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Procedia - Social and Behavioral Sciences 186 (2015) 456 – 460

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**Procedia**  
Social and Behavioral Sciences

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5th World Conference on Learning, Teaching and Educational Leadership, WCLTA 2014

## Examination of The Effects of Reggio Emilia Based Projects on Preschool Children's Creative Thinking Skills

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### Abstract

The present study investigates the effects of Reggio Emilia based projects on preschool children's creative thinking skills. The study was carried out with the participation of 18 six-year-olds attending a preschool in Kırklareli province of Turkey, in a period of 3 months, during which they were subjected to a Reggio Emilia based instruction project. As the data collection tool, we used Torrance Tests of Creative Thinking Form A, and conducted pre- and post-project testing in order to examine the differences in children's creative thinking skills. The results reveal differences in test scores in favor of the post-project test.

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Peer-review under responsibility of Academic World Education and Research Center

*Keywords:* Reggio Emilia approach, project, creativity

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### 1. Introduction

During the recent years creative thinking and creativity have become essential skills for adapting to the rapidly changing world. Creativity is a characteristic that can be encountered in each individual to varying degrees (Runco, 1996). However, it is also possible that it is smothered by factors such as parenting, educational history, and socio-cultural environment. Nevertheless, it can also be sharpened and enhanced through specialized instruction programs and techniques. Whereas Torrance (1968) defines creativity as being receptive towards problems, disorders and discord, spotting difficulties, searching for remedies, making guesses, developing hypotheses regarding problems or

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attempting new solutions in the face of failure, and Kısıroğlu (2000) sees it as a product of a mind capable of multi-dimensional thinking, Bentley (1999) defines it as the acquisition of information followed by retransformation and reconfiguration until it is transmuted into a new and distinct form or idea. In brief, creativity is not only coming up with an original product, but also synthesizing what was already known so as to produce something new; it is coming up with new and different solutions to familiar problems, being easily adaptable to new situations, and reconceptualizing the functional properties of familiar objects in unfamiliar ways (Rep; Sungur, 1997).

In Turkey as well as elsewhere in the world, there have been numerous studies engaging creative thinking, thanks to the rising awareness of its significance. Most of these studies compare traditional and alternative instruction paradigms and conclude that alternative instruction has a more positive impact on the development of creative thinking (Karataş, Özcan, 2010).

Loris Malaguzzi, who was the founder one of these alternative paradigms (Reggio Emilia Approach), believed that all children possessed a natural capacity for creativity, and needed to be provided with opportunities for cultivating this capacity to its full potential. Malaguzzi put a strong emphasis on children's own unique way of expressing themselves, which he referred to as “Children's 100 languages.” According to him, children use these “languages” through many different ways such as speaking, singing, painting and drawing, dramatizing and playing (Thornton and Brunton, 2010).

On the Reggio Emilia Approach, children's preexisting skills are reinforced and boosted by instructional activities and the environment, which help them improve in aesthetic judgment, and express themselves better through media such as painting, music, theater and photography (Thornton and Brunton, 2010).

In doing so, the objective is to encourage the child to wield the desired knowledge as a tool during instructional activities, instead of trying to teach the said knowledge in a didactic fashion. In this context, children get to experience learning by practice. For instance, in the painting class, the goal is to encourage the child to create a painting that will communicate her thoughts on that day's activities to her peers, as opposed to telling her to paint a preset object or concept. This approach allows the child to use “painting” as a linguistic medium (Yayla, 2004; Rep, Kalıpcı, 2008).

## 2. Material and Methods

We used the experimental paradigm in our study, which envisioned a 3-months project dedicated to instructional activities with children, as well as the pre- and post-project applications of the Torrance Tests of Creative Thinking Form A in order to investigate the effects of the project on children's creative thinking skills. We used SPSS to conduct the statistical analysis of the data. As a result of the analysis, we computed the Cronbach's Alpha reliability coefficients for the Torrance Tests of Creative Thinking which consist of the following subscales: Fluency, Originality and Flexibility. These values were found to be 91 for Fluency, 86 for Originality and 89 for Flexibility, which indicate that these three subscales of the test possess high reliability. The study sample consisted of 18 preschool children enrolled in a stand-alone preschool operating under the National Ministry of Education in Kırklareli province of Turkey. The participants were all 6-year-olds. 9 of them are girls and 9 are boys. The parents and preschool teachers also participated in the study *via* their input and feedback into the activities implemented during the project. We chose this particular group for our study by directed sampling.

