

## **A Study on the Creativity Levels of Vocational College Students with Respect to Several Variables (The Turkish Case)**

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**Abstract:** The study aims to examine, the creativity levels of students attending various programs of study at vocational colleges and explore whether program of study and gender create a difference in students creativity scores over time. Participants were a total of 138 students attending Kirikkale University Keskin Vocational College's Child Development, Textile Technologies, Accounting and Taxation, Marketing, Public Relations and Advertising, Electricity and Local Authorities Programs. Data about the students were collected by a general information form that the researcher designed and students creativity was assessed by the Torrance test of Creative Thinking Figural Form A. Using the pretest/posttest no control group design, the study used 2 way analysis of variance and independent groups t-test to analyze the data. The results showed that students posttest creativity mean scores were higher than their pretest creativity mean scores; there is a meaningful difference between girls and boys pretest/posttest total creativity scores and the pretest/posttest program of study interaction creates a meaningful difference in the scores obtained in the fluency, originality, abstractness of titles and elaboration dimensions of creativity, as well as total creativity scores.

**Key words:** Creativity, vocational college, creative thinking test, group design, taxation

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### **INTRODUCTION**

Having a crucial role in the development of society and humanity and representing an important human talent, creativity is an inherent latent power. Creativity is a process that requires features such as flexibility, multifaceted thinking, sensitivity, being alert and interested in others, fluency, thinking and acting comfortably, quickly and independently, originality and reaching unique conclusions. The word creativity is derived from the Latin word *creare* which means to give birth, create and form. Despite being as old as humanity, creativity has emerged, as a fine arts concept particularly in the last 500 years and has often been explained in relation to genius or divine and extraordinary powers. Creativity is not divine inspiration or special insight possessed only by the lucky few but a skill and a way of behavior that can be honed with practice. Creative thinking is a way of thinking that seeks to innovate or find new solutions to existing problems and promotes the emergence of original thoughts. It is a concept that needs to be nourished and developed in the information age. Creative thinking is an independent, dynamic and productive process (Erlendsson, 1999).

Though, creativity has been defined in a number of different ways, these definitions have recurring threads such as being unique, being original, thinking what no

one else does and innovation. However what needs to be noted is that no other concept can fully explain the concept of creativity on its own.

Cellek defines creativity, as being critical, offering new propositions, making connections between objects or thoughts not connected before, being unconventional and original, seeing problems and reaching new conclusions by using different solutions. Gartenhaus writes that creativity is no secret; it is known by everyone but very few can actually develop and strengthen it. Isenberg and Jalango (1997) define the concept, as doing or creating what has not been done before and responding to objects, symbols, ideas and situations by linking them to previous experiences.

At the heart of creativity lies the skill of fluent, flexible and original thinking and thus, the skill of problem solution. Intuition, curiosity and metaphorical thinking are all important elements that encourage creativity. Creativity is an inherent action with no limits and that can be developed. It is not learned but it can be improved provided that proper conditions are present. Developing creative thought helps individuals gain communication skills and more easily adapt to new situations. Even though, creativity is thought to be inherent, their creativity can be supported by intelligence, talent, the environment and education (Yenilmez and Yolcu, 2007).

The most important responsibility in raising creative individuals undoubtedly falls onto the education system. These systems aim to improve individuals thinking structure and raise individuals who have the ability to create new and original things rather than replicate those of the previous generations.

The increased accumulation of knowledge and rapid advances in the technology area lead to radical and continuous change in human life. Naturally, all societies aim to keep up with these changes and advances and their educational systems aim to train creative individuals who research, question, criticize, participate, adapt to new situations, put their thoughts into practice and solve problems.

The development of societies requires not only mentally developed individuals but also creativity ones. In the day when technology and science are advancing rapidly, development and adapting to the EU both require qualified human power and proper, timely use of resources. There is a close relationship between development and education. One of the greatest aims of national development is to catch up with the rate of vocational and technical education in developed countries.

Offering vocational and technical education, vocational colleges and the education given in these are essential to the industry and economy of the country. Owing to this importance, increasing the quality of education in these institutions may contribute to training better qualified personnel and higher quality scientific research studies in these institutions.

