

Prediction of Satisfaction and Performance of Students in Tehran Technical and Vocational Training and Work-Study Program

(The study of relationship between interest, prior performance, self- efficacy and satisfaction and performance of students in Tehran technical and vocational training and work-study program)

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ABSTRACT

The goal of this research is to study the relationship of interest, prior performance with self-efficacy, satisfaction and present performance of technical and vocational training and work-study program students. Due to this, a sample in size of 765 as chosen from students of Tehran technical and vocational training and work-study program by means of multistep cluster sampling. Data tools were obtained by a questionnaire including 3 subsets of interest, satisfaction and self-efficacy and also study of educational performance by existing documents. The prepared questionnaire was used by group method when its validity and reliability were qualified. In order to analyze the data, simple and multiple regression was utilized. Results revealed that grade point average of high school first year can be predictable by grade point average of middle school third year ($F=886.170$, $df=1.742$ $p<0.01$). The grade point averages of high school first year and middle school third year lead to prediction of grade point average of students in second year ($F=51.53$, $df=1.239$ $p<0.01$). The grade point average of second year predicts the self-efficacy, prior interest and satisfaction of students ($F=92.63$, $df=3.219$ $p<0.001$). The grade point average of middle school third year and high school first and second year predicts the self-efficacy of students ($F=3.24$, $df=3.213$ $p<0.05$).

KEYWORDS: interest, self-efficacy, satisfaction, educational performance, technical and vocational training.

INTRODUCTION

Study of features and factors related and influential on satisfaction and performance of students was always noticed by officials and instructors of technical and vocational training and work-study program high schools. One of the effective factors on satisfaction is tasks and their requirements which educational major and related tasks are the most important factors of satisfaction. Eccles and Wigfield (2002) have emphasized on the importance of mutual role of task value beliefs in educational motivation and performance. According to their opinion, beliefs of task value are related to beliefs of students about interest, importance and task value and has plays an important role in motivation of students. Pintrich's research (1999) indicated that there is positive relationship between task value and educational progress and task value beliefs have positive prediction for educational progress. Thus, it can be mentioned that it is an effective variable on performance and satisfaction. Bandura (1986, 1997, 2000, 2006) has also emphasized on the role of self-efficacy roles in educational performance and motivation and introduces the self-efficacy as a mediator for the relationship between various external factors and performance. Self-efficacy means one person's belief about being effective in a situation or task or one person's beliefs about his performance capabilities in a specific field. This structure has two components, expectation and value (Bandura, 1986 & 2000, Schunk, 2009 and Zimmerman, 1997). Results show that self-efficacy affects task choice, effort, perseverance and progress (Bandura, 1986, 1997, Zimmerman, 1995 and Leim 2008). Also, individuals with high self-efficacy are more prepared for learning a skill or doing a task, they work harder, and when they face with problems, they are more persevering and reach the high levels of progress, in comparison with individuals whom think of themselves with less learning capabilities (Carpenter, 2007, Berger, 2011, Hejazi, 2007). So, it can be said that like task value, self-efficacy is effective on performance and satisfaction (Pintrich, 1999, lavasani, 2012, Bahrami, 2011, Asgari, 2013). One of the task value aspects is the educational major (or branch of education). About index of interest to branch of education, Navidi's research (1999) revealed that its semi-partial correlation with educational progress is about 0.04% i.e. lower than 0.002 of educational progress variance can be predictable from expressed interest. Correlation square is also 1% between educational progress and educational tendency i.e. 1% of educational progress variance can be predicted from tendency. Except for interest and self-efficacy, prior educational progress is also an effective variable on performance, satisfaction and self-efficacy of students. Karamdoust, Zandovanian and Aboulghasemi (2006) showed in their research that previous education progress is able to

