

# The Effectiveness of Training Program Based on the Six Hats Model in Developing Creative Thinking Skills and Academic Achievements in the Arabic Language Course for Gifted and Talented Jordanian Students

Ayed H. Ziadat<sup>1</sup> & Mohammad T. Al Ziyadat<sup>2</sup>

<sup>1</sup> Department of Special Education, Princess Rahma College, Al-Balqa Applied University, Al Salt, Jordan

<sup>2</sup> Al-Jebaha Secondary School, Amman, Jordan

Correspondence: Ayed H. Ziadat, Department of Special Education, Princess Rahma College, Al-Balqa Applied University, Al Salt, Jordan. E-mail: ayedziadat@yahoo.com

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## Abstract

The main purpose of this study was to determine the effectiveness of a training program based on the six hats model in developing creative thinking skills and academic achievements in the Arabic language for gifted and talented Jordanian students.

The study sample consisted of 59 gifted male and female students of the 7<sup>th</sup> grade from King Abdullah II Elite School at the Directorate of Education in Salt City, Jordan. The sample was carefully chosen from students enrolled in the academic year 2014 and were divided randomly into two groups: an experimental group of 27 male and female students and a controlling group of 32 male and female students.

For the purpose of this study, a training program was developed based on the Six Hats Model that tackled chapter 11 and 12 of the Arabic language syllabus of the seventh grade. Both groups had been given Torrance's B Test for creative thinking that the authors of this research developed for the Arabic Test to the gifted and talented students with the required factors of reliability and consistency. Statistical tools and analysis on obtained data were applied including the analysis of Covariance (ANCOVA).

The outcome of this research showed discrepancies of statistical significance ( $\alpha \leq 0.05$ ) among the skills and measurements of the achievement test in favor of the experimental group. In view of the outcomes of this study, the authors strongly recommend that teachers and educators should be rehabilitated and trained to use and apply the latest educational methods and techniques such as: Alcorn program, creative solutions of problems and obstacles, critical thinking, brainstorming, and to refrain from the conventional old methods used which commonly focuses on information storage and retaining crammed data, regardless of the active participation of students.

**Keywords:** Six Hats Model, creative thinking, gifted students, achievement tests, Torrance B test

## 1. Introduction

Special education is not confined to the handicapped individuals but also to the talented in the special education groups including the special needs. Neglect of such groups is a failure and default in the different levels of the society.

Talented people are gifted and their education is important for the society as a whole. As a result, it is very important to provide special education and effective programs that should take into consideration the intellectual abilities with proper methods to suit their needs.

Differences among people could be distinguished through their intellectual abilities and characteristics, it is important to develop their individual capabilities and skills (Al-Barakati, 2008; Jarwan, 2004).

China can be considered as the pioneer in educating the gifted and talented people, as more special programs and curricula were developed to fit the needs of students with different levels of special needs.

In recent history, the United States of America developed more programs and future curricula for the gifted people after the famous Russian scientific achievement in the space project Sputnik program in 1957. Such achievement by the Russians became a turning point in the education policies and curricula in the United States (Killen 2013).

Natural thinking doesn't develop with the normal growth of individuals and is not gained from accumulation of knowledge and information only, but is nurtured through education and continuous training as the major core of improvement (Al-Qarni, 2010; Facione, 2011).

Critical thinking is an important step in improving the capabilities of thinking outside the box. The National Council for Excellence in Critical Thinking identifies critical thinking as: "the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action" (NCECT, 2014, p. 2).

On the other hand it is worth mentioning that many researchers worldwide evaluated the way of thinking for different levels of people in societies (Kivunja, 2015; Dobozy, Bryer, & Smith, 2012; Reynolds, 2012; Mulnix, 2010). As a result, thinking approach is the ability to establish a thought or an idea, assessing and inferring the meaning in order to apply what has been learnt to solve problems in different situations and circumstances.

De Bono (1992) developed the most famous model in the thinking approach through what is known as the Six Thinking Hats Model. The model reflects De Bono's belief that "simple methods used effectively are more valuable than complicated methods that are difficult to understand and confusing to use".

