# VOCATIONAL AND TECHNICAL EDUCATION IN TURKEY AND THEIR ADAPTATION PROBLEMS TO INDUSTRY

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Global competition has been rising day by day in today’s world. In this situation, the importance of vocational and technical education in the achievements of industrial companies and individuals is increasing parallel to that. As a natural fact, vocational education has a key role in the development of the countries.

Today, improvements in the vocational knowledge, skills and creativity of workers are very essential with regard to qualified manpower, efficiency and competitiveness. Furthermore, it has become necessary for the workers to compete with other colleagues from the international area. The fact that the workers are able to stay permanently in their professions depends hereafter highly on refreshing themselves steadily in terms of technology and knowledge.

While it was formerly possible that a person could get retired from a profession he was educated in, it does not seem to be possible any more in today’s conditions. The globalization phenomenon and rapid technological improvement lead to changes in professions and also professional skills. As a consequence, it is impossible in today’s world for an individual to stick with the same profession for the whole life long without refreshing the knowledge and skills. It is also very common that individuals have to change their professions when the conditions mentioned above are not fulfilled. Therefore, the fact that the business firms keep on their activities and that the workers stick with their own position for a long time necessitates regular learning activities during their business.

Vocational and technical education is one of the most fundamental issues of a country. Countries need to have certain, stable and sustainable policies in this manner. The fact that this kind of education is very costly and requires experts in that field makes possible investments very difficult for individual entrepreneurs and companies. As a result, this important duty remains as a mission of state authorities and governments.

In this article, studies in the field of vocational and technical education in Turkey and adaptation problems of the graduates to the industry have been examined.

**STRUCTURE OF TURKISH NATIONAL EDUCATION**

The Turkish national education system, determined through the National Education Fundamental Law, is composed of formal and non-formal education:

**Formal Education**

Formal education in Turkey comprises pre-primary, primary, secondary and higher education. Among those, pre-primary, secondary and higher education is not mandatory, yet primary education is mandatory and after the modifications in the National Education Fundamental Law in 1997, it was raised from 5 years to 8 years. Secondary education in Turkey is divided into two sub-parts, as general and vocational/technical secondary education, both of which take 4 years. Furthermore, higher education involves two-year degrees in vocational schools, four-year bachelor degrees, master degrees and doctorate degrees in universities (Figure – 1).

Primary education

(8 years)

General
secondary education (4 years)

Vocational/technical
secondary education (4 years)

Higher education (university)

(2 or 4 years)

Industry

Figure – 1 Formal education in Turkey

**Non-formal Education**

Non-formal education includes the entire educational activities besides formal education. The main purposes of non-formal education can be stated as follows:

* Teach literacy, provide an education opportunity to complete the lacking educational manners,
* Provide a chance to ease the adaptations to the scientific, technological, economical, social and cultural developments,
* Provide an education protecting, improving and promoting national cultural assets,
* Bring in community life, solidarity, cooperation, organization manners and customs,
* Provide opportunities for acquiring a profession according to the economical progress and employment policy,
* Provide a better nutrition and a healthy life,
* Bring in certain knowledge and talents for various professions,
* Make use of free time in a more useful way to the people who are at a certain phase of formal education or are not educated at all.

**Facts and Figures**

As a giant organization, Ministry of National Education (MEB in Turkish) has served in 2009/2010 educational year with 59.539 schools, 23.199.865 students, 800.028 teachers and 572.623 classrooms in Turkey. 8.913 schools, 4.240.139 students, 206.862 teachers and 110.310 classrooms exist in the secondary education part. Whereas, in the vocational/technical secondary education; the numbers are 4.846 for schools, 1.819.448 for students, 94.966 for teachers and 44.996 for classrooms. Taking these facts and figures into account, it can be seen that vocational/technical schools comprise the 43% (as number of students) of the whole secondary education part. That points out that most of the students are directed to higher education (universities) rather than technical works. Although these percentages are not very pleasing, the numbers were 35% for vocational/technical high schools and 65 % for other high schools around 10 years ago. Compared to those numbers, today’s stats show that there has been a good progress during the last years. However, the main goal should be to modify these numbers to 65% for vocational/technical high schools and 35 % for other high schools.



