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THE DEVELOPMENT OF CREATIVITY IN PRESCHOOLERS' DRAWINGS THROUGH TASK-ORIENTED ACTIVITIES

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Abstract: The goal of this paper is to plan working task for preschool children in order to deliver original and creative outputs. The theoretical background of the paper is set in defining creativity as *the capacity to create something new, original, and adequate to reality* (Roco, 2004; Jaoui, 1975; Roşca, 1981; Boden, 1992). The research hypothesis states that *if preschoolers are asked to comply with some predefined working rules in drawing they will deliver original outputs*. The independent variable is the working task and the dependent variable is the output. The empirical research involved children enrolled in preparatory group from Floreşti Kindergarten (Cluj). The learning content involved elements from Math, Biology, and Decorative Art: circle, square, triangle, leaves, flowers. Children were involved 13 comparative experimental contexts. Therefore, their progress for each output was monitored. Preschoolers delivered original drawings, different from their peers' but similar in using the same decorative element. The research hypothesis confirmed. Results are to be judged with caution as future researches should use fewer tasks as the independent variable

Key words: task, requirement, progress, originality, variety

1. The scientific problem

Previous studies of creativity focused on Romanian and international products of light industry (clothing, faience, carpets etc.). We noticed the low degree of creativity for Romanian products and their inadequacy to the market demands. The current study analysis the textures using mainly circles, squares, flowers and leaves. We were interested in how can we support preschoolers to create models that could be printed on textures for different clothing articles (skirts, dresses), bed sheets, curtains etc.. We noticed that preschoolers like drawing familiar elements like flowers, human figures, cars etc.. Age is an important factor in drawing and placing these elements (Dulamă, Ilovan, Vanea, 2009 a). In this current research we aimed helping children in drawing patterns according to a logic process, following some specific tasks. We were interested in learning to combine different colors and shapes in a pleasant manner. Therefore, their outputs were analyzed according to five criteria: originality, fluency, flexibility, execution, and synthesis. We were also interested in the ways we could stimulate teachers' creativity in order for them to design adequate educational contexts for their students.

2. Theoretical background

Our research is based on several definitions of creativity. Mihaela Roco (2004) states that *being creative* means *creating something new, original and adequate to reality*. H. Jaoui (1975) refers to creativity "as the process of associating and combining pre-existing elements in new structures". Al. Roşca (1981, p. 16) defines creativity as "the ability or the capacity to produce something new and valuable". Other authors as Margaret A. Boden (1992) believe that in general creativity means "creating new and original combinations using old ideas", but these combinations should have a certain value.

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J.P. Guilford claimed that all people are creative and they can be distributed on continuous scale of creativity. I. A. Taylor (1959, *apud.* Roco, 2004) distinguishes five levels of creativity: *expressive creativity, productive creativity, inventive creativity, innovative creativity and emerging creativity*. The current study focuses on *expressive creativity* defined as the fundamental form of creativity and characterized by spontaneity and freedom of expression. It is not subject to any ability and is revealed in children's drawings.

In order to measure the creative behavior, Guilford (1967) developed sets of tests focused on divergent thinking. *Factors of divergent thinking* being measured are: (a) *the fluency (flow)* - the ability to quickly and easily produce under certain conditions words, ideas, phrases, sentences; (b) *the flexibility* - the ability to change and effectively restructure problem solving skills and to transfer them in different contexts; (c) *the originality* - the ability to deliver new ideas, creative, unconventional and unusual solutions that shock; (d) *the development* - the ability to plan an activity taking into account as many details as possible and the ability to predict the final outcome, to develop and finalize an idea; (e) *the attention to problems* - the ability to easily observe unusual phenomena; (f) *the reorganization (or restructuring)* - the ability to use an object or a part of it in a new and unusual way. In this paper we analyze the ability of children to produce their work differently from their previous works and from their peers by following certain guidelines set by the teacher.

Previous papers show that children have freedom of graphic expression in their works, they are able to adapt to the new contexts, they perceive the same stimulus, but they are using different representations. (Roco, 2004); preschoolers are on the first level of creativity: expressive creativity (Taylor, 1959, *apud.* Roco, 2004). This is characterized by spontaneity and freedom of expression that is free from any ability. With respect to characteristics of drawings they are in the phase of *intellectual realism* or ideoplastic drawing; (year 4 - 6– 9 -10). In this phase they draw what they see, what they memorized, what they understand and how they understand.

