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The Level of Creative Thinking Skills among Gifted and Ordinary Students in Tafila Governorate

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Abstract

This study aimed to identify the level of creative thinking skills among gifted and ordinary students, according to the type of school and academic level variables. The study sample consisted of 60 male and female students who joined the King Abdullah II School for Excellence in the eighth, ninth, and tenth grades, who were chosen purposely. In addition, the study sample consisted of 70 male and female students from public schools in Tafila Governorate, who were chosen randomly. Adapted Torrance Test of Creative Thinking (TTCT) Module "A" (Verbal form) was used to measure their creativity skills. The results of the study indicated that the level of creative thinking skills among all participants was on "average"/medium, but "means" of results were higher in favor of the gifted students in all creative thinking skills (fluency, flexibility, originality). Further, there were no statistically significant differences at the level of significance (α=0.05) as shown in creative thinking skills (fluency, originality) between the ordinary and gifted students, as well as, the total score. While there were statistically significant differences in the skill of flexibility, for the benefit of gifted students. The results also indicated that there were statistically significant differences in creative thinking among gifted students' skills according to the academic level variable whereas, there were significant differences in originality skill of gifted students. They were in favor of the tenth grade students (highest class).

Keywords: Talented Students, Torrance Scale for Creativity Thinking, Ordinary students, Tafila-Jordan.

Theoretical Background

Many researchers assume that people are creative, but their degree of creativity is different (Beghetto & Kauffman, 2009; Craft, 2003, Siswono, 2010, Siswono, 2011). The idea of the level of student's creative thinking has been expressed by experts, such as Gotoh (2004) and De Bono and Rudnick (1999). Therefore, the researchers argue that creativity in education is not only essential but vital in promoting our students' opportunity to extend their knowledge and give them the chance and possibility to create new knowledge and ideas (Louca, Marouchou, Mihai, & Konis, 2014). That is shown by someone being able to create ideas, technology or knowledge whilst others merely use these or just accepted, when one is applying creative thinking in a practical problem solving situation or problem posing context, divergent thinking produces many ideas. Some of these seem to be useful for finding solutions (Siswono, 2010). Gifted students are the treasure of a nation development and progress, so they must be given a care and put in an appropriate environment to reveal their hobbies and latent powers (Shokair, 1999).

The gifted students were given a special care for their role in development, renewing and invention which became a truth since all human achievements from development and progress are the results of gifted students efforts (Al_Qaisi & Al_Tamimi, 2010). The programs for gifted students give them an interest through securing on appreciate educational environment to develop the individual abilities. The gifted students are the most who get appreciation certificates and scholarships, so private schools were established for them (Qadhi, 2016). There are many programs with different contents were prepared, but all of them serve one main goal, that is developing the talent students abilities and talents. (Al-Suleiman, 2006). Programs for gifted students were classified into three types: enrichment programs, acceleration programs and grouping programs (Suleiman, 1999). The Arab council for gifted (2002) indicated that the creative thinking is based on essential hypotheses as follows: creativity is a skill, that any individual can learn it through training and instructional material. Creativity is not excluded to only gifted students or high intellectual persons.

Literature Review

Many studies investigated the factors that may affect creative thinking skills, such as specialization, achievements, gender and years of study.

The Kousoulas study (2010) and Netrwap study (2011) indicated positive correlation between creative thinking skills (flexibility, originality, and fluency) and students' achievements. With same sense, the study of Karwowski, Lebudaand and Wisniewska (2009) showed positive correlation between accumulative average and students' applications of creative thinking skills.

The results of Rawashdeh and Qudhah (2003) showed that there are no differences in creative thinking attributed to the variable of gender. With same sense, the study of Duriez and Soenens (2005) showed that there are no significant differences attributed to the variables of gender and specialization in creative performance.

The study of Al_qaisi and Al_tameemi (2010) aimed to recognize the level of creative thinking upon normal students and gifted ones. The sample consisted of (469) male and female students chosen from schools of talents and normal schools. The results indicated that preparatory schools got an acceptable degree with different levels. The level of creative thinking of females was higher than males, and for gifted than normal as well.