## 3. Results and Discussion

Table 1. Evaluation of Participating Children with Regards to Creative Thinking Skill Factors

Creative Thinking Skill Factors	Time	N	Mean	Standard Deviation	T	P
Fluency	Pre-project	18	17.6111	5.59557	-3.425	0.003**
	Post-project	18	22.3333	3.69419		
Originality	Pre-project	18	11.4444	4.86551	-5.299	0.000***
	Post-project	18	18.0556	4.31785		

Flexibility	Pre-project	18	8.0556	3.40367	-1.630	0.122
	Post-project	18	9.4444	3.11018		
Elaboration	Pre-project	18	11.2778	2.44482	-5.326	0.000***
	Post-project	18	13.8333	1.91741		

As Table 1 indicates, hypothesis H1a can be considered confirmed for  $p < 0.01$  whereas H1b and H1d can be considered confirmed for  $p < 0.001$ . Therefore, there are significant differences between pre- and post-project Fluency, Originality and Elaboration factors. The mean pre- and post-project values in these areas also suggest an increase in these factors.

Also as Table 1 indicates, it was not possible to confirm H1c with  $p > 0.05$ , which means that there was no statistically significant difference between the pre- and post-project test results in the Flexibility subscale. However, mean pre- and post-project test results indicate that there was an increase in average Flexibility scores. Therefore, it is possible that the increase could become significant if the study is repeated with a larger sample.

A controlled study by Zahra, Yusoo and Hasim (2012) also yielded parallel results which support and complement our findings. In their study, the authors worked with 60 preschoolers, and investigated the effects of creative instruction by exposing the experimental group to techniques such as narration, brainstorming, roleplaying and online searches. They also used pre- and post-project Torrance testing with both the experimental and control groups, which indicated a significant increase in the test scores for the experimental group without a significant increase in the test scores of the control group.

Another study by Dziejewicz, Oledzka and Karwowski (2013) titled “Developing 4 to 6-year old children's figural creativity using a doodle-book program” also yielded significant differences in Fluency between the pre- and post-project Torrance Creativity Test scores. In particular, there was a noticeable increase in post-project Fluency in comparison to the pre-project test results. Yet another similar study by Karataş and Özcan (2010) found significant increases in Fluency, Originality and Elaboration scores of two groups after exposure to information technologies instruction and creative information technologies instruction. The authors of the study reached the conclusion that the students in the group exposed to creative information technologies instruction scored higher in Fluency, Originality and Elaboration than the students who were exposed to information technologies instruction. Finally Karakuş (2000) investigated the creative problem solving program's effect on creative thinking skills, and found significant differences in various subscales of creative thinking in favor of the experimental group. In conclusion, we could argue that creative instructional programs and approaches have a positive impact on children's creative thinking skills.

Table 2. A Gender-based Comparative Analysis Of Creative Thinking Skill Factors In Pre-and Post-Project Testing

Creative Thinking Skill Factors	Time	Groups	N	Mean	Standard Deviation	T	P
Fluency	Pre-project	Girls	9	19.7500	6.38637	1.444	0.174
		Boys	9	15.9000	4.48330		
	Post-project	Girls	9	21.0000	4.62910	-1.409	0.178
		Boys	9	23.4000	2.50333		
Originality	Pre-project	Girls	9	11.5000	3.85450	0.042	0.967
		Boys	9	11.4000	5.75809		
	Post-project	Girls	9	18.5000	4.65986	0.381	0.708
		Boys	9	17.7000	4.24395		
Flexibility	Pre-project	Girls	9	8.8750	2.99702	0.909	0.377
		Boys	9	7.4000	3.71782		
	Post-project	Girls	9	10.7500	2.76457	1.675	0.113
		Boys	9	8.4000	3.09839		

Elaboration	Pre-project	Girls	9	11.3750	2.66927	0.146	0.885
		Boys	9	11.2000	2.39444		
	Post-project	Girls	9	13.8750	1.45774	0.080	0.937
		Boys	9	13.8000	2.29976		