Previous educational experiments on children's drawings (Dulamă, Ilovan, Vanea, 2009 a, b; Dulamă, Alexandru, Vanea, 2010; Dulamă, Iovu, Vanea, 2011) analyzed how subjects fulfill tasks and how their creativity is influenced by these specific tasks. A similar research was carried with children enrolled in a different group in the school year 2009-2010 (Dulamă, Alexandru, Vanea, 2010).

3. Method

The main objective of this research is to design and to carry on stimulating activities for developing the creativity of preschoolers. This was followed by analyzing the results and the learning process. Research was carried at Floreşti kindergarten (Cluj) during the 2010-2011 school year. The sample consisted in 16 children (girls and boys) enrolled in high-preparatory group (preschool teacher Vanea Cornelia). During the learning activities, the content involved five major themes: circle, square, triangle, leaf, and flower. This paper describes the learning contexts and the conclusions of the experiments. A previous paper of (Dulamă et al., 2011) describes the first part of the experiments. The current paper aimed to explore and validate some hypothesis, instruments for data collection, tasks and learning contexts. The research hypothesis stated that *if preschoolers are asked to comply with some predefined working rules in drawing they will deliver original outputs.* The tasks given to students (subject, number) represented the independent variable and the results (outputs) are the dependent variable.

At the initial test, children received 4 white sheets (A6) and colored pencils. They were asked that for 30 minutes to decorate 4 present bags. If they finished earlier they could ask for more sheets. In all tasks, children were asked to comply with the following rules: not to copy their peers' drawings, not to overload the sheets with decorative elements and to create a pleasant model.

The assessment of the drawings included the following points: 1-2p for originality – for the differences among the drawings (2p if one child's drawing are different than his/her peers') (quantitative measure); 1-2p for fluency – the total number of generated solutions even with little differences between drawings (quantitative measure); 1-2p for flexibility – the degree of differentiation among the drawings (qualitative measure); 1-2p for development – correctness of the

execution; 1-2p for synthesis – general aspect of the drawings. The final grade is the sum from the five criteria. The maximum grade one can get is 10.

On experimental tasks, children received colored crayons, one A6 white sheet on which the outline of the elements that needed to be decorated was traced. The needed time was 20 minutes. Children were also asked to comply with the general rules set during the previous task. The outlines were identical for the similar tasks: circles (3A, 3B), squares (4A, 4B, 4C), triangles (5A, 5B), leaves (6A, 6B, 6C), flowers (7A, 7B, 7C). Preschoolers had to fill the entire outline with different lines. Several additional rules had to be met (see table 1).

Table 1. *Subjects of the drawings and the additional rules*

The number of the working task	The subject of the working task	Rule 1 – color of the lines	Rule 2 – weight of the lines	Rule 3 - the aspect of the lines
3 A	Circle	one color	different weights	-
3 B	Circle	2 or 3 colors	-	parallel lines
4 A	Square	one color	-	winding lines
4 B	Square	different colors	-	winding lines
4 C	Square		-	
5 A	Triangle	same color in a triangle	different weights	parallel lines
5 B	Triangle	same color in a triangle	the same weight in a triangle	parallel lines
5 C	Triangle	one color	thick lines	parallel lines
6 A	Leaves	one color	thick lines	parallel lines
6 B	Leaves	one color	thin lines	parallel lines
6 C	Leaves	different colors	thin lines	parallel lines
7 A	Flowers	one color	thick lines	-
7 B	Flowers	different colors, each flower a different color	thin lines	-
7 C	Flowers	different colors, each flower a different color	thin lines	-

4. Results

The following figures reveal the drawings from the initial test and from the following four experimental tasks. Each drawing is signed. By placing them side by side we can then compare the results.

