

The Effects of Creative Drama Teaching Methods on Academic Success in Architectural Education

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ABSTRACT

This study aims to determine the effects of creative drama as a teaching method on undergraduates' academic achievement and on the permanence of knowledge acquired in both theoretical and applied courses in architectural education. The study, which employed a pre-test/post-test control group design, was conducted as part of the bachelor's degree courses Environmental Behavioral Knowledge and Basic Design in the architecture department of Karadeniz Technical University. The study involved 26 undergraduates in the Environmental Behavioral Knowledge course and 48 in Basic Design. From the results of this study, we concluded that undergraduates in the experimental group instructed using the creative drama method showed higher levels of achievement than those in the control group instructed using conventional teaching methods. These results suggest that the creative drama method should be used in architectural education and that further study is needed in this area.

Keywords: architectural education, conventional teaching, creative drama, academic success, permanence of knowledge

INTRODUCTION

Architectural education incorporates several disciplines, from science to art to technology. However, to accommodate unstable social and economic circumstances, architectural education requires changes in program content, learning-teaching strategy and methods. The purpose of creating different and original products and trying for a better one results in constant novelty-seeking in architectural education. An analysis of the recent systems of architectural education shows the emergence of alternative approaches to expression and presentation (Anthony, 2002; Fasli & Hassanpour, 2016; Rodríguez Bernal, 2016).

Architecture students require a holistic perspective and the ability to identify cause-effect relationships, and cultivating these qualities in students throughout architectural education will enable them to use these skills instinctively when seeking new information (Aydnlı, 2003). This has been corroborated by Anderson (2011), who stated that learning by practising enables students to generate better solutions to the problems they will encounter by seeing their visual and physical consequences. Architectural education aims to transmit ways of creative thinking and cultivate individuals who would be able to perceive and generate creative ideas.

According to Piaget, the most important purpose of education is to cultivate individuals able to do and generate new things without repeating what has been done before (Fisher, 2005). Most education programs aim to enhance students' thinking ability as well as their physical and mental health and enable them to experience their own generative power (McCaslin, 1990). Teacher-centred methods, which are frequently preferred in educational environments and based on one-way communication, include activities in which teachers directly convey knowledge to students, and students listen and take notes. However, modern education aims to develop individuals by acknowledging their own cognitive, affective and psychomotor behaviours. DeVries and Zan (2005) noted that teaching how to learn has been gaining importance while the popularity of simply transmitting knowledge to students and other traditional methods have been declining in importance. The quests for active learning related to the teacher-student relationship base on the experiential learning or hands-on learning approach set forth by the educational theorist Dewey (1933). Dewey argues that students should play an active role in the

Contribution of this paper to the literature

- The creative drama method based on the principle of “learning by doing” seems to correspond to design process and stages in terms of the containing concepts and be employable in architectural education.
- It can be said that creative drama is an efficient method which has an impact on architecture students’ ability to see, comprehend, evaluate and express themselves.
- To adopt creative drama as an alternative method in the theoretical and applied courses in architectural education will give a significant point of view to this scientific field.

learning process by criticizing the students playing a role of the passive audience (Anthony, 2012). Hence, the need for student-centered architectural education is evident for fulfilling the academic and social needs.

On the document entitled “UIA and Architectural Education: Thoughts, Recommendations”, prepared by the Union of International Associations (UIA), the purpose of architectural education is defined as the development of characteristic methods of architecture and design, by combining the methods of various disciplines and arts that would contribute to the creativity. In this context, it is specified that research and testing of innovations in architectural education should be encouraged in order to fulfill the requirements of fluctuating social and technological conditions (UIA Mimarlık Eğitimi Komisyonu, 2002). NAAB (National Architectural Accrediting Board) specifies the skills and competencies that architecture students must acquire as follows; critical thinking and representation; building construction; technical skills and knowledge; integrated architectural solutions and finally professional practice (The National Architectural Accrediting Board, 2014).

Most of the current architectural education practices are carried out by traditional methods, ignoring contemporary developments, and thus, default information is transferred to the students. However, according to today’s modern developments, the learning process should allow the student and the teacher to work together to generate new information (Ciravoğlu, 2003). Similarly, Chickering and Gamson (1987) argue that the students should use in their daily life whatever they learn by linking them with previous experiences since the education process, in which the students would only listen to the teacher by sitting in the classroom and learn by memorizing the information would be insufficient.