The concept of the six hats model is built on the assumption that the human thinking would follow six patterns; each pattern is represented by one hat. People will put on one hat at a time in one situation and put another on as the situation changes. Each hat represents one pattern of different thinking.

Gifted students are those with distinguished abilities, abnormal capabilities, and performance in comparison with their peers (Jarwan, 2009). Such groups of gifted students usually have the ability to perform and respond in different situations verbally or non-verbally to solve problems easily and more rapidly by providing solutions to different cases (Al-Ghamdi, 2011; Violla & Rogers, 2009).

Flexible thinking is one of the most important characteristics in gifted students, as originality of thinking becomes the base of significantly productive original thinking according to the present situation. This is totally the opposite of what is commonly known as rigid thinking which imposes to face all situations in the same repeated pattern (Tok, 2008, De Bono, 1995).

The purpose of this research is to evaluate the gifted student's performance and to improve creative thinking, increase thinking flexibility using the Six Thinking Hats Model in order for the sample group to adjust with the reality of life, the Arabic language course was chosen for the excelled gifted students in the seventh elementary grade from King Abdullah II Elite School at the Directorate of Education in Salt City, Jordan. It is worth mentioning that the Arabic language is the main native tongue among gifted students in the sample group.

## **2. Method and Procedures**

For the purpose of this study, a training program was developed based on the Six Hats Model (De Bono, 1992) that tackled chapter 11 and 12 of the Arabic language syllabus of the seventh grade students/King Abdullah II Elite School at the Directorate of Education in Salt City, Jordan. The program was conducted using the experimental approach by choosing a controlled group of gifted students in comparison to the experimental group under the same environmental conditions. Pre and posttests using Torrance's B and an achievement tests developed by the researchers were conducted on the sample groups.

The credibility of the designed training program and achievements was verified by presenting its primary form to (15) arbitrators specialized in special education fields and in the Arabic language teaching methods from university instructors, in order to provide their opinion regarding the suitability of the training program and the used activities and strategies for the purposes of this study. The required adjustments and modifications were made in light of the arbitrators' opinions regarding the methodological, theoretical, and linguistic aspects.

### *2.1 The Study Sample*

The study sample consisted of (59) students; (34) males and (25) females, from the seventh elementary grade gifted students in King Abdullah II School for Excellence in Al Salt City/the Hashemite Kingdom of Jordan. Students were chosen and divided randomly into two groups: one as the controlled group and the other was identified as the experimental group as shown in Table 1 below.

Table 1. Distribution of students according to the controlled and the experimental groups

The Group	Male	Female	Total
Experimental Group	17	10	27
Controlled Group	17	15	32
Total	34	25	59

In order to identify any differences in the total degree of achievements and capabilities between the controlled and the experimental groups prior the implementation of the Six Hats Model training program, a T-test was applied to the two groups equivalence as shown in Table 2.

Table 2. T-Test to test the differences in the total degree of achievement and the total degree of pre Torrance Test B between the two groups

Type of Test	Group	Average	Standard Deviation	Calculated T- test	Degrees of Freedom	Statistical Significance
Achievements	Control	19.53	3.47	0.595	57	0.554
	Experimental	20.04	2.97			
Torrance	Control	127.66	11.09	0.256	57	0.799
	Experimental	126.89	11.88			

It is clear from Table 2 that the performance averages prior the implementation of the six hats training program between the two groups were minimum leading to conclude that there were no statistical significance differences.

In order to achieve the objectives of this research, the developed Torrance Test (form B) for creative thinking was applied to the two sampling groups for the Arabic language units (11 & 12) of the syllabus of the seventh elementary grade Arabic course, as such units are far from the linguistic biases and can be used individually and collectively in the classroom.

According to the developed Torrance Test which consisted of the verbal and descriptive forms as it measured the credibility between the high and low creative students indicating a statistical significance on students' performance within the sample groups (Gavin et al., 2007; Szabo, 2006; Torrance, 1993; Alshatti, 2013).