Figure 1. *Preschoolers' drawings at the initial test*

Figure 2 . *Circles filled with one color lines of different weights* ***(3A) and curcles filled with parallel lines using 2-3 colors (3B)***


Figure 3. *Squares filled with winding lines of one color* ***(4A) and circles filled with winding lines using different colors (4B, 4C)***



Figure 4. *Triangles filld with parallel lines of different weights and sing one color/outline* ***(5A) and triangles filled with parallel lines using the same weight and color (5B)***


Figure 5 . *Leaves with parallel thick lines using the same color* ***(6A), leaves with thin parallel lines using the same color (6B) and leaves filled with thin lines using the same color (6C)***

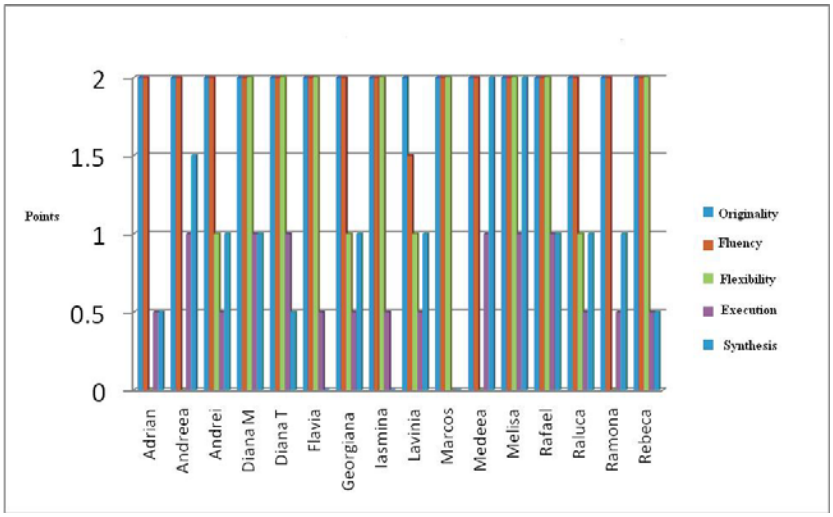
Figure 6. *Flowers filled with thick lines using different colors* ***(7A) and flowers decorated with thin lines using a different color for each outline (7B, 7C)***

5. Discussion

The analysis of the drawings from the initial test revealed several issues. All the drawings were different than their peers' so they received the maximum grade for originality. As for fluency, just one girl did not complete the four drawings; therefore she received 1.5p and the other received 2p. With respect to flexibility some children draw four similar pictures, other have just two similar pictures. The biggest difficulties were for execution and synthesis. So, we notice their difficulty in tracing straight lines, in merging the lines when they circle a surface, they do not color the surfaces homogenously. Also, we notice that many children just place randomly the elements on the paper and their final composition is not unitary and not necessarily pleasant.

Figure 7 reveals the results of the experimental group. Based on the results from the initial test, we grouped children in three categories: minim creativity (below 6.1p.), medium creativity (6.1-7p.), and high creativity (7.1-10p.). Five children are considered as having minimum creativity (25%), eight children (50%) have medium creativity and the rest of 4 (25%) have high creativity.

Figure 7. ***Preschoolers's results at the initial test***



Before every task, children received the white papers and the rules were clearly explained. We assessed if children comply with the rules, if they create new models, if there are differences among their drawings, if they work systematic or chaotic, the number of outputs generated in each learning context. We analyzed then every composition in order to asses the difficulties they encounter and to understand how they think when they draw. The concluding observations are next.

1) Qualitative assessment of the preschoolers' drawings in experimental activities

The output 3A (Circle). Children had the task to fill the outlined circles with lines of different weight and using just one color. 14 children complied with this rule. They were not told to use parallel lines, therefore their lines are intersecting. Three children use the same pattern (alternating thick and thin lines) in all circles, so their flexibility is quite low. The quality of execution thou is very good. 4 children repeat the same filling model in all circles or in almost all circles so again, their flexibility is low. The execution is also low. 9 children draw random models inside the circles. They show a higher flexibility, but execution is low. In some circles they intersect the lines. In conclusion, even if a person has low flexibility in the same composition, the composition itself can be original. The general appearance of the composition depens on the quality of execution. Some lines do not reach the edge of the outline, some lines are traced with multiple movements and sometimes they draw outside the outline.

Output 3B (Circle). Children were asked to fill the circles with parallel lines using 2-3 colors. Because there are only 2 rules, 15 children comply with these. 4 children intersect the lines. One child uses more colors (instead of 2-3). 6 children fill every circle using lines of the same color. These ones have low flexibility, but the general aspect of the paper is pleasant. 7 children fill every circle with 2-3 colored lines. 3 children use lines of the same color for some circles. In conclusion, children identify

three main solutions: to use lines .of the same color for every circle, to use lines of 2-3 colors for every circle, to fill some circles with one color and other circles with 2-3 colors. Even if there are few rules to comply they still act as constraints determining children to find alternative solutions. They draw parallel lines more accurately, lines are drawn from one move of the hand; in some circles the decorative lines do not reach the outline..

