

World Conference on Educational Sciences 2009

The effectiveness of improved global warming project for 5-6 year old children attending pre-school

Özgül Polat Unutkan*

Atatürk Education Faculty Department of Primary Education, Program of Pre School Education., Marmara University, İstanbul, Turkey

Received October 23, 2008; received in revised form December 23, 2008; accepted January 5, 2009

Abstract

In this study educational aims appropriate for executing Global Warming project and various activity samples to realize such aims for pre-school children. The study is experimental and is based on data obtained from test and control groups. 5-6 year-old children attending pre-school are randomly assigned to test and control groups of 15 children. The test group is specifically presented with the project for the Global Warming Project while the same subject is presented to the control group with a conventional approach. The data in both test and control groups are measured with a survey, preliminary and post testing. At the preliminary and post testing children are also face-to-face presented with a question list. The data were evaluated with appropriate statistical analysis methods. Results were discussed at a debate on what needs to be done to develop the program further.

© 2009 Elsevier Ltd. Open access under [CC BY-NC-ND license](https://creativecommons.org/licenses/by-nc-nd/4.0/).

Keywords: Project-based learning approach; 5-6 year-old children; global warming.

1. Introduction

Global studies demonstrate that successful countries in education apply Project Based Education (Pissa, 2008) conducted in various approaches of education proved that project based methods increase children's success and interest about project subject when compared with conventional education methods (Özdener and Özçoban, 2004, Colley, 2001). Projects are done thorough investigations of a real-life subject according to the children's interests and needs (Chard, 2001; J. According to Thomas (2000), projects involve research and new information gaining by students while improving participation and self-reliance. They create wider horizons for students to reach education possibilities and opportunities for culturally diverse students (Railsback, 2002). Students that deal with projects assume more responsibilities in class (Boaler, 1997). It is noted that during project studies the students have fun while they are learning and gain searching and thinking abilities (2005). Also, project studies enable students to use different intelligence fields. They help establishing causal relationships (Korkmaz, 2002). Projects are an important learning modal that help the children actively learn a subject in all its dimensions and employ thorough and multi-dimensional thinking. Project studies support children in development and teach ways of reaching information while having fun. In pre-school education since supporting cognitive fields of development carry importance, projects have a significant weight. In pre-school education gaining information, active participation and enjoying the application would ease to reach the desired results. Catapano (2000) emphasizes the importance of projects in pre-school education. In this research appropriate education aims and various activity

* Özgül Polat Unutkan. Tel.: 05324848836.

E-mail address: ounutkan@marmara.edu.tr

realize these aims are presented to pre-school children to apply the Global Warming project. The aim of the project is to inform children about reasons of global warming, possible precautions, what needs to be done, etc. and bringing them in appropriate change in behavior. Thus, a program is formed for the global warming project and the level of attaining targets is tested. In the program topics are presented with different pre-school activities (games, drama, art, Turkish language, music, field trip, literacy, family participation, vs.) and computer support.

The aim of the study is to determine effectiveness of the Global Warming project on 5-6 year-old children attaining pre-school. Problem of the research is to determine if the Global Warming project is effective in developing the necessary information, skills and behaviors in 5-6 year-old children attaining pre-school.

2. Method

2.1. Research design

In order to determine the effectiveness of the Global Warming Project experimental design was used in the research.

2.2. Sample

Sample of the research is 30 children of 5-6 age group attaining the same class of the same pre-school randomly assigned to a test (8 girls, 7 boys) or control (9 girls, 6 boys) group of 15 each.

2.3. Data collection tools

In the research preliminary and post testing evaluation were made with children and teachers before and after the project. Teachers evaluated the children in preliminary and post testing. The children answered illustrated questions prepared by researchers with computer support under teacher supervision and evaluated themselves in preliminary and post testing. In preliminary and post testing there are 24 questions on the subject.

2.4. Data analysis methods

In the research SPSS 10.0 package program was used. Relationship between preliminary and post testing of test and control groups is investigated with Wilcoxon Signed Ranks Test over the children's self-evaluation. Difference between test and control groups in terms of preliminary and post tests is determined with Mann Whitney U test. The same processes are repeated for forms where teachers evaluate the children.

2.5. Application

The Global Warming Project is presented to the test group with various activities (Turkish language activities [stories, tongue twister, conversation, poet, and riddle], drama, art, game, literacy, science and mathematics studies, music, field trip and parent participation). The activities are presented with the help of technological tools (computer, projector, dvd, stereo, overhead projector).

