

2.3. VOCATIONAL AND TECHNICAL EDUCATION IN TURKEY: PROBLEMS AND RECOMMENDATIONS

SUMMARY

Technical education has become very important in Turkey. Within the last few years many two year vocational schools of higher education have been established. But there are not enough lecturers to teach technology in these colleges. In addition, ample tools and study materials have not been supplied until recently.

This article will discuss the role played by engineers in technical education, the undergraduate and graduate curricula of the technical education facilities, the employment fields of graduates from technical education facilities and the student selection for technical education programs. Finally some important recommendations that are based on the research at the Technical Education School of Firat University will be given.

TECHNICAL AND VOCATIONAL EDUCATION IN TURKEY'S JUNIOR COLLEGES

The vocational schools of higher education that have been established in Turkey within the last few years are the best examples of Turkey's commitment to technical education. Although these junior colleges were established throughout Turkey, there are not enough lecturers to teach technology in these colleges. In addition, ample tools and study materials have not been supplied until recently. A large number of junior colleges do not have any buildings. Classes are conducted temporarily in other buildings. Lack of laboratories and lack of workshops add to the above mentioned situation; thus, people doubt the quality of the students who graduate from these colleges. Because of a shortage of lecturers, additional

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instructors are temporarily recruited from private industry located in same city. It's not taken into consideration whether or not these instructors are qualified and whether they know their subject well enough to teach. Apparently the target is to prove only on paper that all courses have teachers. These teachers who are recruited from companies or factories don't keep themselves up to date in their fields because they know that they are temporarily employed. Many of them only read their lectures from a text book instead of preparing their own material. Some courses for which teachers don't exist are simply cancelled. This results in many unqualified graduates who have not completed their studies in the best way.

It should be mentioned that there are some junior colleges which have enough instructors and enough workshops. The graduates of these schools are well educated.

THE ASSISTANCE OF ENGINEERS IN TECHNICAL EDUCATION

The main source of instructors for the two year junior colleges and vocational high schools is the technical and engineering faculties. The Higher Technical Teacher Schools became the technical education faculties with the passage of the Higher Education Law in 1982 (Law number 2547).

There are only three technical education faculties. They belong to Gazi University in Ankara Marmara University in İstanbul and Firat University in Elazig. In these facilities there are approximately seventeen different teaching programs. These are named in Table 1 below.

Table 1: The teaching programs of the technical education faculties /1/.

Teaching Program	Approx. Quota of Student
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	Gazi	Marmara	Firat
Castinwork	43		
Computer Technology	31	31	
Construction	63		52
Electrical Design and Inst.	108	126	
Electronics	72	52	
Industrial Machining	78	78	
Heating Vent. And Air Cond.	43	36	
Machine Design and constr.	43	52	
Metalwork	63	43	52
Foundry Patterns	31		
Motors (Automotive)	52		52
Paint Finishing		33	
Prepared Clothing Techn.	21		
Printing		33	
Weaving		33	
Woodwork	52		
Work of Thread Maker		33	

Before 1982 it wasn't possible to promote the people who worked in the Higher Technical Teacher Schools in their career because it was not possible to earn a M.Sc. or Ph.D. in these fields. After these schools were changed to technical education faculties, both degreed and other qualified people were required; therefore, engineers were appointed to these faculties.

Engineers, technical teachers and educational lecturers all work in the Technical Education Faculty in Firat University. This faculty has only four departments which are called Mechanical, Metallurgy, Construction, and Education. Only in the first three departments are there undergraduate students. In the Education Department there are only M.Sc. and Ph.D. students. The other two faculties (Gazi and Marmara) have more departments that can be inferred from Table 1. Most of the department heads in Turkey's technical education faculties graduated from engineering schools.

There are four different types of courses in these faculties: Education, general cultures, basic formation and technical fields. The technical field courses divide into two groups. In the first group theoretical lessons are held by the engineers. In the second group there are practical lessons that are held in the workshop of technical education faculties, and these lessons are taught by the technical teachers. The education lessons are given by the lecturers with education backgrounds.

UNDERGRADUATE CURRICULA OF TECHNICAL EDUCATION FACULTIES

The students who study in different departments of the technical education faculty take a variety of subjects in order to complete their undergraduate studies. There are also various credit hours in the same program between technical education faculties. For example, Firat and Gazi Universities have automotive (motor) programs that belong to the Department of the Mechanical Education. Even though the automotive program of Firat University has about 20 credit hours less than Gazi University's, students who graduate from these automotive programs receive the same diploma and can work at the same vocational high schools. The Technical Education Faculty of Firat University was established after 1982 while the Technical Education Faculty of Gazi University was founded in 1937. As a result, the technical courses of the Technical Education Faculty of Gazi University are based on the education schedule 1937 which is scheduled to be updated to current standards in 1991.