The country with its young population has to increase its competitive power via high quality vocational and technical education and become a developed country. Thus, there is a need for creative and qualified individuals who understand, interpret and use technology. This study, therefore aimed to explore whether the creativity levels of students attending several vocational college programs changed over time and investigate the effects of gender on student creativity.

## **MATERIALS AND METHODS**

The study was conducted with a total of 138 students attending Kirikkale University, Keskin Vocational College's Child Development, Textile Technologies, Accounting and Taxation, Marketing, Public Relations and Advertising, Electricity and Local Management Programs. Information about the participants was gathered by a general information form designed by the

researcher and their creativity levels were measured by using the Torrance test of Creative Thinking Figural Form A. The latter was implemented as pretest at the beginning of the 2009-2010 and as posttest at the end of the 2010-2011 school year. The test includes the subdimensions of fluency, originality, concreteness of titles, elaboration and resistance to premature closure and the mean score of the subdimensions yields total creativity score.

The number of responses given to the test yielded the fluency score, unusual responses yielded the originality score, the titles that enable the viewer to see the picture deeper and richer yielded the abstractness of titles score, any relevant detail added to the borders of the picture yielded the elaboration score and a delay in closure of the figure yielded the resistance to premature closure score. In a Turkish adaptation study by Aslan (1999), the reliability of the Torrance test of Creative Thinking Figural Form A was tested by using the Guttman, Spearman Brown and Cronbach alpha and internal consistency coefficients and a creativity total score varying between 0.74-0.38 was found. As a result, the test was concluded to be reliable and fit for use with preschool, elementary, high school and university students (Torrance, 1972; Aslan, 1999).

In the study, t-test for independent samples groups was used to explore whether students creativity scores varied by gender and 2-way analysis of variance was used to investigate whether the program affected creativity scores. Following the analysis of variance, the Scheffe test was used to find the group that caused the difference.

## **RESULTS AND DISCUSSION**

The findings of this study which was conducted to establish whether vocational students creativity scores varied over time with respect to gender and program were tabulated and discussed in relation to the literature.

Table 1 displays gender-related findings and reveals that females had higher pretest mean scores on the fluency, originality, abstractness of titles and elaboration dimensions of creativity and higher total creativity pretest mean scores than males. The t-test conducted to reveal whether gender created a significant difference in creativity scores showed that the originality ( $t_{(136)} = 2.658$ ,  $p < 0.05$ ) and total creativity ( $t_{(136)} = 3.134$ ,  $p < 0.05$ ) pretest scores of males and females varied significantly.

The fluency, originality and total creativity posttest mean scores of females were also higher than those of males. The t-test showed that male and female students

Table 1: The t-test results of female and male participants' pretest/posttest creativity dimension scores

Creative dimension	Sex	N	Pretest				Posttest			
			X	S	t	p	X	S	t	p
Fluency	Female	87	25.41	8.29	2.508	0.099	34.69	7.03	1.473	0.013*
	Male	51	21.94	7.01			32.73	8.37		
Originality	Female	87	16.86	7.00	2.658	0.028*	23.21	6.31	2.230	0.168
	Male	51	13.82	5.47			20.59	7.20		
Abstractness of titles	Female	87	1.98	2.03	1.717	0.269	0.95	1.01	0.804	0.396
	Male	51	1.41	1.66			1.10	1.02		
Elaboration	Female	87	9.36	3.16	3.345	0.723	9.63	2.33	1.205	0.556
	Male	51	7.50	3.12			10.12	2.18		
Resistance to premature closure	Female	87	1.13	0.99	0.075	0.690	0.74	0.83	3.346	0.007*
	Male	51	1.15	1.97			1.31	1.14		
Total creativity	Female	87	10.95	3.42	3.134	0.015*	13.75	2.84	1.024	0.052
	Male	51	9.19	2.70			13.21	3.26		

Table 2: Dimensions of creativity mean scores, standard deviations and analysis of variance results with respect to the program of study

