The Difference and Relationship between the SSEE and UEE-1 Scores of Anatolian Vocational High Schools

Mustafa BAHAR[a]

Fatih University

Abstract

Vocational High School students enter schools either with GPA or with Secondary School Entrance Exam (SSEE). In this research, the difference between the percentages of standard scores of 6190 students at four kinds of Anatolian Vocational High Schools in SSEE and UEE-1 exams, and their regression analyses have been studied. Moreover, one-way Anova test has been carried out to test the significance of difference. The school type with the lowest UEE-1 standard score percentage compared with the percentage of SSEE standard score was Anatolian vocational high schools. In all school types SSEE explained less than 30% of UEE-1 scores, the highest being 0,298 for Anatolian girls vocational high schools. Girls had better percentages of standard scores in three school types.

Key Words

Academic Achievement, Prediction, Standard Score, Gender, Vocational School.

Because success in education is directly related with a country's power of competition, attempts to increase enrollment rates and keeping them high in developed countries, which already have higher rates, become more understandable. Thus, considerable effort has been made to keep vocational school attendees within the educational system. Parallel with this, to increase the rate of enrolment and to keep these rates higher in vocational schools, the desire of students for academic achievement should be utilized in a positive way.

Taken into account its benefits, academic achievement is something students of all schools would like to have. Even in vocational schools, students prefer places in universities that focus on academic achievement. However, their failure to win a place at universities with university entrance exams wrongly implies their considerable general failure. Researches that control inputs of these schools will give a more accurate picture of these schools.

As SSEE has scores of all the students who win a place in Anatolian Vocational High Schools, they are the best agents to control their academic success inputs. Comparing the scores of SSEE and UEE, records of academic achievement will be beneficial in reflecting the choice of vocational high school, which, to some extent, stems from co-efficient differences, which means different school types have different coefficients for the same tests in placing students into universities.

Academic Achievement

When success in education is expressed, "academic achievement" which means grades developed in classes and given by teachers, test scores or both of them are meant (Carter & Good, 1973). Academic achievement expresses changes in behavior in all program areas other than in individual's psycho-motor and affective development (Erdoğdu, 2006).

It has been accepted that academic achievement is positively correlated with intelligence (Yıldırım, 2000). Individuals who catch and taste success are more motivated to study and focus more (Keskin & Sezgin, 2009). Academic achievement of individuals with higher optimism level has been found to be higher (Aydın & Tezer, 1991).

On the other hand, low academic achievement is a cause of dissatisfaction, which adds to importance of academic achievement. A research done in Aus-

a   *Correspondence:* Assist. Prof. Mustafa BAHAR. Fatih University, Faculty of Education, Department of Educational Sciences, 34500 İstanbul / Turkey. E-mail: mbahar@fatih.edu.tr & aretlim@ hotmail.com. Phone: +90 212 866 3300-2822 Fax: +90 212 866 3412.

tralia pointed out that among those most likely to have left school early between 2003 and 2005 are those whose parents worked in blue-collar occupations or were other than university-educated, those who were from non-metropolitan locations, those who were low academic achievers and those who were from public schools (Curtis & McMillan, 2008). In a study it was revealed that demographic and family variables affected educational expectations, and even if not always, it had an important influence in educational level (Trusty, 1998).

As academic achievement is measured by grades and test scores, general and centralized exams are used to evaluate academic achievement in various countries such as United Kingdom, Australia, Singapore and numerous states in the USA. Due to differences in grading systems in schools, class, or school wide exams have not been preferred. Empirical evidence shows school grades are a weak predictor of success (Nelson, 1975).

Moreover, during the process of preparation, to increase its reliability coefficient and especially to ensure content validity, intensive attempts are made in standardized tests, thus making them a healthier form of testing. There is plenty of evidence citing standard tests as a better predictor of success than local exams. Besides, research shows that reliability coefficients of UEE are increasing further. Tezbaşaran indicated that reliability coefficients of university entrance exams after 1987 increased (Tezbaşaran, 1991). In mathematics, physics, chemistry and biology lessons, compared to mathematical part, multiple correlations of 2000 were higher than those of 1998 (Kelecioğlu, 2003). Studies carried out in the years 2003-2005 have evidence that university entrance exam has made quite consistent ranking with respect to KR-21 reliability coefficients (Baykal, 2005).