In addition, the acquisition of conceptual ways of thinking can sometimes be realized more easily by using the body language. In this context, we may give the example of the Schweder’s studies, advocating that the architecture is influenced by the energy of the human body, by examining the performance-based applications on concepts body, perception, and gender. In addition, we may give example the studies of School of Architecture and Design in Valparaiso in the 1970s, suggesting that the architectural thoughts are based on the poems (Schweder, n.d.; Galán, 2015; Colomina, Choi, Galán, & Meister, 2012). Hence, it is possible to state that the architectural education process is now transformed into an atmosphere benefiting from the different ways of thinking and interactive methods, and an environment, for which, the process is more important than the outcome. This process evolving from the “teacher” to the “student”, gives the prominence to the individual and his/her ability to design.

The design is a discipline that depends on the culture and conditions, in which the individuals are live. The design, which can be defined as a creative problem solving, forms the basis of all human activities (Cross, 1995; Papanek, 1997; Schön, 2003). Rapoport (2004), as one the pioneers of researchers studying the relationship between people, environment, and behavior, emphasizes the importance of keeping in mind that basic decisions are almost always given in advance, by advocating that the design is for the users. Rittel (1985) defines the designing action as a “decision-making process” oriented for the purpose, while defines the design as a “plan” to fulfill the desired conditions. Hence, it is possible to respond to a problem with many different solutions. As in all problem-solving activities, the design process includes some inductions, containing following stages; decision making, expressing ideas, validating recommendations and evaluation (Cross, 1995; Do & Gross, 1996). Schön (1985) mentions that the designing action may be learned by doing it, hence, both the learning process and the design should enable the student to learn to design. De Bono (1992) points out the prominence of group work in creative education and suggests that both group and individual studies should be addressed.

This study argues that the creative drama method offers a different perspective on architectural education and can be effectively used in both theoretical and applied courses in architectural education. We believe that creative drama, as a student-centred approach, impacts individuals’ awareness of their knowledge, skills and experiences and enable them to apply these skills in their courses by making students more active in their courses and in solving problems by using new knowledge. Additionally, this method offers students a learning environment distinct from a conventional classroom and course format. Creative drama methods also allow for a supportive learning environment that cultivates individuals’ characteristics and experiences. Design matters involve all group members rather than just individuals, enabling all students to actively participate in courses through self-study and group studies. This helps students become aware of problems, generate solutions to these problems and realise that they can find alternative solutions to problems. Therefore, this method enables students to acquire information, improve

Table 1. Research design

Groups	Before experiment	During experiment		After experiment	3 months after
	Applied scales	Experimental operations	Period	Applied scales	Applied scales
Experimental group	Pre-test	Creative drama	14 weeks	Post-test	Permanence test
Control group	Pre-test	Conventional teaching	14 weeks	Post-test	Permanence test

upon it and develop skills in applying new knowledge. We thus assume that creative drama is an effective teaching and learning method that allows students of architecture to enhance skills including sight, perception, evaluation and self-expression. Thus, using creative drama as an alternative teaching method contributes a useful new perspective to architectural education.

This is an experimental study to determine the effects of creative drama as a teaching method on architecture students' academic success and permanence of acquired knowledge. Towards this end, we seek to answer the following questions related to our topic:

- 1) Are there any significant discrepancies between the academic achievements of the experimental group in a theoretical course, Environment-Behavior Knowledge, employing the creative drama method and the control group employing a conventional teaching method?
- 2) Are there any significant discrepancies between the academic achievements of the experimental group in an applied course, Basic Design, employing the creative drama method and the control groups employing conventional teaching methods?
- 3) Did the effects of the creative drama method have a significant impact on the levels of permanence of knowledge acquired by the experimental group students?

METHOD

Research Model

The pre-test-post-test control group model was used in this study. The independent variable, whose effect was analysed for the experimental groups, was the creative drama method. For the control groups, the conventional teaching method was used. Dependent variables in the study (academic achievement and permanence of knowledge) were analysed by comparing students' pre-test/post-test scores, midterm exam scores and permanence test scores (Table 1).