determine a significant portion of students' next educational progress. In research of Pajeras et al. (1999), written beliefs and talent predicted written performance. There are many researches done about features and differences of technical and vocational training and work-study program students. Whether we consider the educational major and related tasks as an aspect of tasks' requirements, many studies have been done about differences of students in various majors. Yousiliani (2001) concludes from his research that technical and vocational training students are more satisfied in comparison with students in work-study programs. Shafiei (2002), studied the reasons why there is loss of tendency in students for technical and vocational training and work-study branch of education and he concluded that the more students become positive about technical job and it becomes more valuable from social point of view, their tendency for education in technical and vocational training and work-study program, increases. Masrour (2003), in his research about tendency of second and third year students for their educational major in Shiraz work-study program high schools, introduces the interest of students to technical and service jobs as a cause for increasing their interest to choose work-study programs. According to research of Alidoust and Abadikhah (1990), about 25% of students have stated that due to some reasons they could not register for their favorite major and the same percentage of students are interested to change their educational major. Also the results related to research of Abadikhah et al. have revealed that 25% of general branch students and 4% of technical and vocational students want to continue their studying in a major which is not related to their present educational major. Also Navidi (1997) has studied 18 variables in order to determine the extent to which each of the criteria related to educational guidance are influential in prediction of educational progress of high school new system of education. He concluded that there is a positive and significant correlation between prior education progress of students (grade point of last year) and their educational progress. The correlation between prior educational performance and educational progress of general branch students is high and about technical and vocational training and work-study program students, this correlation is rather weak. About 58% of educational progress variance related to students in mathematics and physics and experimental sciences majors, 48% of educational progress variance related to students in literature and social sciences majors, 21% of educational progress variance related to students in technical and vocational majors and 11% of educational progress variance related to students in work-study programs were predicted from their prior educational performance. The educational performance index of high school first year students in basic compulsory courses was significant in their next educational progress (33%). This ratio was between 45-50% for general branch and was 5% for technical and vocational students. In research of Kondori (2002), one of the characteristic features which is related to motivation, has been studied. He compared the self-efficacy beliefs of students in various majors and concluded that male students of second year in social sciences major believe in themselves less than other students in mathematics and physics and experimental sciences and technical and vocational majors. In mentioned research, students in literature majors of social sciences were less talented than mathematics and physics, experimental sciences and technical and vocational students. Ghasemi pouya (2010) believes that technical and vocational students are interested in their educational major, but this tendency is not effective on their educational performance.

Totally, it can be mentioned that performance and satisfaction of students are affected by previous performance, prior interest and their self efficacy. In addition to educational major, gender, age, demographic features, school and situation circumstances are also effective variables on performance and satisfaction of students.

Amongst important researches overall, there is no quest that studies important effective factors on satisfaction and performance of students. Our objective in this research is to review the role of grade point average of middle school third year, high school first year, prior interest and self-efficacy to predict the performance and satisfaction of students in technical and vocational training and work-study programs. Therefore, in order to study the effective factors on satisfaction and performance of students, due to discussions, researches and given theories, the questions or hypotheses below will be examined:

- A) The grade point average of middle school third year predicts the grade point average of students in high school first year.
- B) The grade point average of middle school third year and high school first year, predict the grade point average of students in high school second year.
- C) The grade point average of middle school third year and high school first and second year, predict self-efficacy of students.
- D) The grade point average high school second year, predicts self-efficacy, prior interest and satisfaction and students.
- E) The grade point average of middle school third year and high school first year and self-efficacy, predict performance of students.

The method of research is of prediction studies that data collection was done by survey research. In addition to this, educational performance was also obtained by referring to educational profiles of students.

Statistical Population and Sample

Statistical population of this research includes all students of second and third year in technical and vocational training and work-study program high schools of education organization in Tehran and cities around Tehran. From all individuals in mentioned population, 765 students were chosen by multistep cluster sampling.

Data Collection Tools

In order to do this research and collect the required information about students in statistical sample, two tools given below are used:

A) The form of recording the educational features of students (grade point average and scores)

B) A questionnaire of evaluating students' educational and professional interest, their satisfaction and technical self-efficacy. This questionnaire consisted of 28 questions and was designed by researchers. In order to determine the facial validity of questions in questionnaire, the opinions and standpoints of psychological scholars and also experts of technical and vocational training and work-study programs, were used and based on their opinions and points of view, some corrections were done in the content of questionnaire. In order to determine the reliability of research tool, Cronbach's alpha coefficient was utilized. In ultimate implementation of research, Cronbach's alpha coefficient was 0.79 for all the questions. In ultimate implementation of research, for technical self-efficacy subtest that was consisted of 12 questions, Cronbach's alpha coefficient was 0.69 which is rather acceptable. In ultimate implementation of research, for interest subtest that was consisted of 6 questions, Cronbach's alpha coefficient was 0.75. In ultimate implementation of research, for satisfaction subtest that was consisted of 10 questions, Cronbach's alpha coefficient was 0.72 which is rather acceptable.