Figure – 2 Facts and figures from 2009–2010 for vocational high schools and other high schools

**VOCATIONAL AND TECHNICAL EDUCATION**

Main aim of the formal education that is carried out by the high schools of Ministry of National Education (MEB) and of private institutions is to prepare students to the higher education (university) and supply qualified workers to the labor market. In this scope, secondary education is divided into two parts, called general secondary education and vocational/technical secondary education. While general schools prepare students to the higher education, vocational schools aim particularly to supply qualified workers to the labor market.

The graduates of these vocational high schools can be admitted to the vocational higher schools without examination procedure. However, acceptance of those graduates to universities seems to be possible yet highly difficult, due to disadvantages in the examination process.

The main purpose of the Turkish state is to educate young people technically so that the required labor force for industry is provided. In developed European countries, the ratio of vocational schools within the secondary education is around 65%. However, looking at the graphs in Figure 2, it ca be concluded that the ratio in Turkey is a lot below the average value. That ratio should have been 70% for vocational schools and 30% for general schools.

The reason for such a structuring can be stated as follows:

1. Since the formations in the past were mostly for general secondary education, it has been found as easy by the authorities to follow this formation.
2. Vocational and technical education is quite expensive. That is why; administrators have chosen to establish more schools with the same amount of money.
3. The machines, devices and other equipments in the workshops and laboratories of technical schools need modernizing, new investments and routine maintenance. In general secondary schools, this is not the case.
4. The instructors and teachers in the technical high schools have to update their knowledge parallel to the developments in the technology. Moreover, these instructors usually need to be educated abroad.
5. There are some difficulties faced during the preparation of the teaching materials, books, other documents etc.

In European countries where such a technical education is very common in secondary education level; business world, vocational chambers and labor unions play an active role and take a meaningful responsibility. Whereas, in Turkey, every sort of policies, planning and investments are expected from the state. In fact, the main target about the technical education should not be to increase the number of students in vocational high schools, but should be to improve the opportunities of access of those technically educated people into the labor market successfully.

**TRANSITION TO VOCATIONAL AND TECHNICAL EDUCATION**

Students who have completed their 8-year mandatory primary education pre-register for the secondary education in July and August via internet. During this pre-registration, they select 5 schools that they want to register to. Definite lists about the candidates are determined by computer taking the graduation grades into account. Moreover, apart from the definite list, a waiting list with half the number of people in definite list is formed as well. Students that prove to be eligible for the school register for the 9. class. This 9. class is common in the secondary schools of the entire country, and the lessons do not differ for different schools. Student who achieves to finish the 9. class can pursue his study in the country by registering again to the school he wants, within the registration calendar of the ministry (MEB).

Student who wants to continue 10. class in a vocational/technical high school chooses firstly the vocational field he wants to get education. In his first year, he gets the basic lessons of the field he has chosen. After successfully finishing the 10. class, the student then selects a sub-option of his vocational field and continues his study. For instance, a student who has succeeded in Machine Technologies field in 10. class may choose in 11. class one of these sub-options: Computer Aided Industrial Modeling, Computer Aided Production, Computer Aided Machine Designer, Industrial Mould or Machine Maintenance/Repair.

**PROGRESSION IN VOCATIONAL AND TECHNICAL EDUCATION**

The student continues his study in 11. class by taking basic, workshop and culture lessons about his chosen sub-option with 5 days a week. In 12. class, he works in industrial companies which are approved by the school management 3 days a week, in order to see the practical applications. In the remaining 2 days, he visits the school and gets theoretical lessons. The student is insured by the ministry (MEB) against a possible industrial accident in the company during this work. Moreover, the students are paid as 1/3 of the minimum wage in the companies they are working.

 The performance of the student in the company is controlled regularly once a week by a teacher assigned by the school management. The results of these controls, in which e.g. the works of the student, progress of his technical abilities and his attendance situation are investigated, are reported by the relevant teacher to the management. In case of conflicting situations between the student and the company, the responsible teacher finds a way of consensus between the both parties. If no consensus is provided, the student is directed to another company.