To evaluate the stability of the achievement test for the Arabic language (units 11 & 12), the pre and posttests in the Arabic language skills (reading, comprehension, lexicon and denotation, grammar, speaking, writing and memorization) based on Bloom classification (knowledge, understanding, and high mental operations) was calculated using Pearson Correlation as it reached 92% which is an acceptable level for this study.

The specially designed program of the Six Hats Model for this study consisted of training the experimental group of 27 gifted students for 29 sessions for six weeks with a total of 5.25 hours per week. Students were instructed to read units (11&12) of the Arabic language course in the seventh grade syllabus. Students were trained by the researchers on the rules of applying the Six Hats Model and the meaning of each hat.

Students expressed what he or she had learned while reading, depending on the color of that specified hat and its specific meaning at that stage. For example; the black hat for analysis of situations and criticism, yellow hat for optimism and linguistics communication strategies, and the green hat for student new ideas and advantages that was not mentioned by the author of the text. Keeping in mind all other hats were applied during the training period for the experimental group.

### 3. Results and Discussion

To evaluate the effectiveness and improvements in creative thinking among the controlled and the experimental group using the Six Hats Model that was designed for the purpose of this study, Torrance Test was used as the results shown in Table 3.

Table 3. Averages and standard deviation for the grades of the creative thinking scale (Torrance pretest and posttest) for both groups

Groups	Number of Students	Pre test		Posttest	
		Averages	Standard Deviation	Average	Standard Deviation
Controlled Group	32	127.66	11.09	128.03	11.44
Experimental Group	27	126.89	11.88	160.56	11.92
Total	59	127.31	4.71	142.92	20.02

It is clear from the analysis shown above that the averages of both groups were almost the same with respect to the pretest as the averages increased dramatically in favor of the experimental group in the posttest. To assure the above conclusion of such result, the Analysis of Covariance (ANCOVA) is used to determine whether there are any significant differences between the means of the two independent groups was applied as shown in Table 4.

Table 4. Results of (ANCOVA) analysis for the differences between both groups

Source of Variance	Squares Total	Degree of Freedom	Average of Squares	Calculated F	Statistical Significance
Pre test	700.301	1	700.301	5.558	0.022
The Group	15697.290	1	15697.290	124.593	0.000
Error	7055.335	56	125.988		
Total	1228.308	59			

According to the (ANCOVA) regression analysis concerning the difference inside the groups as shown in Table 4, the calculated (F) value reached (124.593) which is higher than the critical value of (F = 4.00). It can be concluded that there are differences among the groups in favor of the experimental group, indicating the positive impact of the designed Six Hats Training Model and its effect in improving the creative thinking among students. These results are in full agreement with the outcome of table 3, and many researchers (Kivunja, 2015; Ibrahim, 2010; Petty, 2009).

The researchers investigated if the improvement and effectiveness in achievements in creative thinking among the groups was attributed to the gender. The pretest and posttest averages and standard deviations with respect to the gender were calculated as shown in Table 5 below, that the average thinking scale for the post test for the male controlled group was (127.59) with a standard deviation of (8.67), and for females (128.35) with a standard deviation (14.27), while the average for the total score for the post test experimental male group reached (159.76) with a standard deviation (12.81) and for females (161.90) with a standard deviation (10.75). It is clear that there is a significant difference in favor of the female students in both groups, this is in agreement with (Alshatti, 2013; Naifah, 2005).

Table 5. Averages and standard deviation according to gender in total scores with respect to the creative thinking scale (Torrance pretest and posttest) for both groups

Groups	Gender	Number of Students	The post test	
			Averages	Standard Deviations
Controlled Group	Males	17	127.59	8.67
	Females	15	128.53	14.27
	Total	32	128.03	11.44
Experimental Group	Males	17	159.76	12.81
	Females	10	161.90	10.75
	Totals	27	160.56	11.92
Total Performance for Males		34	143.68	19.56
Total Performance for Females		25	141.88	20.99

To evaluate the significance of differences between the averages for the pretest and posttest for both groups with respect to gender, the joint dual variance (2x2 ANCOVA) was applied as shown in Table 6.