Al_Aqeel, Al_shaya and Al_jgyeman (2012) conducted a study to recognize the effect of suggested enrichment and scientific activities in creative thinking development towards elementary gifted students. The sample consisted of (50) students of sixth grade. The results showed that there are differences in means of degrees in favor of pilot group and the students ensured that the role of enrichment and scientific activities are effective in skills acquisition and creative thinking.

Al_Aysrah and Hamadnah (2010) conducted a study aimed, to recognize the degree of creative thinking upon students of secondary stage in Irbid. The sample consisted of (250) male students and (138) female students from scientific and literal streams chooses by a stratified random method. The results indicated that the degree of creative thinking for secondary students was (69.43). There were significant difference in the average degree attributed to the variable of specialization in favor of scientific specialization, and the variable of school in favor of private schools in creative thinking.

The study of Awamleh, Al Farah, and El-Zraigat (2012) aimed to identify the level of dimensions for creative abilities (originality, flexibility, originality, elaboration) among students in Al Rai Jordanian schools according to Torrance Formal test, and to investigate the differences in these levels attributable to the study variables (gender, age, grade point average "GPA"). The study sample consisted of (63) students from grades one, two, and three. The researchers used Torrance formal test form (b) to collect the data. Means, standard deviations, and ANOVA were used to analyze the collected data. The study indicated that most creative thinking skills (fluency, flexibility, and elaboration) scored a medium level while originality was at a low level, the presence of statistically significant differences in the dimensions of fluency and flexibility attributed to sex in favor of females, and also showed a statistically significant differences between the performance of students means on the Torrance Test due to the variables of age and in favor for (8 and 7) years old over those (6) years old. In addition, the researchers found statistically significant differences for the means of the sample performance on the test dimensions for the variable GPA in favor for those of GPA (70-85, and 85 and above).

AL-khayat (2012) conducted a study aimed to investigating the levels of creative and metacognitive thinking skills among students as well as the effect of student's gender on creative and metacognitive thinking skills in the intermediate stage at Al-Balqa Province in Jordan. The method of stratified sampling was selected for the purpose of this study. The metacognitive inventory consisted of (52) items, and Torrance test (Figure B), has been applied on (372) students. The results showed that there were statistical significant differences between the average performance of males and females on the creative and metacognitive thinking for the benefit of males as well as a high level of Metacognitive

thinking from the viewpoint of the students. The researcher recommended that further studies should be focus on training programs for students on metacognitive skills and impact on educational achievement and creative thinking.

Rababah, Bin, Jdaitawi, and Bani Melhem (2013) conducted a study that aimed to explore the level of creativity in English writing among Jordanian secondary school students. The researchers have used a random sample of 100 students of secondary school students in Irbid and Amman cities in Jordan. Adapted Torrance Test of Creative Thinking (TTCT) was used to measure their creativity in English writing. TTCT test is thought to be the best test to evaluate the creativity dimensions of students in writing. TTCT assesses fluency or the number of ideas; flexibility, the variety of categories in the answers; and originality, which consists in considering innovative answers, neither familiar nor inappropriate. The results of the study showed that the respondents fall in the moderate level of creativity.

Kumari, Pujar, and Naganur's (2014) study aimed to explore Creative Thinking Ability among High School Children. The sample of the study comprised of 300 high school children in the age group of 13-16 year from five urban high school of Dharwad taluk. Creative thinking scale developed by Mehdi (1989) and creative thinking check list developed by AICRIP-CD Dharwad center (2010) were used to assess the creative thinking ability of children. The result of the study revealed that majority of children showed high level of creative thinking ability and none of them belonged to low category of creative thinking ability. There was no influence of type of school, age and gender on creative thinking ability of children.

Problem Statement

This study tries to identify the level of creative thinking among the gifted students at King Abdullah II of Excellence School; gifted students who were provided with special programs and who were in need for more care and attention by providing them with a suitable learning enrichment environment, meets with their abilities and attitudes. These students have been diagnosis by the Directorate of Education in the governorate of Tafila as gifted students; who have the skills and capabilities of high mentality, through the use of tests and standards approved by the Ministry of Education in the Hashemite Kingdom of Jordan, such as intellectual abilities, readiness academic achievement, and personal interviews.