Output 4A (Square). Children were asked to fill the squares with winding lines using just one color. Preschoolers find difficult to draw the winding lines in a unitary manner. They show the tendency to draw winding lines parallel with one side of the square (5 subjects) and they are facing the same direction, which means low flexibility. One child draws winding lines following the edges of the square resulting "a winding frame" and then he fills with parallel winding lines. 8 children draw winding lines by connecting neighboring edges. Raluca draw curving winding lines in three squares. One child uses many colors but he does not finish the composition. In conclusion, we notice that preschoolers have a representation of the winding line thus influencing their execution.

Output 4B (Square). Children were asked to use winding lines of different colors in filling the squares. 2 children fill every square with parallel winding lines using one color. The compositions are pleasant, but the flexibility is low. Other two children fill every square with winding lines of different colors but they connect neighboring edges and they merge lines. The flexibility is high and the general aspect is rather pleasant. 4 children fill the squares with different colored lines and different direction lines. Another draw the frame in a winding line, but the execution is weak. Another child uses only yellow so he does not comply with the rule. Their compositions are different from each other, but are not pleasant in general; children have difficulties in drawing winding lines, the distances among the lines vary.

Output 4C (Square). As in the previous task, children were asked to fill the squares with winding lines using different colors. Because of the teacher's suggestions, the resulting compositions are different. Children intersect winding lines, they draw spirals, frameworks, flowers using winding lines. Drawings of two children are similar as they use same colors and same elements. One child uses the same color for every square. Unlike his peers, one child draws short winding lines. The compositions are different, but the general aspect is rather chaotic.

Output 5A (Triangle). Children were asked to fill the triangles using parallel lines of different weight but in one color/triangle. 3 children did not comply with this rule. They filled some triangles with lines of different colors. 2 children did not comply with the rule regarding the weight of the lines. 8 compositions are very similar which proves that preschoolers worked randomly with no logic in tracing the lines. 4 children fill the triangles in alternating thick and thin lines. Compositions are different but they are not very pleasant. Some children draw outside the outline and in some triangles they do not reach the edge. Some lines are curved and with the tendency of parallelism.

Output 5B (Triangle). Children were asked to fill the triangles with parallel lines of the same weight and color. They display the tendency to use more colors. They could use lines of different weight in different triangles, but they choose a certain weight and use it in filling all the triangles (the color is different thou). 3 children fill the triangles with lines of different colors, so they do not comply with the rule. Among other compositions the differences are only in execution.

Output 6A (Leaf). Children were asked to decorate the leaves with thick, parallel lines using the same color. 6 children decorate the leaf with thick perpendicular lines on the axis of the leaf. One child draws the lines parallel with the axis. 6 children decorate the leaves with thick lines with different orientation so their flexibility is high. One child uses oblique lines and other uses curved lines. Their compositions are quite similar especially because their lines have the same weight. They could have used different weights and different orientation. Lines could have been winding, but thick and parallel. In some compositions, they draw outside the outline lines. Some lines are not homogenous colored and have some blank spaces.

Output 6B (Leaf). Children were asked to decorate the leaves with thin parallel lines of the same color. 2 children do not comply with the rule. One child uses thick lines and introduces a decorative element. Another child uses more colors in one leaf. The compositions are similar. They are different by the colors. 2 children use the same color.

Output 6C (Leaf). Children were asked to decorate the leaves using thin lines of the same color. The fact that the lines are not parallel gives them more freedom to create models. Their compositions are pleasant. Some children use short lines, dot lines or even dots. They do not comply with the rule. The fact that they decorated all the leaves using one color gives a positive aspect to the compositions.

Output 7A (Flower). Children were asked to decorate the flowers using thick lines of different colors, but using one color/flower. We notice that preschoolers use lines of different weight, of different length, some are parallel and some intersect each other. They display flexibility in lines but the general aspect is not entirely aesthetic. Children are focused on the task and they are not attentive to the space they have to decorate. On the same composition some flowers are better than others. They either used an aesthetic judgment in drawing next flowers or they just draw chaotically.