Research Implementation

In order to collect required information about students in statistical population, first of all educational files of middle school until the end of their high school first year, were studied and then, educational and professional interest, technical self-efficacy and satisfaction were evaluated by means of questionnaire. This questionnaire was used in group method and then the collected information was analyzed.

Findings

When data is collected, appropriate statistical analysis i.e. simple and multiple regressions were done. Results were reported in two descriptive and analytical parts.

A) Data Description. Table (1) shows the mean, standard deviation and the correlations between variables of this research. As it is observed, satisfaction is correlated with all factors (self-efficacy, prior interest and grade point average in first year) except for performance and middle school grade point average ($p < 0.05$).

Table 1. Mean, standard deviation and correlation between observed variables.

Variables	Mean	Standard Deviation	1	2	3	4	5	6
Satisfaction	19.06	4.95	1					
Grade point average of high school second year	14.29	2.45	0.03	1				
Technical self-efficacy	24.28	3.85	0.62**	0.02	1			
Grade point average of middle school third year	15.68	1.62	-0.02	0.39**	-0.04	1		
Grade point average of high school first year	13.85	2.05	-0.10**	0.58**	-0.11	0.74	1	
Prior Interest	12.32	1.35	-0.47**	0.04**	0.41**	-0.86**	0.13**	1

* = significance in 0.05 level

** = significance in 0.01 level

Self-efficacy has relationship with satisfaction, grade point average of high school first year and middle school third year ($p < 0.05$). There is a relationship between ultimate performance or grade point average of second year and year point average of middle school third year and high school first year ($p < 0.05$). The grade point average of second year has relationship with other factors ($p < 0.05$). The highest correlation is observed in relationship between grade point average of middle school third year and high school first year (0.74) and self-efficacy and satisfaction (0.63).

B) Data Analysis. Although correlation relations give useful information about relationships between variables, but do not predict these relationships; so, simple and multiple regressions are used to study the mentioned relationships, deeply.

A: Does grade point average of middle school third year predict grade point average of students in high school first year?

Simple regression was utilized to predict the grade point average of first year by grade point average of middle school third year. The results showed that grade point average of middle school third year can predict the grade point average of students in first year ($F=886.170$, $df= 1.742$, $p<0.01$).

Table 2. Simple regression for predicting the grade point average of students in first year by grade point average of middle school third year.

Effects	Sum of Squares (SS)	Degree of Freedom (df)	Mean of Squares (MS)	F	Significance
Regression	1805.036	1	1805.036	886.170	.000
Remainder	1511.377	742	2.037		
Total	3316.414	743			

Also, the regression equation is given below:

Grade point average of students in first year = $0.20 + 0.85$ (grade point average of middle school third year)

Coefficient of determination (square of correlation coefficient) shows that 54% of changes in grade point average of first year are determined by grade point average of middle school third year.

B: Do grade point average of middle school third year and high school first year predict the grade point average of students in second year?

Simple regression was utilized to predict the grade point average of second year by grade point average of middle school third year and high school first year. The results showed that grade point average of middle school third year and high school first year can predict the grade point average of students in second year ($F=51.53$, $df= 1.237$, $p<0.001$).

Table 3. Simple regression for predicting the grade point average of students in second year by grade point average of middle school third year and high school first year.

