



Teaching Thinking and Research Course on Learning and Scholarship Spirit of Students

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A B S T R A C T

The aim of this study was to evaluate the effectiveness of teaching Thinking and Research course on learning and scholarship spirit of students in the sixth grade of elementary school in District 6 in Isfahan. The study is quasi-experimental. The statistical population of the study consisted of all students in the sixth grade of elementary schools in District 6 in Isfahan. The sample consisted of 40 patients determined through multi-stage cluster sampling. The data collection tools in this study are the Learning standard questionnaire of Weitzman (1990) and scholarship spirit Inventory of Farashbandi (2016) with a reliability of 0.82 and 0.85 respectively. One-way and two-way (ANCOVA) analysis of covariance and a two-variable two-way analysis of covariance (ANCOVA) were used to analyze the hypotheses. The results suggest that teaching Thinking and Research course causes the promotion of learning in the experimental group compared with the control group. Teaching Thinking and Research course promotes the scholarship spirit in the experimental group compared with the control group. There was a significant difference between the experimental group and control group according to their gender.

Keywords: Teaching Thinking And Research, Learning, Scholarship Spirit, Students.

INTRODUCTION

Learning is a relatively permanent change in feeling, thinking and behavior created based on experience. Moreover, learning has a relatively constant influence on the mind and behavior of the child (Domjan, 2014; Gokhale, 2012). We will not be able to learn without thinking and without learning, positive changes will not happen (Brown, 1997). All theories of education and learning are supporters of thinking and its key role in teaching and learning (Hean, Craddock, & O'Halloran, 2009; Illeris, 2018). Curiosity is a natural phenomenon in each one of the healthy young members of the society that should be activated gradually by providing the proper conditions. It is obvious that this talent must be first activated in the family and school and then be flourished in other social institutions and environments. But in today's world, the role of the educational system is more impressive than other institutions because of economic, scientific and technical changes in this field. The role of educational system is important due to the fact that it has a wide realm and scope and includes large amount of the time of society members as kids, children, adolescents and youngsters (Kek & Huijser, 2011; Safari & Meskini, 2016).

The importance of thinking in human life is so that it is the main distinctive characteristic of human beings from other creatures. In fact, what distinguishes humans from other animals is

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the prodigious ability of thinking. Thought is a trend through which we posit our understandings together in an appropriate manner in order to reach a new result. In other words, thinking makes us to deeply delve into the things in order to obtain desired and reasonable results (Vandevelde, Van Keer, Schellings, & Van Hout-Wolters, 2015). Thinking is also called the directed activity of mind to solve problems and the problem that how does thinking happens and what are the consequences for every person has been always viewed by people and different definitions and interpretations are presented for it. According to Piaget, thinking is for mental balance. If the person fails to deal with the new situation, his balance will be violated. Accordingly, the person will move in the way of his cognitive structure change in order to reassure his balance. Basically, Piaget's theory of cognitive development is based on thinking due to which we can bring thinking to school (Rikard & Langley, 1995).

Research is an integrated activity to achieve a clearer understanding of the concepts around us. In sum, research is a way to expand the frontiers of knowledge and to open new horizons for the future. A person, who does research in various ways, is called a researcher. The researcher is an individual who is trying to reach a new understanding of the issues and different concepts with scientific methods. He uses various means to have a closer and deeper look at the surrounding phenomena (Eilks, 2015). The researcher looks at the surrounding with a critical and meticulous view and gives reliable information to the authorities to come over the problems of society and presenting the best practical strategy (Richter et al., 2017).

In a study, Cook and Odom (2013), studied the role of educational methods based on research and research skills on learning and scholarship of students in the schools of the city of Cameron and showed that the educational method based on research will cause the promotion of learning among students. There is a significant difference between the educational methods based on research and research skills and learning and scholarship based on gender of students.

In a study, García (2014), studied the role of group and individual research-centered educational methods on learning the social behaviors and scholarship of students in Belarus and showed that there is a significant difference between the two methods of group research-oriented educational method and individual research-oriented educational method on learning social behaviors. There is a significant difference between the group and individual research-oriented educational methods on the scholarship of students.