At the end of the academic year, teachers prepare a report for the school management about how much the topics that have to be learned by the students are covered by them during their work. Provided that this ratio is more than 90 %, the student is assumed to have completed his vocational study. Otherwise, the student has to attend the summer courses organized by the management. If such a course is not organized at all, the student is assumed to be unsuccessful.

The performance of the student in the company is evaluated at the end of the academic year. Students who are regarded as successful for their performance also have to do practical examination in the last week of the academic year. Students have to get at least 45 points out of 100 to pass the examination. In the case of getting fewer points in the exam means that the student has failed, regardless of his performance in the company.

**TRANSITION TO TECHNICAL HIGH SCHOOL**

Students who are successful in 9. class get the chance to attend to the technical high school. The prerequisite for this is that the student has passed the 9. class already, and that the average grade of the lectures Turkish, Physics, Chemistry and Maths is minimum 55 (over 100). The student eligible for this process does a pre-registration until the middle of August with the help of the vice manager of the school via “e-school” portal in internet. Results are announced again in internet after one week, and the eligible students do their registration.

 The syllabuses of lectures in technical high schools are intended for a preparation of the student to the university. These students have their workshop applications once per week in the laboratories and workshops in the school during the 10., 11. and 12. class. In order that these students adapt easily to the industry, it is mandatory to have a totally 300-hour internship during the summer break. These internships can be performed either as 300 hour at once, or 150+150 hour during the 11. and 12. class. As the students can find the companies for internships themselves, they can also get help from their teachers in this manner.

During the internship, students are insured by the Ministry of Education (MEB) for the entire period. The performance of the student in the company is controlled by a teacher assigned by the school management once per week. Moreover, the work and the performance is reported and documented. In case of a negative report, the internship is considered as invalid. Student who has not achieved the internship cannot graduate from his high school.

**ADAPTATION PROBLEMS OF GRADUATES TO THE INDUSTRY**

Major problems the students graduating from the vocational high school encounter after starting a career can be listed as follows:

* The equipments and machinery in the workshops and laboratories of the schools are old. However, the equipments and machine tools in the companies are state-of-the-art.
* The machine tools and equipments in the schools are insufficient. Whereas, in the companies, there are more machine tools and equipments per student, since the number of students working/doing internship in the companies are not very high.
* The machine tools and the equipments in the schools are for general purposes. Whereas in the companies, machine tools have a comparably higher technology.
* The equipments used during the education are either very old or very insufficient. In the companies, there are equipments available with cutting edge systems.
* The works asked from the students in the schools are very fundamental, so that they can enhance their basic skills and abilities. There exists for instance no risk if a component is not done properly. However, in the companies, every piece of work has to be done properly.
* Since the students are in a learning phase in the school, they are more flexible in finishing their works. Whereas, in the companies, the works have to be finished at a certain time.
* The knowledge of the teachers educating the students in the schools is not as up-to-date as the knowledge of the workers in the companies.

Due to the reasons listed above, vocational high school students get an opportunity to work with more modern and high-tech machine tools in the industry 3 days per week during the 12. class. Therefore, they do not have adaptation problems after finishing the school and start working in the industry. Moreover, since they experience in this way the real working life, they come to a decision of continuing this profession or not for their future. Technical high school students overcome these problems during their internships in the companies.

**EMPLOYMENT PROBLEMS OF GRADUATES**

According to the latest statistics, the unemployment rate in Turkey is %13.7 (March 2010). Furthermore, most of the students graduating from their schools have problems in finding a working place in the industry. This is the bitter truth in Turkey. In order to solve this problem, the state established new vocational and technical schools and hence aimed to educate more people there. However, after some years, those new graduates could not be hired in the industry as well, which led to a faster increase in the employment rate. Besides, the needs for personnel in the companies have also increased parallel to that.

Recent studies have shown that, the main reason for this problem was that the graduates did not know the working life well, and that the education given in vocational schools was way off to satisfy the expectations and demands of the industry. Actually, the main aspect of the unemployment problem in Turkey is not less number of educated people, but less number of educated and trained people in the fields the industry is demanding. Improper education of people in those fields arises from the fact that the schools are inadequate in terms of equipments, machine tools and laboratories, and that the teachers in these schools cannot update themselves with the current technologies.

