınavda öğrencilerin başarısını neler etkiliyor? *Cumhuriyet Gazetesi*, 894, 21.
- Gesser-Edelsburg, A., Guttman, N., Israelashvili, M., (2006). Educational Drama and The Dilemma of 'false catharsis': lessons for theory and practice from a study of anti-drug pays in Israel, *Research in Drama Education*. Vol 11, 3, 293-311.

- Hatipoğlu, Y.,Y., (2006). *İlköğretim 5. sınıf matematik dersi konularının öğretiminde drama yönteminin öğrenci başarısına etkisi*. Yayınlanmamış Yüksek Lisans Tezi, Gazi Üniversitesi Eğitim Bilimleri Enstitüsü, Ankara.
- Hipsky, S. (2007). Drama discovery: setting the stage for students with motional/behavioral needs to learn about self. *Essays in Education*, Volume 21, 163- 182.
- Karasar, N. (2000). Bilimsel Araştırma Yöntemi. Ankara: Nobel Yayın Dağıtım
- McCaslin, N. (1996). *Creative drama in the classroom and beyond*. (6th edition). Longman Publishers USA.
- O'Neill, C. ve Lambert, A.,(1990), *Drama structures a practical handbook for teachers*, Heinemann Educational Book Inc. London.
- Orton, A. (1994). *The aims of teaching mathematics*. (Edited by Orton, A. and Wain, G.) Issues in Teaching Mathematics. London, Cassell.
- Ömeroğlu, E. (1990). *Anaokuluna giden beş-altı yaşındaki çocukların özel yaratıcılıklarının gelişimine yaratıcı drama eğitiminin etkisi*. Hacettepe Üniversitesi Sağlık Bilimleri Enstitüsü, Çocuk Sağlığı ve Eğitimi Programı Doktora Tezi, Ankara.
- Özsoy, N. (2003). İlköğretim matematik derslerinde yaratıcı drama yönteminin kullanılması. *Balıkesir Üniversitesi Fen Bilimleri Enstitüsü Dergisi*, 5-2, 112-119.
- Pajares, F. (1996). Self-Efficacy beliefs in academic settings. *Review of Educational Research*, 66(4), 543-578.
- Sağlam, T. (2004). Dramatik eğitim: Amaç mı? Araç mı? *Tiyatro Araştırmaları Dergisi*, 17, 4-22.
- San, İ. (1996). Yaratıcılığı geliştiren bir yöntem ve yaratıcı bireyi yetiştiren bir disiplin: eğitsel yaratıcı drama, *Yeni Türkiye Dergisi*, 2(7) 148-160.
- Soner, S., (2004). İlköğretim matematik dersi kesirli sayılarda toplama-çıkarma işleminde drama yöntemi ile yapılan öğretimin etkiliği. Yayınlanmamış Yüksek Lisans Tezi, Abant İzzet Baysal Üniversitesi Sosyal Bilimler Enstitüsü, Bolu.
- Zengin, U. (2003). *İlköğretim öğretmenlerinin öz-yeterlik algıları ve sınıf-içi iletişim örüntüleri*. Yayınlanmamış yüksek lisans tezi. Anadolu Üniversitesi, Eskişehir.

GENİŞLETİLMİŞ ÖZET

Eğitimin amacı, ilk olarak öğrencilerin bilgilerini, deneyimlerini arttırmak, yaratıcı düşüncelerini geliştirmek ve ahlaki değerlerini fark etmelerini sağlamaktır. İkinci olarak aldıkları eğitimden sonra bireyin mümkün olduğunca bağımsız çalışabilmesi, sorumluluk alması ve topluma aktif biri olarak katılmasını sağlamaktır (Warnock, 1978 akt. Orton, 1994). Bu amaçların yerine getirilmesinde öğrenciler için uygun öğrenme ortamları oluşturulmalıdır. Uygun öğrenme ortamlarının oluşturulması için çağdaş öğrenme yöntemleri uygulanmalıdır. Bu yöntemlerden biri de dramadır. Yapılandırmacı öğrenme kuramına dayanan bir öğrenme yöntemi olan drama, bir kelimenin, kavramın, davranışın, cümlenin, fikrin, deneyimin ya da olayın tiyatro tekniklerinden ve oyunsu süreçlerden yararlanarak anlamlandırılması, canlandırılmasıdır (San, 1996). Drama çalışmaları, bireyin duyuşsal, düşünsel ve bilişsel alanlarının bir bütünlük içerisinde olduğu, öğrenmenin yaşantısal hale getirildiği uygulamalardan oluşmaktadır (Adıgüzel, 1993).