Effects	Sum of Squares (SS)	Degree of Freedom (df)	Mean of Squares (MS)	F	Significance
Regression	496.173	2	248.087	51.53	.000
Remainder	1140.966	237	4.814		
Total	1637.140	239			

Also, the regression equation is given below:

Grade point average of students in second year = $1.76 + 0.10$ (grade point average of middle school third year) + 0.76 (grade point average of first year)

Implementation of significance test of regression test (t) shows that regression coefficients of grade point average of middle school third year are not significant in prediction of grade point average of second year however, regression coefficient of grade point average of second year ($t= 7.01$, $p<0.001$) is significant in prediction of grade point average of second year.

Coefficient of determination shows that only 30% of changes in grade point average of second year are determined by grade point average of middle school third year and high school first year.

C: Do grade point average of middle school third year and high school first and second year predict the self-efficacy of students?

Multiple regression was utilized to predict the self-efficacy by grade point average of middle school third year and high school first and second year.

Table 4. Multiple regression for predicting the self-efficacy by grade point average of middle school third year and high school first and second year.

Effects	Sum of Squares (SS)	Degree of Freedom (df)	Mean of Squares (MS)	F	Significance
Regression	317.335	3	105.778	3.214	0.024 ^a
Remainder	7011.236	213	32.917		
Total	7328.571	216			

The results showed that grade point average of middle school third year and high school first and second year can predict the self-efficacy of students ($F=3.24$, $df= 3.213$, $p<0.05$).

Also, the regression equation is given below:

Self-efficacy = $24.11 + 0.13$ (grade point average of second year) - 0.89 (grade point average of first year) + 0.833 (grade point average of middle school third year)

Implementation of significance test of regression test (t) shows that regression coefficients of grade point average of high school second year are not significant in prediction of self-efficacy; however, regression

coefficient of grade point average of middle school third year ($t = 2.85$, $p < 0.001$) and grade point average of high school first year ($t = 2.65$, $p < 0.001$) is significant in prediction of self-efficacy.

Coefficient of determination shows that 43% of changes in self-efficacy are determined by grade point average of middle school third year and high school first and second year.

D: Does grade point average of second year, self-efficacy and prior interest predicts the satisfaction of students?

Multiple regression was utilized to predict the satisfaction of students by grade point average of second year, self-efficacy and prior interest. The results showed that grade point average of second year, self-efficacy and prior interest can predict the satisfaction of students ($F = 92.63$, $df = 3.219$, $p < 0.001$).

Table 5. Multiple regression for predicting the satisfaction by grade point average of second year, self-efficacy and prior interest.

Effects	Sum of Squares (SS)	Degree of Freedom (df)	Mean of Squares (MS)	F	Significance
Regression	4367.970	3	1455.990	92.633	.000 ^a
Remainder	3442.219	219	15.718		
Total	7810.188	222			

Also, the regression equation is given below:

Satisfaction = $0.42 + 0.009$ (grade point average of second year) + 0.62 (self-efficacy) + 0.89 (grade point average of first year)

Implementation of significance test of regression test (t) shows that regression coefficients of grade point average of high school second year are not significant in prediction of satisfaction; however, regression coefficient of self-efficacy ($t = 12.09$, $p < 0.001$) and prior interest ($t = 5.12$, $p < 0.001$) is significant in prediction of satisfaction.

Coefficient of determination shows that 60% of changes in satisfaction are determined by grade point average of second year and self-efficacy.

E: Does grade point average of middle school third year and high school first year and self-efficacy predict the performance of students?

Multiple regression was utilized to predict the performance of students by grade point average of middle school third year and high school first year and self-efficacy. The results showed that grade point average of middle school third year and high school first year and self-efficacy can predict the performance of students ($F = 30.415$, $df = 3.213$, $p < 0.001$).

Table 6. Multiple regression for predicting the performance by grade point average of middle school third year and high school first year and self-efficacy.

Effects	Sum of Squares (SS)	Degree of Freedom (df)	Mean of Squares (MS)	F	Significance
Regression	468.647	3	156.216	30.415	.000 ^a
Remainder	10.94.012	213	5.136		
Total	1562.659	216			

Also, the regression equation is given below:

(Performance) Grade point average of second year = $0.927 + 0.05$ (grade point average of middle school third year) + 0.83 (grade point average of first year) + 0.02 (self-efficacy)

Implementation of significance test of regression test (t) shows that regression coefficients of grade point average of middle third year and self-efficacy are not significant in prediction of performance; however, regression coefficient of grade point average of first year ($t = 6.73$, $p < 0.001$).