Both groups took a pre-test before the experiment and a post-test after the experiment. Three months after the experiment, a permanence test was also given to compare the permanence of knowledge acquired by the students in the two groups.

The experimental groups employed creative drama in their lessons while the control groups did not. None of the students in the control groups had taken a drama course before.

Study Groups

Study group of environment-behavior knowledge course

The group consisted of 26 students in total; 22 females and 4 males. It was broken into a control and an experimental group, each of which comprised 13 students. Students were grouped according to their previous scores in architectural projects. After determining the groups of students who got approximate scores, the students who got involved in the study were divided into the experimental and the control groups with unbiased assignment.

The basic design course group

This group comprised a total of 48 students; 31 females and 17 males. It was further divided into a control and an experimental group, each of which included 24 students. Because the students were undergraduates and thus had no grade point average, the groups were selected randomly from the class list counting 1, 2, 3 and 4 in succession. Participants in the study were randomly divided into experimental and control groups.

Data Collection Tools

The achievement test

For each of the courses (Environment-Behavior Knowledge and Basic Design), an achievement test was prepared to be used as a pre-test and post-test before and after the courses. The pre-tests aimed to determine the participants' initial levels of knowledge while the post-tests measured any discrepancies between the groups' achievement.

The achievement test drafts comprised 20 multiple-choice items proposed by the researcher. The content validity of the tests was confirmed by expert opinion. For the item analysis, split-half reliability was used. Questions whose discrimination index was low according to item analysis were removed from the tests and made ready for the application.

Means of midterm scores

The means of participants' midterm scores were used to compare achievement levels. In Environment-Behavior Knowledge, students took midterm exam 1, midterm exam 2 and the final exam during the semester. Midterm exam 1 included nine open-end questions while the midterm exam 2 included four and the final exam included seven. The questions on the main topics of the courses were jointly prepared by the course instructors and a domain expert to provide the content validity.

For Basic Design, 17 design exercises were conducted during the midterm period and 17 homework topics were given to the students to be returned by the end of the following course period. The contents of the design exercises and the homework subjects were prepared by the course conductors.

Permanence test

A permanence test was conducted three months after the experiment to compare the knowledge permanence of the experimental and control groups. A pool of twelve questions was generated from the open-ended questions in the midterm examinations for the permanence test. The prepared questions are presented to the course director and a specialist for getting their opinions. The validity of the test was ensured by eliminating the questions, which are not found appropriate. Five open-ended questions selected from the collected questions were prepared for the implementation.

Data collection and experimentation period

In this study, creative drama activities developed by the researcher were carried out by the experimental groups. These activities had three phases; warm-up/preparation, impersonation and evaluation-discussion. Theoretical knowledge on class topics was presented through creative drama activities focused on these contents. Activities included warm-up works, plays, improvisations and evaluations.

Activities in the Environment-Behavior Knowledge Course

This course is a compulsory second-year course in architectural education. Course content is based on a book by Gür (1996). In this course, the instructor is active, and the classic teaching method is effective. The activities were carried out in the spring term of 2011–2012. The course took four hours a week and students in the experimental group used the creative drama method. The students in the control group were taught with conventional teaching methods. The creative drama activities performed in the course is exemplified in [Table 2](#).

Activities in the Basic Design course

Basic Design is a compulsory first-year course in architectural education. This course, which has a significant impact on architectural education, was developed in Bauhaus, Germany, as an introductory course for artists and designers (Lang, 1998). In Basic Design, an applied course, students create designs in response to problems; the course has been taught using conventional teaching methods. Activities for the current study took place in fall semester of 2012–2013. The theoretical part of the course, including the first two hours, was presented to the students in the experiment group through the creative drama method. The students in the control group learned this material through conventional teaching methods. The creative drama activities performed in the course is exemplified in [Table 3](#).