Programs	N	Creativity dimensions											
		Fluency	Originality	Abstractness of titles	Elaboration	Resistance to premature closure	Total creativity						
<b>Pretest</b>													
Child development	36	29.66±7.29	20.83±6.22	2.19±1.87	10.47±2.99	1.00±0.82	12.86±2.95						
Textile technologies	18	24.55±7.83	16.16±6.30	2.11±2.19	9.38±2.59	1.05±0.87	10.72±2.67						
Accounting and taxation	19	19.21±5.98	11.73±4.65	1.21±1.61	7.57±4.45	1.42±3.16	8.31±2.49						
Marketing	21	23.14±6.53	14.23±6.48	1.19±1.20	7.95±2.67	1.00±0.83	9.38±2.63						
Public relations and advertising	21	24.47±7.91	16.09±5.10	2.47±2.15	8.76±3.16	1.52±1.16	10.66±3.23						
Electricity	8	20.00±6.86	12.12±4.67	0.62±1.40	5.62±1.59	1.25±0.70	7.75±2.71						
Local administration	15	19.66±7.34	11.60±5.48	1.53±2.26	7.46±2.06	0.86±0.83	8.33±2.55						
Total	138	24.13±8.00	15.73±6.62	1.77±1.91	8.68±3.26	1.14±1.42	10.30±3.28						
<b>Posttest</b>													
Child development	36	36.31±4.72	24.50±4.87	0.86±0.96	9.31±1.63	0.61±0.64	14.08±2.04						
Textile technologies	18	33.39±7.19	22.94±5.78	1.22±1.16	9.11±1.77	0.66±0.68	13.55±2.68						
Accounting and taxation	19	34.26±7.46	22.00±6.15	1.05±1.02	10.63±2.36	1.68±1.49	13.94±2.49						
Marketing	21	28.43±9.44	16.05±7.71	1.24±1.33	8.33±2.88	0.80±0.81	10.90±3.75						
Public relations and advertising	21	38.95±2.39	26.81±3.07	0.71±0.71	11.05±2.15	0.90±0.99	15.71±1.05						
Electricity	8	38.00±5.65	25.63±4.37	1.25±0.70	11.25±1.58	1.25±1.16	15.50±2.00						
Local administration	15	27.27±8.16	16.73±6.91	1.00±0.92	10.40±2.09	1.33±0.89	11.46±3.11						
Total	138	33.96±7.59	22.24±6.75	1.01±1.01	9.81±2.28	0.95±0.99	13.55±3.00						
<b>Analysis of variance results</b>													
	SD	F	p	F	p	F	p	F	p				
Pretest/posttest	1	154.904	0.000*	118.166	0.000*	7.946	0.006*	29.362	0.000*	0.763	0.384	138.938	0.000*
Program	1	9.766	0.000*	11.693	0.000*	1.034	0.406	2.682	0.017*	1.635	0.142	10.446	0.000*
Pretest/posttest* program	5	4.547	0.000*	5.618	0.000*	2.443	0.028*	6.861	0.000*	1.219	0.301	7.331	0.000*
Error	130												
Total	138												

\*p<0.05

fluency ( $t_{(136)} = 1.473, p < 0.05$ ) and resistance to premature closure ( $t_{(136)} = 3.346, p < 0.01$ ) posttest scores differed significantly.

Matud *et al.* (2007) studied the effects of gender on creative thinking and found a significant difference in favor of women in originality and creativity index scores.

In a study about vocational college students creativity levels, Cakmak found that fluency, originality and total creativity scores varied significantly in favor of female students.

Gok and Erdogan (2011) examined elementary teacher candidates creative thinking levels and critical thinking tendencies and concluded that students creative thinking scores varied meaningfully in favor of females.

Even though, male and female students undergo the same educational process, it may be stated that female students are more interested than males in activities that enhance creative thinking and that these activities are more suitable to their nature. In addition, female students may be encouraged more by their families to participate in such activities.

Table 2 displays creativity dimensions mean scores according to pretest scores. It may be seen that fluency ( $\bar{x}:29.66$ ), originality ( $\bar{x}:20.83$ ), elaboration ( $\bar{x}:10.47$ ) and total creativity scores ( $\bar{x}:12.86$ ) of child development students were higher than those of students in other programs.