The analysis results of the joint dual variance after excluding the differences in the pretest shows a significant impact at the level of trust ( $\alpha \leq 0.05$ ) for the training program. The (F) value was calculated (116.676) with statistical significance of (zero), between the averages of posttest for the performance of both groups, referring to the averages in table (5) they are in favor of the female students in the experimental group.

Table 6. Analysis of joint dual variance (ANCOVA) for the test of the differences between the groups

Source of Variance	Total of Squares	Degrees of Freedom	Average of Squares	Calculated F	Statistical Significance
Pre test	914.577	1	914.577	7.257	0.009
The group	14703.301	1	14703.301	116.872	0.000
Gender	243.214	1	243.214	1.930	0.170
Group Gender	0.516	1	0.516	0.004	0.949
Error	6805.233	54	123.023		
Total	1228608.00	59			

To evaluate the student's improvement levels according to the designed Six Hats Model with respect to the achievement test developed by the researchers, a statistical analysis was conducted as shown in Table 7.

Table 7. Averages and standard deviations for the scores on the pre and post achievement tests for both groups

Groups	Number of Students	Pre-test		Post-test	
		Average	Standard Deviation	Average	Standard Deviation
Controlled Group	32	19.53	3.47	20.06	4.46
Experimental Group	27	20.04	2.97	26.07	2.34
Total	59	19.76	3.23	22.81	4.71

For the controlled group:

The average performance of the achievement pretest was (19.53) with standard deviation (3.47). The average performance of achievement posttest reached (20.06) with standard deviation of (4.46).

For the experimental group:

The average performance of the achievement pretest was (20.04) with standard deviation (2.97). The average performance of achievement posttest reached (26.07) with standard deviation of (2.34). It is worth mentioning that there is a significant difference in favor of the experimental group for the achievement posttest. The Analysis of Covariance (ANCOVA) is used to determine whether there are any significant differences between the means of the two independent groups was applied as shown in Table 8. It is noticed that the results of the joint dual variance on the post achievement test shows significance statistical difference at the level of trust ( $\alpha \leq 0.05$ ). It could be concluded that the impact of the training course based on the Six Hats program increased the academic achievement among the experimental group.

Table 8. Analysis of (ANCOVA) for the achievement test between the groups

Source of Variance	Total of Squares	Degrees of Freedom	Average of Squares	Calculated F	Statistical Significance
Pre test	349.220	1	349.220	47.873	0.000
The Group	460.755	1	460.755	63.132	0.000
Error	408.507	56	7.295		
Total	31994.000	59			

It can be concluded from this research that the six hats designed model implemented, had a significant impact on improvement of achievements and creative thinking among the gifted students in the experimental group. This is attributed to many factors including the nature of the training program, the six hats designed model, and the ability of students to perform and accept changes of normal tasks given to them which they were not accustomed to. Students in the experimental group were trained to develop mental skills including thinking of tasks regarding everyday various activities under different conditions and situations. The results of this research is in full agreement with many researchers (Al-Otaibi, 2013; Fengjuan, 2010; Siribunnam & Tayraukham, 2009; Barakati, 2008).

The designed six hats model with its training content focused on allowing the gifted students to unleash their thoughts in order to think differently outside the box and to have different prospective at different cases from all aspects, which provided the students with new comfortable strategic approaches outside the traditional framework of thinking.

#### 4. Recommendations

In light of the results reached by this research which proved the effectiveness of applying training courses based on the six hats model to improve the creative thinking and the academic achievement skills for gifted and superior students in the seventh elementary grade.

Below is the list of recommendations:

- 1) Changing the teaching strategies applied in classrooms which commonly depended on the traditional teaching methods to more modern techniques and strategies including the six hats model.
- 2) To extend the use of the six hats model in teaching the Arabic language subject for the seventh elementary grade students in the Ministry of Education in the country of Jordan.
- 3) Conducting workshops/courses, and training programs for Arabic language supervisors and teachers to benefit from the six hats model.
- 4) Conducting more studies about the six hats model, in order to stress the effectiveness of such program in developing the creative thinking and academic achievement skills at different levels of education.
- 5) The necessity to include in the Arabic text books at various education levels more creative thinking tools and skills.

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