Drama; öğrenmeyi hayat içinde sunması, dış etkenlerden soyutlaması, çocuğun bilgilerini öznelştirmesi, öğrenmeyi ve bilgiyi fonksiyonel kılması, öğrenmeyi aktif hale getirmesi ve öğrenmede öğrencilerin gelişimsel özelliklerini harekete geçirmesi açısından önemlidir (Adıgüzel, 2002). O'Neill ve Lambert (1990)'e göre drama, bir öğrenme yöntemidir çünkü drama aracılığıyla olaylar ve durumlarla bunların arasındaki bağlantılar

kolayca öğrenilmektedir. Bu bağlamda literatürde, Dewey'in de öğretim sırasında drama yönteminin kullanılmasını önerdiği görülmektedir (Bolton, 1985). Güneysu (1991)'ya göre drama, bireyin kendini başkalarının yerine koyarak çok yönlü gelişmesini, eğitim ve öğretimde aktif rol almasını sağlayan, motivasyonunu artıran bir eğitim yöntemidir (akt. Can, Dere ve Turan, 1998). Bu yöntem, dil ve iletişim, problem çözme becerisi, yaratıcılık, olumlu benlik tasarımı, değer ve tutumların aydınlatılması, sosyal farkındalık ve empati gibi birçok becerileri kazandırmayı amaçlar (Ömeroğlu, 1990). Bu nedenle, matematik öğretimi gibi öğrencilerin anlamakta güçlük çektiği bir derste drama yönteminin kullanılmasının, bireylerin matematikteki birçok kavramı hayal ederek öğrenmelerini sağlayacağı ve günlük hayatta karşılaşacakları problemleri daha yaratıcı çözmelerini sağlayacağı düşünülmektedir.

Öğrencilerin matematik dersinin günlük hayatla bağlantısını kurabilmelerini sağlamak için öğretim faaliyetleri sırasında gerçek durumlardan faydalanmak gerekir. Gerçek durumların yaratılması veya bu durumun olduğu yerlere gidilmesi her zaman mümkün olmayacağından bu gibi durumlarda drama uygulamalarından yararlanılarak hem anlaşılması zor konuların anlaşılması sağlanmış olur, hem de öğretim faaliyetleri çeşitlendirilerek ders ilgi çekici hale getirilmiş olur. Böylece öğrenciler yaparak yaşayarak ve oyun oynayarak öğrenme ile bir sonuca ulaşmış olurlar (Hatipoğlu, 2006).

Dramanın, matematik dersinde öğrencilere bir çok beceriler kazandırdığına dair literatürde pek çok çalışmaya rastlanmaktadır. Bu çalışmaların bazılarında matematik dersinde başarıyı (Duatepe, 2004; Fleming, Merrell ve Tymms, 2004; Hatipoğlu, 2006; Özsoy, 2003; Soner, 2005), kalıcılığı (Duatepe, 2004; Soner, 2005) ve matematiğe yönelik tutumu (Soner, 2005; Duatepe, 2004; Fleming, Merrell ve Tymms, 2004) olumlu yönde geliştirdiği tespit edilmiştir. Hipsky (2007) yaptığı bir araştırmada, drama yöntemini kullandığında öğrencilerin özyeterlik inançlarında olumlu yönde gelişmeler olduğunu belirtmiştir. Özyeterlik, Bandura (1997) tarafından "bireyin belli bir performansı göstermek için gerekli etkinlikleri organize edip, başarılı olarak yapma kapasitesi hakkında kendine ilişkin yargısı" olarak tanımlanmıştır. Özyeterlik inançları yüksek olan bireylerin bir işi başarmak için büyük çaba gösterdikleri, olumsuzluklarla karşılaştıklarında kolayca geri dönmelikleri, ısrarlı ve sabırlı olduklarını göstermiştir (Pajares, 1996). Ayrıca özyeterlik inancının yüksek olmasının matematik başarısını yükselttiği de Erkin ve Ader (2004) tarafından belirtilmiştir. Woolfok ve Hoy (2002)'da öğrencilerin öz-yeterliği ile derslerde kullanılan materyallerin arasında güçlü bir ilişki olduğunu yaptıkları çalışmada belirtmişlerdir (akt. Zengin, 2003).

Araştırmanın amacı, ilköğretim altıncı sınıf "Dik Prizmaların Yüzey Alanları ve Hacimleri" konusunun drama yöntemi ile öğretilmesinin öğrencilerin geometriye yönelik özyeterlik inançlarına etkisini ve bu yönetime ilişkin görüşlerini incelemektir. Bu araştırma ile matematik dersinde geometriye yönelik özyeterlik inançlarına etkisinin ve drama yönteminin öğrencilerin görüşlerinin belirlenmesinin daha sonra yapılacak çalışmalara yol göstermesi açısından işlevsel bir değere sahip olacağı düşünülmektedir.