Table 2 indicates that, it is not possible to confirm the hypotheses  $H_{2a}$ ,  $H_{2b}$ ,  $H_{2c}$ ,  $H_{2d}$ ,  $H_{2e}$ ,  $H_{2f}$ ,  $H_{2g}$  and  $H_{2h}$  at the  $p < 0.05$  level of significance. In this regard, there is no statistically significant difference between girls' and boys' Fluency, Originality, Flexibility and Elaboration pre- and post-project test scores. Nevertheless, the means show that girls scored higher on average on both the pre- and the post-project test. Therefore, it is possible that the disparity could become significant if the study is repeated with a larger sample.

As a result of our analysis, we couldn't find a significant difference between the Fluency, Originality, Flexibility and Elaboration scores of the participating girls and boys (Table 2). This negative finding consists with the results of Tekin and Taşgin's study (2009), where the authors could not find a statistically significant correlation between gender and the creativity of gifted children. Öncü (2003) also investigated the question whether there is a difference in creativity between girls and boys, which again yielded no statistically significant difference in creativity between the two genders. The findings of the study yielded no significant difference in Fluency, Originality, Flexibility or Elaboration between girls and boys, which were in agreement with previous findings in the same area. A study by Aydın (1993) also investigated the same hypothesis on 5 and 6-year-olds enrolled in preschools and found no significant difference in creativity between girls and boys. Ergen and Akyol (2012) also found no statistically significant correlation between creativity and gender in their study "An Investigation of Creativity in Preschoolers."

Matud and Grande (2007) on the other hand, conducted a study in Spain titled "Gender Differences in Creative Thinking" which enlisted 466 females and 273 males between 15 and 65 years of age as participants, and found a significant difference in Fluency and Originality in favor of males. Although their results disagree with our findings here, their effect sizes were relatively small. In a similar study investigating gender differences in creativity in 5 and 6-year-olds, Gönen *et al* (2008) again found no significant differences. In a study investigating the relationship between level of education, gender and creativity, Matud, Pilar, Rodríguez and Grande (2007) found differences in Fluency, Originality and average creativity scores. Dikici (2006) found no significant correlation between gender and creativity in a study comparing the students taking art classes to those who aren't. Gülel (2006) on the other hand found that female students had a higher level of creativity in comparison to male students in a study investigating the relationship between creativity and a number of variables in students enrolled in classroom teacher education programs. Similarly, in a study investigating the relationship between multilingualism and creativity in Korean American children, Lee and Kim (2011) found that creativity in girls is higher than it is in boys.

#### 4. Conclusion

The quantitative and qualitative findings of our study indicate that Projects Inspired by the Reggio Emilia Approach have an effect on children's creative thinking skills. Quantitatively, we see a significant difference in the Fluency, Originality and Elaboration subscale scores of the Torrance Tests of Creative Thinking between the pre- and post-activity tests in favor of the latter, though there was no such difference in the Flexibility subscale scores. As far as the qualitative dimension of our study is concerned, it is also possible to argue that the Reggio Emilia Approach as an effect on the Fluency, Originality, Flexibility and Elaboration subscales of creative thinking skills. We are of the opinion that it is possible to develop projects that are driven solely by the interests and inquisitiveness of children, and use these projects effectively to give children an outlet to express their creativity and thus provide support for the development of their creative thinking skills. In the absence of such an outlet, relying on a pre-packaged program runs the risk of hindering the development of the child's creative thinking skills, and depriving them of the opportunity to follow their natural curiosity to where it would take them. If children are allowed to develop their ideas, they will be able to find an adequate outlet for their inquisitiveness through original and creative activities. In this regard, the present study can be seen as a model study in our field, and it could be argued that it will not only play a seminal role for providing helpful information concerning the effects of the Reggio Emilia

Approach on instructional environments, programs, teachers and children but also will serve as pioneer in Turkey. It is possible to reach more robust and significant results if the scope of the current investigation is widened to encompass different and larger samples with new teachers and children situated in different social and cultural environments. In this respect, the current study can be taken as a model for guiding future studies, sampling teachers' activities that take place within the framework of the National Ministry of Education Preschool Education Program, and facilitating the improvement of preschool education in general.

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