The Global Warming Project is applied to the test group prepared as indicated above every day for a month by applying one or two activities per day. With the control group learning about the concepts in project are presented with a more conventional approach in daily plans of the teacher and only showing illustrated cards in Turkish language activity. Information of the children in both test and control groups about the global warming subject are assessed by the teachers with preliminary and post testing evaluation. During these procedures the children were presented with a 24-article illustrated question list prepared with computer support by the teachers whereby the children evaluate themselves.

2.6. Program applies in the test group

The Global Warming Project is realized with the activities mentioned below. The activities are inserted in teacher's daily plan and regularly applied for a month with computer, projector, dvd, stereo, overhead projector support. Turkish Language Activity (12 activities), Drama (4 activities), Game (8 activities), Music (2 activities), Art (8 activities), Preparation to Literacy (8 activities), Science and Mathematics (6 activities), Field Trip (1 activity), Parent Participation (8 activities).

2.7. Program Applied in the Control Group

In control group the concepts in project are presented with a more conventional approach in related daily plans and only showing illustrated cards in Turkish language activity.

3. Results

Results of the research are presented below.

Table 1: Results of Mann Whitney U test regarding averages of preliminary test scores where children evaluate themselves before the project

Group	n	Average	Total	U	p
Test	15	16.30	244.00	102.50	.44
Control	15	14.70	221.00		

According to the results of Mann Whitney U test regarding averages of preliminary test scores where children in test and control groups evaluate themselves before the project, no significant difference was found between the two groups (test and control) ($U = 102.50, p > .01$).

Table 2: Results of Mann Whitney U test regarding averages of post test scores where children in test and control groups evaluate themselves after the project

Group	n	Average	Total	U	p
Test	15	23.00	346.00	.000	.00
Control	15	8.00	120.00		

According to the results of Mann Whitney U test regarding averages of post test scores where children in test and control groups evaluate themselves after the project, a significant result is found between the two groups ($U = .00, p < .01$). According to this, average of test group is significantly higher than average of the control group.

Table 3: Results of Wilcoxon Signed Ranks Test regarding averages of preliminary and post test scores where children in test group evaluate themselves before and after the project

Preliminary Test	Test- Post	n	Average	Total	z	p
Negative Range		0	.00	.00	3.41	.001
Positive Range		15	8.00	120.00		
Equal		0				

According to the results of Wilcoxon Signed Ranks Test whereby children in test group evaluate their scores from questions on the program before and after the project, there is a significant difference in average scores related to information about the Global Warming Project ($z = 3.41, p < .01$). Accordingly, average score of post test conducted after the program is higher than the average score of preliminary test.

Table 4: Results of Wilcoxon Signed Ranks Test regarding averages of preliminary and post test scores where children in control group evaluate themselves before and after the project

Preliminary Test	Test- Post	n	Average	Total	z	p
Negative Range		0	.00	.00	3.51	.000
Positive Range		15	8.00	120.00		
Equal		0				

According to the results of Wilcoxon Signed Ranks Test whereby children in control group evaluate their scores from questions on the program before and after the project, there is a significant difference in average scores related to information about the Global Warming Project ($z = 3.51, p < .01$). Accordingly, average score of post test conducted after the program is higher than the average score of preliminary test.

Table 5: Results of Mann Whitney U Test about n test score averages of teacher evaluation of children in test and control groups

Group	n	Average	Total	U	p
Test	15	15.83	237.50	107.50	.21
Control	15	15.17	227.00		

According to the results of Mann Whitney U Test about preliminary test results of children in test and control groups acquired with teacher evaluation, no significant difference is found between the two groups (test and control). ($U = 107.50$, $p > .01$).

Table 6: Results of Mann Whitney U Test about post test score averages of teacher evaluation of children in test and control groups

Group	n	Average	Total	U	p
Test	15	23.00	345.00	.000	.00
Control	15	8.00	120.00		

According to the results of Mann Whitney U Test about post test average scores of children in test and control groups acquired with teacher evaluation a significant difference is found between the two groups ($U = .00$, $p < .01$). According to this, test group average is significantly higher than control group average.

Table 7: Results of Wilcoxon Signed Ranks Test about teacher evaluation preliminary test-post test average scores of children in test group

Preliminary Test- Post Test	n	Average	Total	z	p
Negative Range	0	.00	.00	3.43	.001
Positive Range	15	8.00	120.00		
Equal	0				

According to results of Wilcoxon Signed Ranks Test about scores that children in test group receive before and after the project with teacher evaluation from questions about the program there is a significant difference between the information score averages on global Warming Project where the children evaluate themselves before and after the project ($z = 3.43$, $p < .01$). Average of the post test conducted after the program is higher than preliminary test average score.