Hence, the study problem is determined by identifying the prevailing level of creative thinking skills for the students enrolled in special programs for high achievers, gifted students and ordinary students in the light of their various levels of study, by answering the following questions:

1. What is the level of creative thinking skills for gifted students who joined the program and the ordinary students?

2. Are there statistically significant differences at the level of significance (α=0.05) in the level of creative thinking skills among gifted students who joined the special programs, and the ordinary students according to the school type variable?

3. Are there statistically significant differences at the level of significance (α=0.05) in the level of creative thinking skills among gifted students, who joined the special programs, according to the grade variable?

Study Objectives

The purpose of this study is to identify:

1. Prevailing creative thinking skills for gifted students and ordinary students.

2. Differences in creative thinking skills, according to the variable of school type (gifted, public) and academic grade (eighth, ninth, tenth).

Limitations

The study is limited to:

- The study sample: students from eighth, ninth and tenth grades, selected from public schools in Tafilah Governorate.

- The time of the study: the first semester of the academic year 2015/2016

The study terms

***Creativity*:** Torrance (1995), defined creativity as "the process of forming ideas or hypotheses, testing hypotheses, and communicating the results" (p. 23).

Creativity is the ability to make or do something new that is also useful or valued by others (Gardner, 1993).

Creative thinking: Runco and Chand (1995) define creative thinking as that which "leads to original and adaptive ideas, solutions, or insights" (p. 224).

***Procedural definition*:** It is the degree obtained by the student according to Torrances scale for creative thinking used for the current research purposes.

Gifted students: (Getzels & Dillon, 1973) are those identified by professionally qualified people, who by virtue of outstanding abilities are capable of high performance. These are children who require differentiated educational programs and /or services beyond those normally provided by the regular school program in order to realize their contribution to self and society.

Ordinary students: They are students studying in public government schools; who are accepted without being subjected to any test or particular scientific achievement requirements.

King Abdullah schools for excellence: Jordanian Public schools provide an enrichment teaching pattern in the learning environment to prepare a promising leaders, and is running for gifted schools to the students with the rate of 90% in the sixth and seventh grades, or the student be within 5% of the students who have the highest academic achievement in the sixth

and seventh grades, as well as pass the cognitive abilities test set by the Ministry. (Al_azza 2002,336, the Ministry of Education site).

Methodology

Study Approach

This study follows a descriptive and analytical approach, it analyzes the phenomenon intended to be understood or ascertained or interpretation.

Population

The study population consisted of all eighth grade up to the tenth grade students in public schools with the total number of (4172) student, according to statistics from the Directorate of Education, and all students of the King Abdullah II School for Excellence from the eighth grade to tenth grade with the total number of (92) in the first semester of 2015/2016 in Tafilah province.

The sample

The study sample consisted of (60) male and female students joined the King Abdullah II School for Excellence (special programs for high achievers and gifted students) in the eighth, ninth and tenth grades, were chosen purposely, and (70) students from public schools, were chosen by random cluster method. Table (1) shows the number of the study sample distributed by the intersection of the study levels (school, gender, academic grade)

Table 1. sample distributed by the intersection of the study levels

gender	School	Academic level			Total
		Eighth	ninth	Tenth	
Male	Gifted	10	9	11	30
	Ordinary	12	11	13	36
Female	Gifted	10	10	10	30
	Ordinary	10	12	12	34
Total		42	42	46	130

Instrument

For the purposes of the study, and to achieve its goal, which is identify the level of creative thinking skills among a sample of gifted and ordinary students, according to the type of school and academic grade variables, the researcher used (Torrance test) in creative thinking, Verbal form "A" (1992), translated and modified by (Abu Gado, 2003) for Jordan environment in order to measure the degree of creative thinking; the test consists of seven sub-tests measuring the following skills:

The fluency: the number of possible answers to the position at a specific time.

Flexibility: the diversity of the possible answers to the position at a specific time.

Originality: the number of new and unique answers in specified time.

Study validity

The validity was checked by a jury of experts in psychology and measurement and evaluation whose agreement ratio for words was (89). In addition to that, coefficient correlation for item of each domain was computed (0.72-0.86) which is appropriate for the purpose of the study.