Bu araştırmada, hem deneme hem de tarama modeli kullanılmıştır. Araştırma, 2006-2007 öğretim yılı bahar yarıyılında İzmir'de bir devlet okulunda altıncı sınıfa devam eden 20 öğrenci ile gerçekleştirilmiştir. Araştırmanın kuramsal boyutunun oluşturulabilmesi amacıyla araştırmacılar tarafından konu ile ilgili yerli ve yabancı kaynaklar taranmış ve konu uzmanlarının görüşlerine başvurulmuştur. Ayrıca araştırmacılar, özel bir kurumun "Yaratıcı Drama Liderliği Programı"na devam etmişlerdir. Öğrencilerin matematik dersinde, geometriye yönelik özyeterlik inançlarını belirlemek amacıyla Cantürk Günhan (2006) tarafından geliştirilmiş olan "Geometriye Yönelik Özyeterlik Ölçeği" kullanılmıştır. Araştırmada ayrıca, sınıf içi gözlem ve öğrenme yöntemi hakkındaki düşüncelerin ifade

edilmesinin istendiği için görüşme yoluyla toplanmıştır.

Araştırmada uygulamaya başlamadan önce ilköğretim altıncı sınıftaki matematik dersinin “Dik Prizmaların Yüzey Alanları ve Hacimleri” konusuna yönelik ders planları hazırlanmıştır. Bu ders planları hazırlanırken, alan yazında drama uygulamaları ile ilgili çalışmalar dikkatle incelenmiştir. Hazırlanan iki ders planı drama alanında uzman bir eğitimci, bir matematik eğitimcisi ve bir matematik öğretmeni tarafından incelenmiştir. Gerekli düzenlemeler yapıldıktan sonra ders planları Ek 2 ve Ek 3’teki gibi oluşturulmuştur.

İlköğretim seviyesindeki öğrenciler için somut kavramlardan soyut kavramlara geçiş oldukça zor olmaktadır. Bu nedenle dersleri daha eğlenceli hale getirmek, oyunla beraber öğrencilerin öğrenmelerini sağlamak gerekmektedir. Gesser-Edelsburg ve Guttman da (2006) eğitsel oyunların yaratıcı ortamlar yaratmak için, karakterler ve modeller yaratarak çeşitli rollerle öğrencileri özdeşleştirdiği için gerekli olduğunu belirtmiştir. Yardımcı olacak ve olan öğrenme yöntemlerinden biri olan dramanın bu çalışmada görüldüğü gibi alan yazındaki bir çok çalışmada öğrenciler üzerinde olumlu etkileri vardır. Bu çalışmada ilköğretim altıncı sınıf “Dik Prizmaların Yüzey Alanları ve Hacimleri” konusunun öğretiminde drama yöntemi uygulanmış ve öğrencilerin bu yöntem hakkındaki görüşlerinin olumlu olduğu saptanmıştır. Bunun yanı sıra matematik dersinde drama yönteminin uygulanması sonucunda öğrencilerin geometriye yönelik özyeterlik inançlarına etkisini belirleyebilmek amacıyla gerçekleştirilen denel işlem öncesi ve sonrasında toplanan verilerin istatistiksel çözümlenmesi sonucunda elde edilen bulgulara dayalı olarak, matematik dersinde drama yönteminin uygulanmasıyla yapılan öğretim, öğrencilerin geometriye yönelik özyeterlik inançlarında bir etkisi olmadığı sonucunu çıkarabiliriz. Bunun nedeni ise drama dersinin bireyin geometriye yönelik özyeterlik inançlarını olumlu yönde geliştirmesi için iki haftanın yeterli olmadığı bu eğitim sürecinin uzatılması gerektiği düşünülmektedir.

Araştırmadan elde edilen sonuçlara ve öğrenci görüşlerine dayanarak araştırmacılara ve öğretmenlere şu öneriler getirilebilir:

Öğrencilerin öğrenme sürecinde onların iletişim becerilerini arttıran, aktif olmalarını, bağımsız düşünebilmelerini sağlayan, süreci eğlenceli hale getiren bu yöntemin matematiğin diğer konularında ve ilköğretimin her seviyesinde uygulanabilirliği araştırılmalıdır.

Yöntemin öğrencilerin hangi öğrenme ürünleri üzerinde etkisi olduğu üzerine kapsamlı çalışmalar yapılmalıdır.

Drama yönteminin eğitimindeki yeri ve önemi özellikle matematik eğitimine katkıları toplantılar, seminerler, sempozyumlar yoluyla öğretmenlere, öğrencilere ve velilere benimsetilmelidir.

Öğretmenlere ve araştırmacılara Milli Eğitim Bakanlığı tarafından drama eğitimliği kursları hizmet içi eğitimler yoluyla öğretilmelidir.

Eğitim fakültelerinin İlköğretim ve Ortaöğretim Matematik Öğretmenliği programlarında öğrenim gören öğretmen adaylarına drama yöntemi öğretilerek, onların meslek hayatlarında bu yöntemden yararlanmaları sağlanmalıdır.

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