Table 8: Results of Wilcoxon Signed Ranks Test about teacher evaluation preliminary test-post test average scores of children in control group

Preliminary Test- Post Test	n	Average	Total	z	p
Negative Range	0	.00	.00	2.25	.025
Positive Range	15	3.00	15.00		
Equal	0				

According to results of Wilcoxon Signed Ranks Test about scores that children in control group receive before and after the project with teacher evaluation from questions about the program there is a significant difference between the information score averages on global Warming Project where the children evaluate themselves before and after the project ($z = 2.25$, $p < .05$). Average of the post test conducted after the program is higher than preliminary test average score.

Results and Discussion

In the study which evaluates the effectiveness of Global Warming Project prepared for 5-6 year-old children attending pre-school, both children and teacher evaluations proved that the program is effective. As a result of children and teacher evaluations between test and control groups, it is determined that average scores of the test group are significantly higher than average scores of the control group. In control group there is a significant difference between preliminary and post test average scores regarding children and teacher evaluation in favor of post test. The conventional approach applied to control group is determined to increase the children's information and skills on global warming (although not at the same level with test group).

This result is parallel to results of research conducted on effectiveness of different projects on children's learning (Güven, Zembat and Şahin, 2003; MacDonnell, 2007; Temel, Çiftçiabaşı and Ünal, 2003; Unutkan and Gülay Duman, 2007; Unutkan and Gülay, 2007; Unutkan and Gülay, 2007).

According to the results of this research it can be concluded that project approach should be presented frequently in every level of education, especially pre-education. For this reason, teachers and teachers of future need to be informed about project approach and project application. Multi-dimensional support of children with different project topics is very important.

Resources

- Boaler, J. (1999, 31 Mart). Mathematics for the moment, or the millennium? *Education Week*.
- Catapano, S. (2005). Teacher Professional development through children's Project work. *Early Childhood Education Journal*. Vol. 32, No: 4, 261-267.
- Colley, K. E. (2006). Understanding ecology content knowledge and acquiring science process skills through Project- based science instruction. *Science Activities*. Vol. 43, No. 1, 26-33.
- Chard, S. C. (2001). Project Approach: Three Phases. Downloaded from www.project-approach.com/development/phases.htm.
- Gültekin, M. (2005). The effect of Project based learning on learning outcomes in the 5 th grade social studies course in primary education. *Educational Sciences: Theory & Practices*, 5 (2), 548-556.
- Güven, Y., Zembat, R. ve Şahin, F. (2003). Concept acquisition with project-based instruction. OMEP World Council Meeting and Conference Kuşadası – Turkey.
- Jarrett, D. (1997). Inquiry strategies for science and mathematics learning. Portland, or: Northwest Regional Training Laboratory. Downloaded from: www.nwrel.org/msec/images/resources/justgood/05.97.
- Korkmaz, H. B. (2002). Effect of Project Based Science Instruction on Levels of Creative Thinking, Problem Solving and Academic Risk Taking. Hacettepe University. Social Sciences Institute. Unpublished PhD thesis. Ankara.
- MacDonell, C. (2007). Signs all around us: A Project approach unit for kindergarten. *Library Media Connection*, 32-34
- Özdener, N. & Özçovan, T. (2004). A Project based learning model's effectiveness on computer courses and multiple intelligence theory. *Educational Sciences: Theory & Practices*, 4(1), 164-170.
- Railsback, J. (2002). Project-based instruction: Creating Excitement to Learn. Portland, Northwest Regional Training Laboratory. Downloaded from. www.nwrel.org/request/2002aug/index.html.
- Temel, F. Z., Kandır, A, Erdemir, N. ve Çiftçi başı, H. K. (2004). Project Approach and Program Examples. İstanbul: Morpa Kültür Yayınları
- Thomas, J.W. (2000). Project-based learning: Overview. Novato, CA: Buck Training Institute.
- Unutkan, O. P. ve Gülay Duman, H. (2007). Effectiveness of Healthy Life Project for 5-6 Year-Old Children. 16th Educational Sciences Congress, September 5th – 7th, 2007, Gaziosmanpaşa University Faculty of Education: Tokat.
- Unutkan, O. P. ve Gülay., H. (2007). Effectiveness of Benefiting from Old Belongings Project for 5-6 Year-Old Children. IInd International Pre-School Education Congress, September 24th – 27th, 2007. Marmara University, Department of Primary Education: İstanbul.
- Unutkan, O. P. ve Gülay , H. (2007). Effectiveness of Conscious Customer Project for 5-6 Year-Old Children. Ist National Primary Education Congress, November 15th – 17th, 2007. Hacettepe University, Faculty of Education: Ankara.