Table 2. The course activities for Environment-Behavior Knowledge













Subjects	Gains
1. Behavior system 2. Requirement 3. Perception 4. Cognition	1. Being knowledgeable with behaviour system 2. By experience, perceiving the concepts; requirement, perception and cognition
Warm-up/preparation	
Twosome walking activities in which body gestures are examined	Walking activities concerning requirements and actions of individuals at the age of 5, 20, 40 and 70
	
Finding out twosomes/foursomes performing the same body gestures identified before	Producing compositions for 'Gestalt perception theory' with the help of several geometric figures
	
Students' compositions for 'Gestalt perception theory'	
	
Impersonation	
Group improvisations relating to the subject; requirement	Group improvisations relating to the subjects, behavior system and requirement
	
Evaluation-discussion	
Activities for the concepts 'perception' and 'memory' using several compositions by Ebneith, a popular artist	
	

Table 3. The course activities for Basic Design

Subjects	Gains
<ol style="list-style-type: none"> 1. Review 2. Symmetry 3. Harmony 4. Contrast 	<ol style="list-style-type: none"> 1. Being informed of the concepts review and symmetry 2. Comprehending the concepts harmony and contrast and the discrepancy between both 3. Being informed of significance of the concepts harmony and contrast on the composition
Warm-up/preparation	
Twosome activities of harmonic and contrast walking	Play of 'harmonies-contrasts'
	
Generating 'symmetric' formations with individual and group performance	Producing anecdotes for four symmetric formations, pictures of which are examined
	
Impersonation	
Twosome improvisations of full review, harmony and contrast	
	
Evaluation-discussion	
Making arrangements concerning types of review (full review, rotating review, variable review) by using several images	Students' products at the phase of evaluation-discussion
	

Data Analysis

The T-test was used to determine whether there was a statistically significant difference between the experimental groups in which the creative drama method was used and the control groups in which the traditional teaching method was used, between pre-test, post-test, semester grade average and permanence test achievement scores. The t-test is used to test whether the difference between the average of sample groups is significant. For T-

Table 4. Normal distribution test of experimental and control groups

Kolmogorov-Smirnov (a)			
	Statistics	df	p
Pre-test	0.170	26	0.053
Post-test	0.167	26	0.059
First midterm exam	0.089	26	0.200
Second midterm exam	0.133	26	0.200
Final exam	0.168	26	0.057
Permanence test	0.096	26	0.200

Table 5. Results for pre-test points

Groups	N	X	S	sd	t	p
Experimental	13	66.23	17.48	24	-.243	0.81
Control	13	67.92	18.02			
Total	26					

Table 6. Results for post-test points

Groups	N	X	S	sd	t	p
Experimental	13	80.54	7.39	24	2.81	0.010
Control	13	71.00	9.73			
Total	26					

test can be applicable, it is a prerequisite that the difference scores of the two related sets of measures are normally distributed. If the group size is less than 50, the normality of the scores is examined by the Kolmogorov-Smirnov test. If the calculated value "p" is greater than 0.05, the set is interpreted as having a normal distribution of scores (Büyüköztürk, 2011).

FINDINGS

Findings Related to Environment-Behavior Knowledge Course

The normal distribution of data obtained from Environment-Behavior Knowledge course was determined by the Kolmogorov-Smirnov test. 95% of the confidence interval was found in data analysis and the significance level was accepted as 0.05. According to the tests performed, the scores of the sets show a normal distribution (Table 4).

Achievement Test Results for Environment-Behavior Knowledge

The average pre-test points for participants in the experimental and control groups were calculated as part of our efforts to answer our research questions. The results of the T-test used to determine if there was a significant discrepancy between the averages of the groups are presented in Table 5.

No statistically significant discrepancy between pre-test point averages ($p=0.81$; $p > 0.05$) emerged. This indicates that the experimental and control groups had similar levels of proficiency before the study. This can be important for determining the effects of creative drama activities in Environment-Behavior Knowledge.

An achievement test was given as a post-test to the experimental and control groups after the application. The results of the T-test used to detect any significant discrepancy between the groups' achievements are presented in Table 6.

A clear statistically significant discrepancy emerged, with the experimental group showing higher average post-test scores ($p=0.010$; $p < 0.05$). The average achievement score of the experimental group was 80.54 while the control group average was 71.00. These results show that the creative drama method used with the experimental group improved students' levels of performance in the course Environment-Behavior Knowledge.

Midterm Point Averages in Environment-Behavior Knowledge

A T-test was used to determine if a statistically significant discrepancy existed between first midterm exam averages in the experimental and control groups in Environment-Behavior Knowledge. The results are presented in Table 7.