Higher scores obtained by child development students, as compared to others suggest that their high

school education might have been more effective. The different methods that child development students use during their practice teaching at kindergartens and the active role they play in these together with children may also have caused a difference in the mean scores of creativity dimensions.

Aslan studied the psychological needs of individuals who think creatively and found that as regards the relationship between high school and creativity, the 2nd highest mean score belonged to the graduates of girls practical arts high school. Considering that students in the child development program come from vocational high schools for girls, it may be stated that the instruction offered at different types of schools affect the development of creativity.

Ozben and Argun studied the creativity levels of 161 students from different departments of Ataturk University and found that the creativity scores of vocational high school graduates varied significantly from those of students from other schools.

The posttest scores revealed that the fluency ( $\bar{x}$ :38.95), originality ( $\bar{x}$ :26.81) and total creativity scores ( $\bar{x}$ :15.71) of public relations and advertising students were higher than those of students in other programs.

The variance of analysis showed a significant difference between the pretest/posttest scores obtained on the fluency, originality, abstractness of titles, elaboration dimensions of creativity and total creativity scores ( $p < 0.05$ ). It also showed that the program of study created a meaningful difference in students fluency ( $F(1-130) = 9.766; p < 0.01$ ), originality ( $F(1-130) = 11.693; p < 0.01$ ), elaboration ( $F(1-130) = 2.682; p < 0.05$ ) scores and their total creativity scores ( $F(1-130) = 10.446; p < 0.01$ ). According to the Scheffe test results, the difference in total creativity pretest scores was caused by the scores of students attending electricity, accounting and taxation, local administration and child development programs while the difference in total creativity posttest scores was caused by the scores of students attending marketing, local administration programs and electricity, public relations and advertising programs.

Wang *et al.* (2010) compared the creative performance of 297 university students attending design and administration programs by using the verbal section of the Torrance Creative Thinking test. They found that a significant difference prevailed between the originality, fluency and elaboration scores of design and administration students.

In this study, total creativity mean posttest scores were higher than total creativity mean pretest scores. This suggests that the academic education that students received turned them into more fluent, flexible and original thinkers over time.

Karacelik studied the creative thinking skill levels of preschool teachers and teacher candidates and found that particularly 1st year preschool teacher candidates had lower creative thinking skill scores than students in all other years.

The pretest/posttest program of study interaction was found to create a significant difference in the fluency, originality, abstractness of titles and elaboration dimensions of creativity and total creativity scores.

Cakmak studied vocational college students creativity levels in relation to several variables and concluded that program of study created a significant difference in fluency, originality, abstractness of titles, elaboration and creativity index scores.

## CONCLUSION

This study intended to examine, the creativity levels of students attending certain programs at vocational colleges and reveal whether program of study and gender created a difference in their creativity scores over time.

The study results showed that the fluency, originality, abstractness of titles, elaboration pretest mean scores, total creativity pretest mean scores and fluency, originality and total creativity posttest mean scores of female students were higher than those of male students.

Students total creativity posttest mean scores were also found to be higher than their total creativity pretest mean scores. The pretest/posttest program interaction revealed a significant difference between the scores obtained from the fluency, originality, abstractness of titles and elaboration dimensions of creativity and total creativity scores.

## RECOMMENDATIONS

Considering that the majority of vocational college students graduate from vocational high schools, it is evident that instruction offered in these high schools should aim to enhance students creative thinking skills. These skills can be improved by education. In order to do so, curricula should be enriched by panels, conferences and interviews and problem solving, production, originality and research habits should be valued. The education system and exams should not only emphasize convergent thought but divergent thought as well. Training of vocational personnel should involve elective courses that promote vocational research, questioning and idea generation, as well as new perspectives and interests. It is essential for creative thinking that all stages of education allow room for students to voice their thoughts and avoid criticizing or judging them for these.

It is also crucial that lecturers are well-equipped in creative thinking. Finally, educators may be recommended to implement the Torrance Creative Thinking test and study the effects of the results on students.

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