Vocational Schools and Academic Achievement

Academic achievement is important in high school education but Anatolian high schools, science schools and general high schools are more concerned with it than vocational high schools, which explains the reason why there is little research about academic achievement in vocational high schools.

Quite naturally, vocational high schools are among the lowest scoring high schools in UEE. According to the data of ÖSYM 2006, technical high schools, vocational girls high schools, private evening schools, evening schools, vocational high schools

of commerce and vocational industry schools are the lowest scoring schools (ÖSYM, 2006). According to findings in UEE tests, both vocational and Anatolian vocational high schools scored lower than 50% in verbal and numerical tests (Berberoğlu & Kalender, 2005). But it should be taken into account that these data take only UEE scores into account. According to US Department of Education, the more vocational classes students took, the less they enrolled in further education, and the more they waited for further education (National Center for Education Statistics, 2008).

Nearly 90% of university graduates believed that their education contributed to better job performance, while only 64 % of vocational school graduates felt the same way (Berberoğlu, 2005).

According to the results of a study conducted by Peker, students finishing sports high schools are not eligible to achieve success at sports departments at university. Considering the correlation between students' scores, Peker offers accepting students into these departments with such UEE scores as numerical or numerical plus verbal tests besides skill tests as a suggestion (Peker, 2003).

In a study investigating students' attitude towards the university entrance exam there was a statistically significant relationship between general academic achievement and attitude (Çevik & Ekici, 2008). In a study done on students of child development department at a vocational high school, it was found that those with positive attitude towards school had higher perceptions of themselves than those with lower attitude towards school (Önder, 2002). Çamlıyer, Çamlıyer and Eniseler (1999) indicated that when enrolling students into sports academies, students' university entrance exam scores should be taken into account instead of using just physical abilities. Observations show positive relationship between academic achievement and physical activity (Trudeau & Shephard, 2008). In a study that included cross sectional study of 6,346 adolescents in Iceland, it was found that lower BMI, physical activity, and good dietary habits were all associated with higher academic achievement and poor dietary habits negatively influenced self-esteem and academic achievement (Kristjánsson, Sigfúsdóttir, & Allegrante, 2010).

Even if psychomotor skills are required in vocational high schools, academic achievement continues to be important. Ministry of Education should make room for areas that will allow students to enroll in vocational high schools to develop their basic skills and talents. Similarly, students of gen-

eral high schools should have the opportunity and motivation to learn technical and application skills (Berberoğlu, 2005). In accordance with the computerization of society the nature of work done in places such as factories, bureaus and schools continues to change (Erdoğan, 2005). Evidence shows academic achievement as well as psychomotor skills is necessary for vocational school students.

While the rate of non-university graduates in OECD countries in qualified jobs decreased 3%, the rate was 1% in Turkey (Education at a glance 2009, 2009), which adds to the urgency of emphasis on academic achievement in vocational schools, which is a cause of enrollment in vocational education.

Method

Sampling

The scope of the study was students of four types of Anatolian vocational high schools. In all four school types a total of 12326 students entered (vocational) higher education with their school grades out of 22014 students. The study included all the students who were the last year students of given schools (all the students whose names and school codes of secondary school entrance exam matched with their names and school codes in university entrance exam), with the limitation that only those who finished their schools in 4 years where they started education were included. There was a total of 6190 students with this specification, which meant 28% of all the students entering the UEE (including graduates) in these schools were covered in the study. The study covered all the students who completed their education in the schools that they entered with secondary school entrance exam. Therefore there was no need to test the validity of the sampling. When studying on the whole group, the results were conclusive. No hypothesis test (test of significance) was applied. If we are studying on a sampling, there is a need for hypothesis tests (Ergün, 2008).