Output 7B (Flower). Children were asked to decorate the flower using thin lines of different colors but just one color/flower. Children repeated some models from the previous task. Some children draw thick parallel lines, other draw thin lines that connect the outlines. The fact that they could have used unparalleled lines allowed them to vary their compositions. Some children color big surfaces, but still have blank spaces. They use winding lines. Because of the limited time they did not finish the composition. We notice the low execution for some children; they are not patient and probably tired or bored.

Output 7C (Flower). Children are asked to decorate flowers using thin lines of different colors but again, one color/flower. Not all children comply with this rule. They draw lines of different weight, intersecting lines, curving lines, dot lines. For some compositions they draw outside the flower and in some the lines are shorter than the outline. In order for the compositions to be more pleasant they could have used fewer colors because the combinations they make are not always fortunate. But their general compositions are better than in the previous task.

Almost all the subjects fulfill the working tasks. Some of them did not finish the composition for several reasons: available time, boring, tiring, the speed of execution is low, and their drawing abilities are not fully developed.

With respect to the experimental activities we mention that the temporal and material resources were limited. If preschoolers were given unlimited time and materials we assume that results would have been different. Working tasks allowed for various solutions and it would have been interesting to monitor their creative potential in these situations.

2) Statistical analysis of the results from experimental activities. Points were assigned for each composition from initial test. For each criterion we generated the sum and the mean. Tasks 1A, 1B, 2A and 2B are discussed in a previous paper (Dulamă, Iovu, Vanea, 2011).

Table 2. *Preschoolers' results in experimental activities*

Forname	Criteria	3A	3B	4A	4B	4C	5A	5B	6A	6B	6C	7A	7B	7C	∑	M
Adrian	Originality	2	2	2	2	2	2	2	2	2	2	2	2	2	26	2
	Fluency	2	2	2	2	2	2	2	2	2	2	2	2	2	26	2
	Flexibility	2	2	1	0.5	2	0.5	1	1	1	1	0.5	1.5	0.5	14.5	1.1
	Execution	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5	0.5	0.5	7	0.5
	Synthesis	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5	0.5	0.5	7	0.5
Andreea	Originality	2	2	2	2	2	2	2	2	2	2	2	2	2	26	2
	Fluency	2	2	2	2	2	2	2	2	2	2	2	2	2	26	2
	Flexibility	2	2	1.5	2	2	2	1.5	1	2	2	2	2	2	24	1.8
	Execution	0.5	1.5	1	2	1.5	1	1.5	1.5	1.5	2	2	2	2	20	1.5
	Synthesis	0.5	1.5	1	2	1.5	1	1	1.5	1	2	2	2	1	18	1.3
An	Originality		2		2	2	2	2	2	2	2	2			18	2