Table 7. First midterm exam point averages

Groups	N	X	S	sd	t	p
Experimental	13	75.46	13.30	24	3.41	0.002
Control	13	57.00	14.28			
Total	26					

Table 8. Results concerning the second midterm exam point averages

Groups	N	X	S	sd	t	p
Experimental	13	85.77	11.69	24	2.72	0.012
Control	13	69.61	17.93			
Total	26					

Table 9. Results concerning the final exam point averages

Groups	N	X	S	sd	t	p
Experimental	13	72.31	5.72	24	5.50	0.000
Control	13	54.46	10.20			
Total	26					

Table 10. Results concerning the permanence test point averages

Groups	N	X	S	sd	t	p
Experimental	13	63.00	14.97	24	4.65	0.000
Control	13	35.77	14.92			
Total	26					

An obvious statistically significant discrepancy emerged, with the experimental group showing notably higher first midterm exam averages ($p=0.002$; $p<0.05$). The achievement average of the experimental group was 75.46 while the control group average was 57.00.

A T-test was used to determine if a statistically significant discrepancy held between the second midterm exam averages of the experimental and control groups in Environment-Behavior Knowledge. Results are presented in [Table 8](#).

A clear statistically significant discrepancy emerged, with the experimental group showing higher second midterm averages ($p=0.012$; $p<0.05$). The achievement average of the experimental group was 85.77 while the control group average was 69.61.

A T-test was used to determine if a statistically significant discrepancy held between the final exam averages of the experimental and control groups in Environment-Behavior Knowledge. Results are presented in [Table 9](#).

An obvious statistically significant discrepancy emerged, with the experiment group showing higher second midterm exam averages ($p=0.000$; $p < 0.05$). The achievement average of the experimental group was 72.31 while that of the control group was 54.46. Thus, the experimental group employing creative drama had higher achievement levels on the final exam than the control group.

Permanence Test Results for Environment-Behavior Knowledge

The T-test was used to identify in the experimental and the control groups for Environment-Behavior Knowledge. Results are presented in [Table 10](#).

An obvious statistically significant discrepancy emerged in the permanence test point averages ($p=0.000$; $p<0.05$), with the experimental group showing notably higher scores. The achievement average of the experimental group was 63.00 while that of the control group was 35.77. Thus, the experimental group taught with creative drama showed higher scores on the permanence test than the control group taught with conventional teaching.

Findings Related to Basic Design course

The normal distribution of data obtained from Basic Design course was determined by the Kolmogorov-Smirnov test. 95% of the confidence interval was found in data analysis and the significance level was accepted as 0.05. According to the tests performed, the scores of the sets show a normal distribution ([Table 11](#)).

Table 11. Normal distribution test of experimental and control groups

Kolmogorov-Smirnov (a)			
	Statistics	df	p
Pre-test	0.126	48	0.056
Post-test	0.108	48	0.200
Midterm averages	0.096	48	0.200
Permanence test	0.090	48	0.200

Table 12. Results concerning the pre-test points

Groups	N	X	S	sd	t	p
Experimental	24	61.46	9.83	46	0.962	0.341
Control	24	58.21	13.31			
Total	48					

Table 13. Results concerning the post-test points

Groups	N	X	S	sd	t	p
Experimental	24	65.75	12.35	46	2.041	0.047
Control	24	57.62	15.09			
Total	48					

Table 14. Results for the midterm point averages

Groups	N	X	S	sd	t	p
Experimental	24	63.42	12.43	46	2.586	0.013
Control	24	55.67	7.81			
Total	48					

Achievement Test Results for Basic Design

The pre-test averages of the experimental and the control groups were calculated, and the T-test was used to determine if any significant discrepancy held between the groups. Findings are presented in [Table 12](#).

No statistically significant difference between the pre-test averages emerged ($p=0.341$; $p>0.05$). This indicates that the experimental and control groups had similar proficiency levels before the study.

An achievement test was given as post-test to the students in the experimental and control groups after the experiment. The T-test was used to determine if any significant discrepancy held between the groups' post-test scores. The results are presented in [Table 13](#).