Reliability of the study

Test, retest and Cronbach's alpha were computed with a result of (0.83-0.91)

Processing of statistical data

The study data was processing through the ANOVA of the variables, and (Pearson's correlation coefficient and Cronbach's alpha) for calculating reliability. Means and standard deviations have been calculated for answer the first question, (T) test for answer the second question and multi variance analysis (MANOVA) to answer the third question.

Results and Discussion

First, the results relating to the first question, which read:" What is the level of creative thinking skills for gifted students who joined the program and the ordinary students?

To answer this question; the mean and standard deviations were calculated for the study sample answers of the creative thinking skills, and table (2) shows that:

Table 2. Averages, standard deviations, levels of creative thinking skills by school

school		Fluency	flexibility	Originality	total
Ordinary	Mean	23.1167	10.6333	5.1618	39.5500
	Std. Deviation	8.25051	3.61713	4.33277	1.44098E1
Gifted	Mean	23.8235	12.0588	5.8000	41.0441
	Std. Deviation	6.76898	3.34076	2.64637	1.20018E1

The table 2 shows mean of fluency skills for ordinary students that is (23.11) and for gifted students is (23.82), while the mean of the skill of flexibility is (10.63) for the ordinary students, and (12.05) for gifted students. The mean of originality for gifted students is (5.8) and for ordinary is (5.16). The level of creative thinking skills in general were (39.55) for ordinary students and (41.04) for gifted students.

These results mean that the level of creative thinking skills for students were close, at the same level of a large extent, and the gifted students practice creative thinking skills (fluency, flexibility, originality) at the same level of "average" of thinking, and highly convergent.

Maybe is not available in such schools teachers with experience in teaching gifted students, and the lack of various different training activities that deal with the student's attitudes and issues at their school and social life, which helps them to develop their creative skills, where to notify students with such problems and issues, and events that are relevant to their lives and community and discuss it in clear and thorough manner; could contribute to stimulate creative skills and enables them to feel the different aspects of these topics, and not

satisfied with offering normal ideas, as well as strengthen their desire to deal better with the attitudes and training activities, by studying it in different aspects to depart from the traditional way of thinking to creative and innovative one. As the results can be attributed to the gifted students themselves, in terms of the availability of creative features they have, methods of their choice, and creative standards that have been applied to them, which is imperative to reconsider in such matters. In addition, the time of application the special program may be short and had no significant effect in the development of creative thinking skills. The application time needed to be longer or could accept students in the study from earlier academic levels in order to develop their creative thinking skills effectively.

This result complies with the findings of Al_smeere (2003), Al-Qaisi and Tamimi (2010) study, and also complies with the results of a study Al-Rashidi, Al-Khalidi, Al- Zouaydi, (2015) study, and Rababah, et al. (2013) study which showed that the gifted students have an "average level" of creative thinking, and in all skills (fluency, originality, flexibility). However, this result disagree with the study of Kumari, Pujar, and Naganur (2014) which revealed that majority of children showed high level of creative thinking ability.

Second, the results relating to the second question,: “Are there statistically significant differences at the level of significance (α=0.05) in the level of creative thinking skills among gifted students who joined the special programs, and the ordinary students according to the school type variable?"

To answer this question, the means and the t-test were calculated for differences in the level of creative thinking between the gifted and ordinary students' skills, and the table (3) shows that.

Table 3. Means and t-test for differences in the level of creative thinking between the gifted and gifted students' skills

skill	school	N	Mean	Std. Deviation	t-test for equality of means		
					t	d.f	Sig.(2-taile)
fluency	ordinary gifted	60 68	23.1167 23.8235	8.25051 6.76898	-.532-	126	0.596
flexibility	ordinary gifted	60 68	10.6333 12.0588	3.61713 3.34076	2.317--	126	0.022*
Originality	ordinary gifted	60 68	5.8000 5.1618	4.33277 2.64637	1.019	126	0.310
total	ordinary gifted	60 68	39.5500 41.0441	14.40977 12.00178	-.640-	126	.523

Table 3 shows that there were no statistically significant differences at the level of significance as shown in (α=0.05) in creative thinking skills (fluency, originality) between the ordinary and gifted students, as well as the total score. This result disagree with the result of study of Al_qaisi and Al_tameemi (2010) that indicated that the level of creative thinking of gifted was higher than ordinary. However, Awamleh, Al Farah, and El-Zraigat (2012) indicated that most creative thinking skills scored a medium level while originality was at a

low level. Further, this study showed that there were statistically significant differences in the skill of flexibility, for the benefit of gifted students.