In this regard, this study examines the effectiveness of teaching Thinking and Research course on learning and scholarship spirit of students in the sixth grade of elementary school. The main question in this research seeks to answer whether teaching Thinking and Research course is effective on learning and scholarship spirit of students in the sixth grade of elementary school in District 6 in Isfahan. Moreover, the researcher is willing to explain the effect of teaching Thinking and Research course on learning and scholarship spirit of students in the sixth grade of elementary school based on gender.

METHODOLOGY

In this research, the quasi-experimental method with pretest and posttest was used and the sample is consisted of 40 students of sixth grade elementary school of District 6 in Isfahan

that 20 of them were placed in the experimental group and 20 were placed in the control group. The groups were selected as completely random and a pre-test was administered in both groups before any intervention. Then, teaching Thinking and Research course was started in the experimental group as the independent variable. Accordingly, Thinking and Research course was taught during 5 regular and separate sessions by a standard educational package to the students of the experimental group. Then, on 45 minutes session, the posttest was taken of the both groups.

The statistical population of the study consisted of all students in the sixth grade of elementary schools in District 6 in the city of Isfahan in 2016. Multi-stage cluster sampling was used to select the sample and finally 40 students (20 boys and 20 girls) were randomly selected and placed in the experimental and control groups.

Two Learning standard questionnaire of Weitzman (1990) and scholarship spirit Inventory were used. Learning questionnaire of Weitzman (1990) consists of 16 questions. This test is paper pencil and running it takes about 20 to 25 minutes. The reliability coefficient of the test is been reported as 0.82 using Cronbach's alpha. Weitzman (1990) has credited the reliability of the questionnaire through construct validity.

Scholarship spirits Inventory of Farashbandi (2016) consists of 20 questions that are scored from strongly disagree to strongly agree in a 5-point Likert scale. The validity of the questionnaire is been credited by Farashbandi (2016) through factor analysis. The reliability of the questionnaire is been reported as 0.85 through Cronbach's alpha by Farashbandi (2016).

RESULTS

The hypothesis states that teaching Thinking and Research is effective on learning and scholarship spirit among sixth grade of elementary school students. Multivariate analysis of covariance was used in order to test the hypothesis.

Table1. The mean of scores and standard deviation for learning and scholarship spirit of sixth grade students in the experimental and control groups at post-test

Variables	Experimental group			Control group		
	N	Mean	Std. deviation	N	Mean	Std. deviation
Learning	20	53.73	3.44	20	46.43	2.09
Scholarship spirit	20	49.5	3.77	20	46.4	1.38

Table2. The summary results of multivariate analysis of covariance on the posttest scores of learning and scholarship spirit variables

Effect	Test	Value	F-value	H df	Error df	Sig. level	Effect size
Group	Philai-Bartlet	0.904	165.73	3	33	0.0001	0.904
	Lambdi-Whilks'	0.096	165.73	3	33	0.0001	0.904
	Hoteling effect	9.38	165.73	3	33	0.0001	0.904
	The biggest Roy root	9.38	165.73	3	33	0.0001	0.904

As can be seen in Table 2, there is a significant difference at the level of ($p= 0.0001$) between the experimental and control groups in at least one of the variables of learning and scholarship spirit. Therefore, the research hypothesis was confirmed. One-way analysis of covariance in MANCOVA was done to examine the differences on the variables of learning and scholarship spirit. The results of this analysis are presented in Table 3.

Table3. The results of one-way analysis of covariance in MANCOVA on the posttest scores with pretest score control of learning and scholarship spirit variables

Resource	Sum of squares	df	Mean of squares	F-value	Sig. level	Etta square
Group Learning	11346.563	1	11346.563	211.42	0.0001	0.794
Scholarship spirit	126.909	1	129.909	17.25	0.0001	0.239

The results of one-way analysis of covariance in MANCOVA in Table 3 show that there is a significant difference in learning ($p= 0.0001$ and $F= 93.21$) and the scholarship spirit ($p= 0.0001$ and $F= 17.25$) between the experimental and control groups. Also, two-variable two-way analysis of covariance (ANCOVA) was performed on the post-test scores with the control of the pretest of the dependent variable (learning and scholarship spirit) in order to study the experimental intervention in interaction with gender.