	Fluency		2		2	2	2	2	2	2	2	2			18	2
	Flexibility		1		1	2	2	1.5	1.5	1	1.5	1			12.5	1.3
	Execution		0.5		1	0.5	1	1	1.5	1	1.5	1			9	1
	Synthesis		0.5		1	0.5	1	1	0.5	1	1.5	1			8	0.8
Diana M	Originality	2	2	2	2	2	2	2	2	2	2	2	2	2	26	2
	Fluency	2	2	2	2	2	2	2	2	2	2	2	2	2	26	2
	Flexibility	0.5	2	1	2	2	2	1.5	1.5	1.5	2	2	2	2	22	1.6
	Execution	1	1.5	1	1.5	1.5	1.5	1.5	1.5	1.5	2	1.5	1.5	2	19.5	1.5
	Synthesis	0.5	1.5	1	1	1.5	1.5	1	1.5	1	2	1.5	1	2	17	1.3
Diana T	Originality	2	2	2	2	2	2	2	2	2	2	2			22	2
	Fluency	2	2	2	2	2	2	2	2	2	2	2			22	2
	Flexibility	0.5	2	1	0.5	2	2	1.5	1.5	1.5	1.5	2			16	1.4
	Execution	2	1.5	1	1	1	1.5	1.5	1.5	1.5	2	1.5			16	1.4
	Synthesis	2	1.5	1	0.5	1	1	1	1.5	1	2	1.5			14	1.2
Flavia	Originality	2	2	2	2	2	2	2	2	2	2	2	2	2	26	2
	Fluency	2	2	2	2	2	2	2	2	2	2	2	2	2	26	2
	Flexibility	0.5	2	1.5	0.5	2	2	1.5	1	1.5	0.5	1	1.5	2	17.5	1.3
	Execution	0.5	0.5	0.5	0.5	1.5	1	1	1.5	1.5	2	1	1.5	2	15	1.1
	Synthesis	0.5	0.5	0.5	1	1.5	1	1	1.5	1	2	1	1	2	14.5	1.1
Georgiana	Originality	2	2	2	2		2	2	2	2			2	2	20	2
	Fluency	2	2	2	2		2	2	2	2			2	2	20	2
	Flexibility	1	2	1.5	0.5		1.5	1	1	2			0.5	1	12	1.2
	Execution	0.5	0.5	0.5	0.5		0.5	0.5	0.5	1			0.5	1	6	0.6
	Synthesis	0.5	0.5	0.5	0.5		0.5	0.5	1	1			0.5	1	6.5	0.6
Iasmina	Originality	2	2	2	2	2	2	2	2	2	2	2	2	2	26	2
	Fluency	2	2	2	2	2	2	2	2	2	2	2	2	2	26	2
	Flexibility	1	2	1	0.5	2	1.5	1	1.5	1.5	0.5	0.5	1.5	1.5	16	1.2
	Execution	0.5	1	0.5	1	1	0.5	0.5	0.5	1.5	0.5	0.5	1	1.5	10.5	0.8
	Synthesis	0.5	1	0.5	0.5	1	0.5	0.5	0.5	1	0.5	0.5	0.5	1.5	9	0.6
Lavinia	Originality	2	2	2	2	2	2	2	2	2	2	2	2	2	26	2
	Fluency	2	2	2	2	2	2	2	2	2	2	2	2	2	26	2
	Flexibility	2	2	1.5	2	2	2	1.5	1	1.5	2	2	2	2	23.5	1.8
	Execution	0.5	1.5	0.5	2	1.5	1	1.5	1.5	1.5	2	1.5	1	1.5	17.5	1.3
	Synthesis	0.5	1.5	0.5	2	1.5	1	1	1.5	1	2	2	0.5	1.5	16.5	1.2
Marcos	Originality	2	2	2	2	2	2	2	2	2	2	2	2	2	26	2
	Fluency	2	2	2	2	2	2	2	2	2	2	2	2	2	26	2
	Flexibility	0.5	2	1.5	1	2	1.5	1.5	1	1.5	1.5	1	1.5	0.5	17	1.3
	Execution	0.5	1	1	1	0.5	0.5	1.5	1.5	1	1.5	1	1	0.5	12.5	0.9
	Synthesis	0.5	0.5	1	0.5	0.5	0.5	1	1.5	1	1.5	1	1	0.5	11	0.8
Medeea	Originality	2	2	2	2	2	2	2	2	2	2	2	2	2	26	2
	Fluency	2	2	2	2	2	2	2	2	2	2	2	2	2	26	2
	Flexibility	0.5	2	1.5	1.5	2	2	1.5	1.5	2	2	2	2	2	22.5	1.7
	Execution	2	1.5	1	2	1.5	1.5	1.5	1.5	1.5	2	2	2	2	22	1.6
	Synthesis	2	1.5	1	1.5	1.5	1.5	1	1.5	1	2	2	2	2	20.5	1.5
Melisa	Originality	2	2	2	2	2	2	2	2	2	2	2			22	2
	Fluency	2	2	2	2	2	2	2	2	2	2	2			22	2
	Flexibility	2	2	2	1.5	2	2	1.5	1.5	2	1.5	2			20	1.8
	Execution	1.5	1.5	1	2	0.5	1	1.5	1.5	1	2	2			15.5	1.4
	Synthesis	1.5	1.5	1	2	0.5	1	1	1.5	1	1.5	2			14.5	1.3
Rafael	Originality	2	2	2	2	2					2	2	2		16	2
	Fluency	2	2	2	2	2					2	2	2		16	2