A statistically significant discrepancy was found between the groups, with the experiment group showing higher post-test point averages ($p = 0.047$; $p < 0.05$). The average score of the experimental group was 65.75 while that of the control group was 57.62. Thus, the group taught with creative drama showed higher post-test scores than the control group taught with conventional teaching.

Midterm Averages in Basic Design

The T-test was used to determine if a statistically significant discrepancy held between the midterm averages of the experimental and the control groups in Basic Design. The results are presented in [Table 14](#).

A statistically significant discrepancy was found, with the experimental group showing higher midterm scores averages ($p=0.013$; $p<0.05$). The average score for the experimental group was 63.42 while that for the control group was 55.67. Thus, the experimental group taught with creative drama showed higher midterm scores than the control group taught with conventional teaching methods.

Permanence Test Results for Basic Design

The T-test was used to determine if any statistically significant discrepancy held between the permanence test point averages of the experimental and control groups in Basic Design. The results are presented in [Table 15](#).

Table 15. Results concerning the permanence test point averages

Groups	N	X	S	sd	t	p
Experimental	24	55.12	13.41	46	6.939	0.000
Control	24	26.54	15.08			
Total	48					

A statistically significant discrepancy was found, with the experimental group showing higher permanence test point averages ($p = 0.000$; $p < 0.05$). The average score for the experimental group was 55.12 while that of the control group was 26.54. This suggests that the creative drama method used with the experimental group positively impacted their academic achievement in the Basic Design course.

Overall, the study found that the experimental groups showed higher achievement levels than the control groups, suggesting that the creative drama method had a positive impact on academic achievement in both Environment-Behavior Knowledge and Basic Design. In addition, the creative drama method had a positive impact on the permanence of knowledge acquired in these courses.

DISCUSSION

Architectural education puts the responsibility for learning on students and thus requires them to actively participate in learning activities. The creative drama process likewise requires active participation. Students bring their own affective qualities, lifestyles and experiences to creative drama activities. These activities motivated students by facilitating empathy, interest and increased attention in class. The creative drama method thus fostered an educational environment that was attractive, encouraging and interactive. In this learning process, knowledge that wasn't acquired at a purely cognitive level went through mental processes and was evaluated by means of affective concepts. The students thus learned by experience, which enabled them to acquire knowledge more efficiently and permanently. These findings all indicate that the creative drama method can improve the students' academic achievement.

Hence, we have shown the effectiveness of the creative drama method and argue that it should be used to achieve the target goals of architectural education. We predict that it will be more beneficial to integrate the creative drama method into courses related to the design process rather than narrow its scope to only two courses, as exemplified in the study. It should be integrated into courses with consideration for the curriculum and weekly course hours of undergraduate courses. It can be used, for example, in courses such as Architectural Design Project, Building Construction or History of Architecture. Warm-up/preparation exercises can be used to get the students to adopt the subject. Through impersonation exercises, activities related to the space-user relation can be conducted involving relevant characters and roles. Activities related to reflection on historical processes for communal living and architectural structures. Warm-up activities/plays can dramatise visual works and impersonations of historic buildings or their architects can be performed. All of these activities enable students to observe and examine structures and immediate surroundings and understand from experience how form and structure are perceived on a human scale. Such activities can facilitate learning through personal engagement with the space; they thus foster permanent learning that will form the basis for the knowledge to be used in the design phase. Thus, subjects that are taught with the creative drama method will not be limited to textbooks but will integrate students' experiences and daily activities. These group activities will provide an unusual and interactive learning environment by requiring students to learn actively.

Architectural education and creative drama have several common aims and targets. Hence, the creative drama method can contribute to architectural education by enabling students to learn by seeing, doing and experiencing.

However, the use of the creative drama method in architectural education also presents challenges and limitations related to curriculum, classroom size and physical conditions. For future studies, the teaching environment must be made suitable for creative drama process by minimising these challenges and limitations.

Creative drama also seems to be effective in the fields other than architectural education. Thus, future studies can examine if the creative drama method itself, students' attitudes towards their courses or their motivation levels have an impact on their academic achievements. In addition, studies should be conducted within longer-term programs, which will make it possible to determine if the method impacts students' creative thinking or overall academic performance.

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