The Technical Education Faculty of Firat University changed its schedule and removed some out-of-date courses from their programs and added contemporary courses like computer science a few years ago.

Table 2 shows the distribution of courses that belong to the automotive program of the Department for Mechanical Education in Firat

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University. The total credit hours of this program have the value of 122 credits that are equal to 206 hours. Theory courses are equal to one credit hour while practical courses are equal to one half credit hour.

Table 2: Distribution of the courses in automotive programs in Firat Uni/2/.

Courses	Hour Rates (%)
Educational Courses	12
General Cultures	28
Basic Formation	30
Technical Courses	30

Educational courses such as Psychology, Sociology, Measurement and Evaluation in Education etc. are offered. General culture courses include Principles of Atatürk and History of Turkish Revolution, elective courses (Physical Education, Music, Art or Printing), Turkish and Foreign Language. Courses that belong to basic formation are Physics, Chemistry, Mathematics, Technical Drawing, Statics, Dynamics, Strength of Materials, Machine Elements, Materials, Thermodynamics, Fluid Mechanics, Computer Programming, Workshop Organization, Term Paper and Hydraulic Machinery. The other courses about automotives are included under the technical course headings.

GRADUATE CURRICULA OF TECHNICAL EDUCATION FACULTIES

The three technical education faculties have M.Sc. and Ph.D. programs in order to make it possible to promote the research assistants in their careers. The graduates who complete their master studies in any department of the Technical Education Faculty in Firat University can continue their doctoral degree only through the Department of Education because the other departments have no doctoral program yet. The other two Technical Education Faculties located in Ankara and Istanbul have doctoral

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programs in some technical fields based on the undergraduate or master programs.

The master program of the Technical Education Faculty in Firat University differs from the other two faculties because at Firat University the masters students have to take at least two educational courses which are given by the lecturers of the Education Department while the masters students of Technical Education Faculties of Gazi and Marmara Universities do not take educational courses.

THE EMPLOYMENT FIELDS OF GRADUATES FROM TECHNICAL EDUCATION FACULTIES

The technical education faculties have for their goal the education of instructors for the vocational and technical high schools. Unfortunately, due to low salaries of teachers in Turkey, Technical Teachers find work in private companies or factories. Some also open workshops or start their own business.

The newly established, two-year vocational schools of higher education (junior colleges) are the new workplaces for technical teachers and even for engineers. Especially the graduates of technical education faculties who continue their master degree in a technical education faculty take the goal to be research assistant in these junior colleges.

Technical teachers have a large number of advantages because they can find a job easily through the Technical and Industrial Vocational High Schools. These schools will have about 13470 vacant places for technical and vocational teachers in 1991. This problem should be solved by three Technical Education Faculties and by the Vocational Education Faculty placed in Gazi University in Ankara.

THE STUDENT SELECTION FOR TECHNICAL EDUCATION PROGRAMS

After finishing high school in Turkey a comprehensive entrance exam must be passed in order to continue an educational program in a University. Until recently, adults who wanted to study in a program of Technical or Vocational Education Faculties could continue their studies there without considering what kind of high school they finished, if they could attain a high enough score on the entrance exam. This meant high school graduates could attend a technical program of the Technical Education Faculties. In 1989 all conditions for Technical and Vocational Education Faculties were changed because it was believed that students who originated from an academic High School were not capable of success in programs of the Technical Education Faculties.

The three Technical Education Faculties had different interpretations about the success of the students who graduated from different programs of High Schools. Therefore, the students' success was surveyed at the Technical Education Faculty of Firat University as shown in Table 3.

The success of the students who originated from the academic High Schools and who graduated from the industrial vocational or the technical High Schools was compared with a computer. The following were considered by this research.

- 1- The courses of the technical education programs were divided into two groups. In the first group, called natural science courses, were Physics, Chemistry, Mathematics, Statics, Dynamics, Strength of Materials, Fluid Mechanics, etc. on which the academic High School graduates were predicted to be much more successful while in the second group, called technical courses, were all kinds of Technology courses pertaining to a technical program in which the industrial vocational and technical High Schools graduates were

supposed to achieve much higher than students from academic High Schools.