Table4. Mean and standard deviation of learning and scholarship spirit of students in the experimental and control groups and their gender in post test

Variables	Gender	Experimental group			Control group		
		N	Mean	Std. deviation	N	Mean	Std. deviation
Learning	Boy	10	43.3	2.16	10	39.4	3.33
	Girl	10	42.8	2.65	10	37.2	4.44
	Total	20	43.05	2.37	20	38.3	3.98
Scholarship spirit	Boy	10	196.5	21.4	10	222.2	19.11
	Girl	10	219.8	27.19	10	285.3	24.3
	Total	20	208.15	26.65	20	253.75	38.74

Table 5 shows the results of multivariate analysis of covariance on the scores of posttest with the control of the pretest scores of the dependent variables as learning and scholarship spirit of students based on gender.

Table5. The summary results of multivariate covariance analysis on the posttest scores with the control of the pretest scores of the variables of learning and scholarship spirit of students based on gender

Effect	Test	Value	F-value	H df	Error df	Sig. level	Effect size
Group	Philai-Bartlet	0.885	79.86	2	31	0.0001	0.885
	Lambdi-Whilks'	0.115	79.86	2	31	0.00001	0.885
	Hoteling effect	7.72	79.86	2	31	0.0001	0.885
	The biggest Roy root	7.72	79.86	2	31	0.0001	0.885
Gender	Philai-Bartlet	0.507	10.61	2	31	0.0001	0.507
	Lambdi-Whilks'	0.493	10.61	2	31	0.00001	0.507
	Hoteling effect	1.02	10.61	2	31	0.0001	0.507
	The biggest Roy root	1.02	10.61	3	31	0.0001	0.507
Interaction: (group * gender)	Philai-Bartlet	0.24	3.26	3	31	0.034	0.24
	Lambdi-Whilks'	0.76	3.26	3	31	0.034	0.24
	Hoteling effect	0.316	3.26	3	31	0.034	0.24
	The biggest Roy root	0.316	3.26	3	31	0.034	0.24

As it can be seen in table 5, there is a significant difference at the level of ($p < 0.0001$) between the experimental and control groups in at least one of the dependent variables of learning and scholarship spirit. Also, in terms of learning and scholarship spirit, there is a significant difference at the level of ($p < 0.034$) between the participants based on their gender. In addition, there is a significant difference at the level of ($p < 0.0001$) between the participants of the experimental and control groups in terms of learning and scholarship spirit (the interaction of group in gender)

CONCLUSION

Multivariate analysis of covariance was conducted to test the research hypothesis and the results showed that the mean of the scores of learning and scholarship spirit variables was higher in the participants of the experimental group in the posttest compared to the control group. In other words, we can say that teaching Thinking and Research course can cause the increase of learning and spirit of scholarship. Therefore, the research hypothesis was confirmed. Review and study of the mentioned hypothesis suggest that learning is a relatively permanent change in feeling, thinking and behavior created based on experience. Any learning does not lead to practice since people learn many things but the possibility of applying these things does not occur to them. Principally, the interest in study and research is an action based on the experimental-mental activities of individuals; meaning that students should examine and experience scientific issues and teachers should not inject the knowledge to the minds of students. In other words, the objective of education is not the accumulation of knowledge in the mind, but it is a means of achieving scientific findings in order to motivate creativity and construction.

In addition, the results of the study showed that the mean of the learning variable is higher among the girls of the experimental and control groups in the posttest than boys but the mean of spirit of scholarship variable was higher among the boys of the experimental and control groups in the posttest than girls. Generally, the research results showed that the issue of learning and spirit of scholarship among students should be paid a great deal of attention.

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