Third, the results relating to the third question, which reads: " Are there statistically significant differences at the level of significance (α=0.05) in the level of creative thinking skills among gifted students who joined the special programs, according to the grade variable?"

To answer this question, we calculate the analysis of variance multi-level, and the table (4) shows that:

Table 4. Analysis Multivariate Tests -level creative thinking skills by grade

	Effect	value	F	Hypothesis df	sig
grade	Wilks lambda	.771	2.542_a	6.000	0.024

The table 4 shows that there were significant differences in creative thinking of gifted students skills due to the academic grade, As the value of the (Wilks) test is (0.77) with corresponding (F) value of (2.45) which is a statistical significance level of significance (α=0.05). This result agrees with the study of Awamleh, Al Farah, and El-Zraigat (2012) that showed statistically significant differences between students due to the variables of age. It has been conducting a variance analysis to Identify of any of the variables there was impact on level of the classroom.

Table 5. Analysis of variance levels of creative thinking skills by grade

Depe Source	nd	Type iii sum of squares	df	Mean square	f	Sig
grade	Fluency	173.985	2	86.993	1.291	.283
	flexibility	38.678	2	19.339	1.505	.231
	Originality	156.916	2	78.458	4.704	.013*
Error	Fluency	3842.198	57	67.407		
	flexibility	733.256	57	12.864		
	Originality	950.684	57	16.679		
Total	Fluency	36079.000	60			
	flexibility	7556.000	60			
	Originality	3126.000	60			
Corrected total	Fluency	4016.183	59			
	flexibility	771.933	59			
	Originality	1107.600	59			

The table (5) shows that there were statistically significant differences in the skill of originality due to the academic grade, while not shown statistically significant differences at the level of significance (α=0.05) at the fluency and flexibility skills attributed to academic grade. Tookie test for dimensional comparisons had been done to determine to whom the benefit of these differences shall return to, as shown in the table 6.

Table 6. The results (Tookie) dimensional comparisons at the originality skills by academic grade

academic grade	8th	9th	10th
(36.05) eighth	-	0.236	*3.5
(37.68) ninth	-	-	*3.26
(44.57) tenth	-	-	-

The table shows that there are statistically significant differences at the means in favor of the tenth grade, with mean of (44.57). This result can interpret that whenever the student's progress at the academic grade, he or she get older, thus he will be more aware and realizes that knowledge is cumulative, which requires him to develop and improve his thinking skills of, in order to improve the level of his education achievements. In addition, the application of the program may have a significant impact in the development of creative thinking skills, which the students have chance to spend three years in the program (from the eighth grade to tenth grade) at the time the application of this study.

The results agree with the study Abu Hilal, and Miller (2002), where the results of his study indicated that the sixth grade students are less creative than the ninth grade students; and disagreed with the study results Abu Arar (2012), which pointed to the lack of statistical differences in creative thinking, and no statistical differences in creative thinking attribute to the academic grade variable except for the skill and originality in favor of twelfth grade students (higher class / grade).

It also agree with the study of Rashidi, Khalidi and Zouaydi (2015) and the results showed the level of creative thinking of gifted students, males and females as a whole, in the light of the academic level that female students at tenth grade had the highest levels, and the level male students of the eleventh grade were least levels.

Recommendations

- Developing of teaching methods currently used by deviating from the traditional method of teaching based on conservation and indoctrination, and giving more attention to the methods of effective teaching subjects that stimulate the creativity for the students.

-Working on the development of the curriculum in terms of content, objectives and activities, to be more suitable for the development of thinking skills among students at different educational levels.

-The Need to prepare and develop a guide for teachers of gifted students in how to prepare and implement enrichment activities, because it is working on the development of creative thinking for students.

- Accepting students in special programs for gifted students; at early classes to get better benefits from the programs.

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