	Flexibility	1	2	1.5	0.5	0.5					1.5	1	2		10	1.25
	Execution	0.5	1.5	0.5	0.5	0.5					2	1	1		7.5	0.9
	Synthesis	0.5	1.5	0.5	0.5	0.5					2	1	0.5		7	0.8
Raluca	Originality	2	2	2	2	2	2	2	2	2	2	2	2	2	26	2
	Fluency	2	2	2	2	2	2	2	2	2	2	2	2	2	26	2
	Flexibility	0.5	2	2	2	2	2	1.5	1.5	1.5	1.5	2	1.5	1	21	1.6
	Execution	2	1	0.5	0.5	0.5	1	1	0.5	1.5	1.5	1.5	1.5	1.5	14.5	1.1
	Synthesis	2	1	0.5	1	0.5	1	1	1	1	1.5	2	1	1	14.5	1.1
Ramona	Originality	2	2	2	2	2	2	2						2	16	2
	Fluency	2	2	2	2	2	2	2						2	16	2
	Flexibility	0.5	2	2	0.5	2	2	1.5						1.5	12	1.5
	Execution	0.5	0.5	0.5	0.5	1	1	1.5						1.5	7	0.8
	Synthesis	0.5	0.5	0.5	0.5	1	1	1						1.5	6.5	0.8
Rebeca	Originality	2	2				2	2	2	2		2	2	2	18	2
	Fluency	2	2				2	2	2	2		2	2	2	18	2
	Flexibility	0.5	2				2	1.5	1.5	1.5		2	1		12	1.5
	Execution	0.5	1.5				1.5	1	1.5	1.5		1.5	1		10	1.2
	Synthesis	0.5	1.5				1.5	1	1.5	1		2	0.5		9.5	1.1

Figure 8. ***Preschoolers' results at the experimental activities***

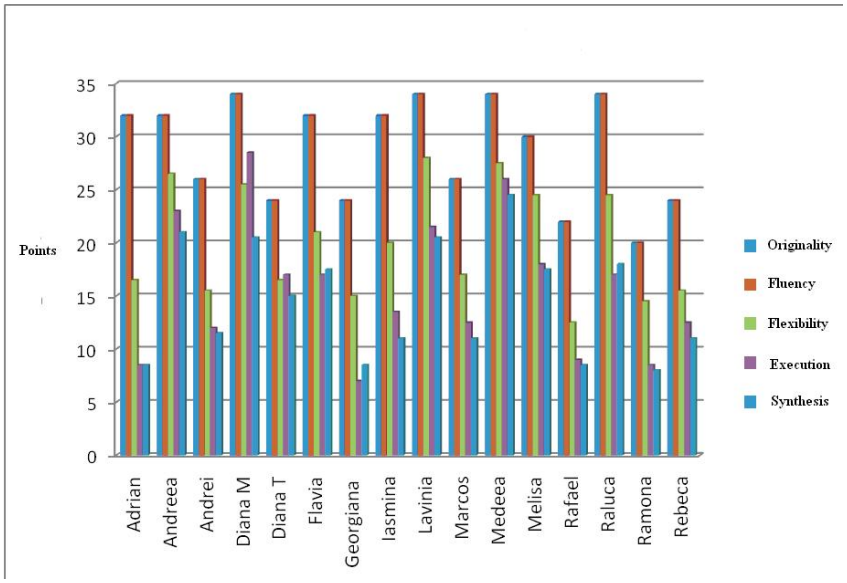
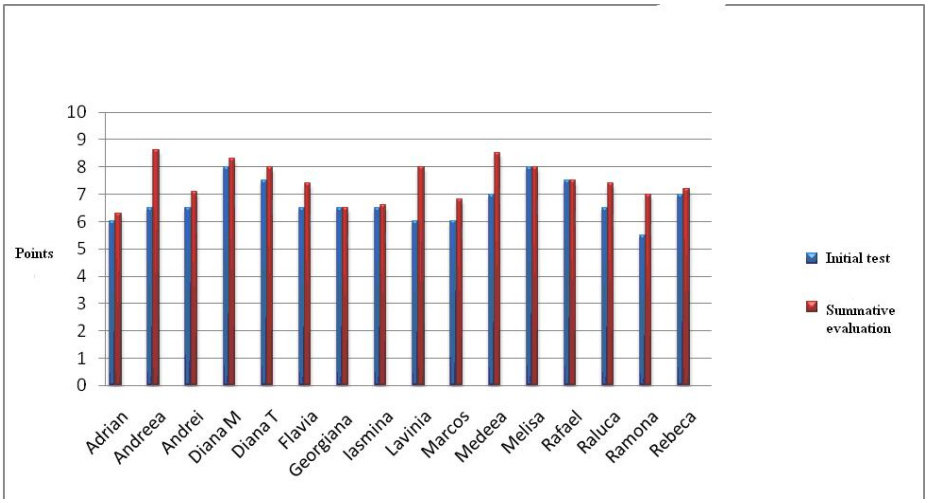


Figure 9. ***Pretest-posttest results***



Based on the points they received at experimental activities children can be grouped in the following categories: 4 (25%) have medium creativity, 12 (75%) have high creativity. A comparison between initial test and posttest results shows that all preschoolers improved their grade during the experiment. Their progress is noticeable in execution and synthesis.