Coefficient of determination shows that 55% of changes in performance of students are determined by grade point average of middle school third year and high school first year and self-efficacy.

Conclusion

The goal of this research is studying the relationship of interest and prior performance with self-efficacy, satisfaction and performance of students in technical and vocational training and work-study program high schools. The results revealed that grade point average of middle school third year predicts the grade point average of high school first year students. This finding is compatible with research of Karamdoust et al. (2006) and Pajeras et al. (1999). The grade point average of middle school third year and high school first year, predicts the grade point average of students in second year. However, regression coefficient of grade point average of middle school third year is not significant in prediction of grade point average of second year. This indicates that educational performance of students in first year has stronger relationship with educational performance of

students in second year in comparison with educational performance of students in middle school third year. This is because of the different atmosphere of middle school and high school and their various performances in which second year performance (technical- vocational performance) is more affected by first year performance.

Also, the results indicate that grade point average of middle school third year and high school first and second year can predict self-efficacy of students. This finding is compatible with theoretical basics of self-efficacy (Bandura, 1986, 2000, 1997, 2006). According to these basics, self-efficacy is a mediator for the relationship between various external factors and performance and self-efficacy affects tasks choice, effort, perseverance and progress. Educational success and failure is influential on self-efficacy. Implementation of regression coefficient significance test shows that regression coefficient of grade point average of high school second year is not significant in prediction of self-efficacy. But, regression coefficient of grade point average of middle school third year and high school first year is significant in self-efficacy prediction. The reason for this difference is that formation of this belief is time-consuming and previous performances can be more effective in comparison with present performance and present performance will later have its effects on self-efficacy.

Also, results show that grade point average of high school second year, self-efficacy and prior interest predicts the satisfaction of students. This finding is compatible with theoretical basics related to task value theory of Eccles and Wigfield (2002). In addition to this, research findings have confirmed the Pintrich's findings (1999) related to relationship of task value beliefs and their progress with importance of role of task value beliefs in educational motivation and performance. Complementary analyses revealed that regression coefficient of grade point average of high school second year is not significant in satisfaction prediction but regression coefficient of self-efficacy is significant. Self-efficacy is of ??? of satisfaction and due to Bandura's theory (1986, 1997, 2000) plays an important role in motivation that satisfaction is a part of it. But more researches are required about grade point average of high school second year and satisfaction.

In addition to this, the results indicate that grade point average of middle school third year and high school first year, self-efficacy predicts the performance of students. Explanation of this issue is possible by means of Bandura's theory (1986, 1997, and 2000). According to Bandura's theory, self-efficacy plays an important role in motivation and as a result in educational performance. This finding is also compatible with research of Karamsoust et al. (2006) and Panjeras et al. (1999). Due to their findings, previous education progress is able to determine a significant portion of students' next educational progress in high school. Regression coefficients of grade point average of middle school third year and self-efficacy are not significant in performance prediction but regression coefficient of grade point average of high school first year is significant in performance prediction. The reason for insignificance and the relationship between grade point average of middle school third year and education performance in high school second year can be intervals and the difference between these educational levels and effectiveness of various factors between middle school third year and high school second year.

It is recommended that in future researches other cognitive, social, structural, emotional and family features of students and also other factors that can affect them, should be studied. Beside the subject, it is necessary to make some changes in implementation method and design of experimental or descriptive research that examine several relationships, simultaneously. Designing or translation and standardization of questionnaires about technical and professional self-efficacy, satisfaction, educational-cognitive performance or motive and technical educational performance, can also be helpful in richness of researches and findings.

These findings have many applications for scholars, policy makers and teachers. Cognition of students' features and effective factors on performances and processes provides valuable information in decision making. Beside fundamental changes in technical and vocational training system, features of students and influential factors on them should be considered as basic. These findings are more applicable for high school consultants specially in choosing a major and educational guidance and also for researchers in field of technical and vocational trainings and educational guidance and consultation.

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