Data Gathering

When this study was devised in the year 2007, the last available data were of the year 2006. As there was 1 year preparatory class and 3 years for schooling, data of 2002 Secondary School Entrance Exam were acquired from General Directorate of Educational Technologies. Data of 105000 students (raw scores in all four areas, student names, prov-

ince codes, school codes and school types) were acquired. Using these data, 2006 UEE-1 scores of the same students were found, which meant scores of 43099 students were matched. Faulty data were cleared and scores of 40669 students were used for the main analysis as standard scores of Anatolian vocational schools would be better represented within a larger group. And for further analysis data of four Anatolian vocational high schools were chosen for the study. It meant scores of a total of 6190 students from Anatolian vocational high schools, Anatolian girls vocational high schools, Anatolian vocational high schools for commerce and Anatolian vocational hotel and tourism high schools.

Data Analysis

First, raw scores of 40669 students were calculated and then these scores were turned into standard scores. The formula used for this equation was Z= $\frac{x - \mu}{\sigma}$ being population mean, and σ population standard deviation (Baykul, 2000).

As there are 100 questions in SSEE and 120 questions in UEE-1, standard scores were turned into percentage and thus differences between these two were found. Provinces with 4 or less than 4 students were excluded from the list at the provincial level.

Prediction of response variable UEE-1 by the independent (explanatory) variable SSEE was sought by simple linear regression and Pearson correlation coefficient was found for provinces. First, correlation and regression in the whole group and then within school types were analyzed. One-way Anova for the significance of differences between scores and Fisher's Z test for the significance of difference between correlations were carried out. For the evaluation Microsoft Excel, SPSS 15.0 and MedCalc softwares were used.

Findings

In general there was a negative difference between the percentages of standard scores of all 40669 students with a value of -3.7 (Table 1). The lowest negative difference between percentages of standard scores of SSEE and UEE-1 is in Anatolian girls vocational high schools with -4.3. The value is -4.6 in Anatolian vocational high schools for commerce and -5.1 in Anatolian vocational hotel and tourism schools. Percentage values of standard scores of UEE-1 of students in Anatolian vocational high schools are 7.5 lower than percentage values of

Table 1.
Findings Related to Differences Between Percentages of SSEE and UEE-1 Standard Scores, Standard Scores and Simple Linear Regression Results Throughout Turkey in Four School Types

School type	N of Cases	SSEE St. Mean Score	%	UEE-1 St. Mean Score	%	Diff*	r	r²
Ant. Voc H. S.	1614	43,3	43,3	43,0	35,8	-7,5	0,444	0,197
Ant. Voc. G. H. S.	2167	32,2	32,2	33,5	27,9	-4,3	0,546	0,298
Ant. Voc. H. S. Com	1003	34,6	34,6	36,0	30,0	-4,6	0,450	0,202
Ant. Ht. Tr. V. H. S.	1406	30,6	30,6	30,6	25,5	-5,1	0,469	0,220
TOTAL	40669	56,1	56,1	62,9	52,4	-3,7	0,729	0,531

***:p<0.001
* The difference between percentage values of SSEE standard scores and percentage values of UEE-1 standard scores

SSEE standard scores. This is the highest negative difference between the percentages of standard scores in four school types.

As for the regression analysis carried out, only in Anatolian girls vocational high schools did SSEE explain 30% of the UEE-1 scores at the significance level $p < .001$. The other schools had a lower value of prediction; In Anatolian vocational hotel and tourism high schools, SSEE explained 22% of UEE-1 scores, in Anatolian vocational high schools for commerce and in Anatolian vocational high schools, and SSEE explained 20% of the UEE-1 scores at the significance level $p < .001$.

Evidently, the difference between the percentages of scores does not explain the success of schools in UEE. That the UEE scores are lower does not mean they are unsuccessful, but it clearly explains their comparative situation of success within the school type in the UEE because they are evaluated on the basis of the same standard scores.

Findings about Anatolian Vocational High Schools at the Provincial Level

The highest positive difference between the percentage of SSEE standard score and UEE-1 score is in Kütahya with a difference of 12.8. Bartın is the second with a value of 6.7. 14 provinces had higher UEE scores. The highest negative difference was in Kırıkkale with -13.8 and Tekirdağ was second with -12.9.

With respect to the correlation of SSEE with UEE-1, there was significant relationship in 26 provinces. Aksaray had the highest correlation with 0.875 ($p < .05$), the second being Uşak with a correlation of 0.843 ($p < .072$). There was no negative relationship in any province.