6. Conclusions

This exploratory study led to several conclusions on the creative potential of preschoolers.

Originality

In respect to originality we notice that the compositions are different from their peers' even if they tend to look similar. When asked to use one color, the teacher controlled for the chosen color so every child used a different color. When asked to use 2-3 colors compositions were original because of the combination patterns. We notice that even if one person displays low flexibility in the same composition, the drawing itself may be considered original. If preschoolers create different models inside the outline they draw randomly.

Fluency and flexibility

As for fluency and flexibility, children use different filling patterns for every outline. Compositions differ among them, but they are similar as style. The compositions of the same child are similar even if he had a variety of line combinations available. In almost all the drawings we notice the tendency to cover the entire surface with lines, even if not asked. This proves the lack of previous knowledge on decorative drawing and less flexibility.

Compared with the first experimental activities (1A, 1B, 2A, 2B), the number of tasks reduced to 2-3. But still, they act as constraints determining preschoolers to find alternative solutions.

Because children were not told to use the same model for the same outline, they had the possibility to create unique models.

If asked to use many colors they found several options. In decorating the outlines they choose: to fill every outline with lines of the same color, to fill every outline with 2-3 colors, and to fill some outlines with one color and the rest with 2-3 colors.

In filling the squares with winding lines they found other alternatives: draw winding parallel lines with one side, drawing winding lines as a framework then filling the interior with winding parallel lines, drawing winding lines connecting neighboring sides, drawing winding curving lines, intersecting lines, drawing spirals, flowers.

When asked for lines of different weight, some children alternated thick and thin lines. This solution was suggested at previous tasks and they transferred it from one composition to another. When asked to fill triangles with parallel lines of same weight and color they used many colors. When asked to use lines of different weight in different triangles they choose one specific line and use it for all triangles changing only its color.

Execution

The general appearance of the composition depends on execution. Children draw more accurate the thick lines compared to thin lines, even if they leave some blank spaces. They have difficulties in drawing thin parallel lines. They draw curved lines. Some children do not draw lines from one move but combining several pieces. We notice progress in the quality of execution from one composition to another. Compared with the lines from the first tasks (1A, 1B, 2A, 2B), which were longer, these lines are more accurately traced (either because they are shorter or because they developed the ability to draw parallel lines). In some cases they draw outside the outline or they do not reach the outline. In order to avid these situations this 'new' rule should be created and communicated to children. Preschoolers find difficult to draw winding lines in a homogenous manner following parallel patterns. The task of drawing this kind of lines is too difficult for preschool children. Therefore, it shall not be used in future experiments.

Synthesis

As for synthesis we notice that the compositions of every child are conceived in a unitary way. Compared to the first four tasks, the general appearance of the drawings is more pleasant. Some compositions appear as if they were drawn by adults. Compositions are similar as style. One explanation may be the similarity of tasks for same aged children.

Using one color for decorating all the geometric shapes, leaves or flowers has a positive influence on the general appearance. Compositions in which leaves are decorated using one color are the best. These compositions were toward the end of the experiment. This proves that children improved their execution. In filling the squares preschoolers used winding lines. This negatively influences the general appearance of the compositions because children do not have necessary skills to draw parallel winding lines. This task is too difficult for them.

As for colors, compositions using just one color are more pleasant. When children used 2-3 colors compositions are successful if they combined lines in a given outline. If they used more colors they obtained a chaotic combination.

Results of the experimental group can be summarized as follows: all children have the skills to deliver new and original outputs – therefore they creativity reached a certain level; in experimental group there are more children who received the highest grade in different tasks so there is no single child with maximum creativity; compositions of children are original and different form one another; each child has some great compositions and some less successful ones - therefore it is hard to register the individual progress. When we analyzed the compositions of preschoolers we took into account the long term goal of creativity development in order to produce original objects as an adult. The question if they will be successful in this goal as adults is still open. Observing the manner they filled the geometric shapes we consider they made a big qualitative step from the initial test to the last test.

As a final remark, going back to the research hypothesis stated in the beginning, we conclude that it confirmed. This raises future concerns in designing learning activities for preschoolers.

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