- 2- The student who graduated from an industrial vocational or technical High School, but continued their studies in another kind of the Technical Education Faculty's program in Firat University were included in the first group (Natural science courses). For example, a student who graduates from the electric program of the industrial vocational high school and who continues his university study in the field of the construction program of Technical Education Faculty was shown in the first group because this student is a stranger to the courses of the construction (Building) program, too.
- 3- Although the quality of the high school and the social status affect the success of the students, these conditions were not considered in this work.
- 4- The comparison between high school graduates was done if there were students from different high school programs the same class and the same program. In addition, there are only three different programs (Motor, Metals, and construction) that have students in the Technical Education Faculty of Firat University (see Table 1).
- 5- The unsuccessful and expelled students were separately considered, and the failed courses of these students were with aid of computer fixed. After that the result were evaluated with regard to the type of high schools that they attended.
- 6- The success of the other students who continued their studies in a program of the Technical Education Faculty was evaluated by the courses they followed in the high schools. The failed exam numbers of each courses for each student were tabulated and for each student the total failed exam numbers were found. The total failed exam

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numbers were divided into the total number of the students who were in same class. The results are shown in Table 3.

The rates of the second and third classes should be considered in Table 3 in order to determine whether or not the graduates of the academic high schools or the graduates of the industrial vocational or technical high schools were more successful, because all of the 4th class students originated from technical or industrial vocational high schools, while the first class students were newly registered during this research.

Table 3: The total failed exam rates of per student who originated from an academic or from a technical or industrial high school and who studied in any program of the Technical Education Faculty of Firat University.

C l a s s e s	G r o u p	The Failed Exam Numbers/Number Of Student					
		First Group Courses Natural Science Courses			Second Group Courses Technical Courses		
		Motors	Metals	Constr	Motors	Metals	Cons.
4	A T	-10.38	-7.58	-3.40	-7.76	-6.41	-1.25
3	A	9.66	5.20	2.00	6.00	2.40	0.00
	T	4.77	4.68	3.60	3.00	1.81	0.80
2	A	2.75	3.33	2.71	1.00	0.00	1.21
	T	3.62	3.40	3.06	1.59	0.32	1.06
1	A	-	-	-	-	-	-
	T	-	-	-	-	-	-

A= Graduates from the academic high schools

T= Graduates from the technical or industrial vocational high schools

In the second classes the failed exam rates per student for the academic originated students were less than for the technical or industrial vocational originated students except the Construction program. It meant the academic originated high school graduates were much more successful than the technical or industrial vocational originated high school graduates.

In the third class the graduates of technical or industrial vocational high school who studied in the Motors and Metalwork programs were much more successful than others, while the academic originated students of the Construction program were much more successful.

After all requirements for Technical and Vocational Education Faculties were changed in 1989, the students who want to continue their studies in a program of the technical or vocational Education Faculties should graduate from the same program of the technical or industrial vocational high school, otherwise their choices are canceled.

The other changes were regarding scholarship given by the Ministry of National Education. The students have 24 choices of different university programs through the university entrance exam. A student who originates from a technical, a vocational or an industrial vocational high school and whose technical education program choice is in the first tenth order, can obtain from the Ministry of National Education a scholarship that covers all his study and living costs. A student who receives a scholarship from the Ministry of National Education is employed as a technical teacher at a technical or industrial vocational high school as soon as s/he graduates from a Technical or Vocational Education Faculty.

CONCLUSION

The existing vocational schools of higher education (Junior colleges) must be improved instead of establishing new ones. Lack of laboratories and workshops must be corrected as soon as possible at the junior colleges.

The number of the lecturers must be increased, and well educated and qualified lecturers must be trained. The Vocational and Technical Education Faculties have the most important responsibility in achieving this goal. The Engineering Faculties should produce engineers who are employed at the technical and vocational high schools, but these engineers should take some educational methods courses before they begin teaching.

The junior colleges have many vacant positions for lecturers. Especially, the Vocational and Technical Education Faculties must train special lecturers in their M.Sc. and Ph.D. programs for junior colleges (The Vocational Schools of Higher Education). Because there are only one Vocational and three Technical Education Faculties in Turkey, it will not be possible to fill vacant places of lecturers at these junior colleges. Therefore, through the M.Sc. and Ph.D. programs of the engineering faculties, students should be trained as specially educated lecturers.

The salaries of the technical teachers are very low at this time. As long as the salaries of the technical teachers are not improved, graduates will continue to find jobs outside education.

Thanks to the research results which were done at the Technical Education faculty of Firat University it can not be claimed that the technical or industrial vocational originated students were much more successful than the others which can be inferred from Table 3.

All high school graduates can enter a program of the Technical Education Faculties without considering the background they originated.

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Students who graduated from a technical or an industrial vocational high school can have additional points added to their university entrance exam score in order to give them a better chance of entering a program of Technical Education Faculties.

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