Findings about Anatolian Girls Vocational High Schools at the Provincial Level

The highest positive difference between percentages of SSEE standard scores and UEE-1 standard scores was in Artvin with a value of 16.5. The second province was Denizli with a positive difference of 7.1. On the other hand, the highest negative difference was in Kayseri with -15.2 and Samsun stood second with a negative value of -12.7. In 42 provinces UEE-1 scores were lower than SSEE standard scores. There was correlation between SSEE and UEE-1 in 34 provinces with 12 provinces having high correlation.

Findings about Anatolian Vocational High Schools for Commerce at the Provincial Level

The highest difference between percentages of SSEE standard scores and UEE-1 standard scores in this school type was in Nevşehir with a difference of 8.4 and Bilecik was the second with a difference of 6.7. The highest negative difference on the other hand, was in İçel with -16.3. Kocaeli was the second with a value of -14.5.

Correlation between SSEE and UEE-1 was highest in Aksaray (0.993) ($p < .007$). Second highest correlation was in Giresun with 0.940 ($p < .017$). SSEE scores did not correlate with UEE-1 in 36 provinces, the highest in four school types.

Findings about Anatolian Vocational Hotel and Tourism High Schools at the Provincial Level

In Anatolian vocational hotel and tourism high schools where scores of 2176 students were studied, only nine provinces had higher UEE-1 score percentages. The provinces with highest difference were Hatay and Uşak with a value of 2.3. In 37 provinces difference was negative, the highest being in Giresun with a value of -21. The second was

Kırklareli with a negative difference of -10.6.

There was significant relationship between SSEE and UEE-1 scores in 23 provinces, the highest being in Kars with 0.899 ($p < .032$). SSEE scores predicted at moderate level in 4 provinces and low in 9 provinces.

Discussion

Compared with overall scores of 40669 students, students of Anatolian vocational school had lower scores but this negative difference was not as high as the low scores of UEE implied. The reason is that these students had already lower scores at entrance to the secondary education.

The difference between the percentages of standard scores in vocational school types was somewhat similar but negative difference was the highest in Anatolian vocational high schools, which means students of these schools were the lowest scorers of UEE-1 compared to their SSEE scores. And prediction was the highest in the same school type. Comparatively, Anatolian girls vocational high schools can be said to be the most successful among the four school types considering they have the lowest negative difference between the percentages of standard scores. Anatolian vocational high schools for commerce had the lowest regression level at the provincial level. SSEE scores did not predict UEE-1 scores in 36 provinces in this school type. It could be argued that students from these schools were not so interested in academic achievement. It may be due to using different coefficients for different school types in university entrance exams that they become disinterested about higher education.

On the other hand, entrance to higher education without having the university entrance exam may have had effect on the low academic achievement of vocational school students. Administrators of vocational schools have for long been saying that educational standards in vocational schools cannot be met because of the differences between graduates of state high schools and vocational high schools and that admitting students without general exams is wrong (Kavi, 2005).

At the provincial level there was no regularity of the population or geographical location of the province. Provinces from the East, West or metropolitan or rural did not make difference in scores. This could imply that differences between academic achievements of schools are due to within school effects.

Low correlation and low student entrance to UEE, considering the total number of vocational high school students, may imply that different coefficients of tests for different school students have great influence in preparation for higher education. Considering most students at these schools are not interested in university education, only those with the hope of winning a place at university enter these exams, which mean generally these schools are rather unsuccessful.

When gender is taken into account, girls had comparatively higher scores than boys. In three school types girls had better scores. Moreover, correlation between SSEE and UEE was higher for girls. This may be due to the fact that successful girls are more inclined to enter vocational schools. This is because, fewer girls than boys attend higher education. The highest dropout rates appear in vocational schools and this problem appears mostly at 9th class and boys leave school more than girls (Uysal & Şahin, 2007). Female students graduate [from] high school at a higher rate than male students (Greene & Winters, 2006). Results of the study are parallel with other researches.

As academic achievement contributes a lot to an individual's personal life, increasing the number of technical faculties at universities can help enrolment of high achieving students at these schools. Besides, results indicate that there are problems with the quality of these schools. Ways to increase level of academic achievement in vocational schools should be investigated.

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