**SPECIALIZED EDUCATION OF GRADUATES**

It has been a necessity to have some measures and to develop new policies that simplifies the hire of new vocational school graduates in the industry in order to solve the unemployment problem. As a result of that, the Ministry of Education (MEB), the Union of Chambers and Commodity Exchanges of Turkey (TOBB) and Ministry of Labor have come to a consensus to train the unemployed people in the fields the industry has demand in Specialized Vocational Training Centres (UMEM).

101 schools in Turkey that have sufficient infrastructure and staff have been determined by MEB as Specialized Vocational Training Centres (UMEM). The training given in these centres have been fixed by the questionnaires performed by the Chamber of Industries and Worker Placement Agency (İŞKUR) in those regions. Furthermore, the teachers in UMEM centres could also identify which of these trainings would be conveyed there. The required equipments, machinery, laboratory and software for those trainings identified before have been reported to MEB. MEB has therefore supported the schools with financial aids for the further requirements. The school management has purchased the necessary equipments, machinery and software. After this purchase, trainings in UMEM have started.

Everyone who is registered in the Worker Employment Agency (İŞKUR) and does not currently work in a company is able to attend the trainings in UMEM. The selection and registration process is carried out by İŞKUR, whereas selections with interview are carried out by a commission involving Chamber of Industry, İŞKUR and UMEM teachers.

Trainings are performed for the first 3 months in UMEM centre as theory and workshop applications, and for the next 3 months in an industrial company determined by the Chamber of Industry as practice work. During these 6 months, the trainees get a financial aid of 15 TL (7€) per day and they are insured against possible accidents. The trainees that complete their second 3 months may continue working in the company in case the trainee and the company both agree on that. If that does not work, he can go to another company to start working. In both cases, the insurance of this person is paid by the state for the next 3 years.

**CONCLUSION AND RECOMMENDATIONS**

In this study, the vocational and technical education as well as general secondary education system has been analyzed. The transition of students graduating from these schools to the higher education, and the career start of those who cannot achieve that transition has been researched. The answer to the question “To what extent are the vocational and technical schools responding to the demand of the industry in today’s conditions?” was searched. At this point, it happens to be a major contradiction that there is still a great need for technical workers in the industry while at the same time many students are graduating from the aforementioned schools.

When the education programs of the vocational and technical schools, which are in fact established to supply intermediate positions in the industry, are investigated; it is observed that the aim of those is not providing students for the higher education, rather training and educating people corresponding to the needs of the industry. However, today, it has been found out that the students want to keep their studies in the higher education, and they lack in vocational education aspects since they tend to focus on the further higher education. As a result, those students cannot be recruited in the industrial companies. On the other hand, they cannot likely achieve to start an education in university due to the insufficient educational program as well. Therefore, they attend some private courses for one or two years after their education in order to complement their deficiencies for the lessons necessary for the university entrance examination. Moreover, male students who get to the age of 20 meanwhile would like to do their military service instead of waiting as unemployed. After the completion of the military service, these students become 22, and in the meantime happen to forget the knowledge and skills they have gained during their entire vocational education. Since they do not want to run the risk of working in their field of education after that point, they stay thoroughly away from the working life, and join the unemployed people plus increase the number of them.

In Turkey, people have recently preferred to work in fields like service sector where no big efforts and investments are necessary, instead of in the manufacturing sector. It is also an important criterion for this preference, that a significant part of the workers in the industry are not insured properly by their companies. Another reason for this preference is that in such professions, a high vocational skill level is required from the workers. Moreover, it takes a very long time until the workers complement their vocational shortcomings. They are supposed to have low salaries until they overcome these problems.

Vocational and technical education is the most expensive type of education among all. It is very difficult or even impossible for the state to modernize all the equipments and machinery in schools. As a result of rapid improvement in technology, available machinery and equipments become obsolete in a very short time; hence the education in schools cannot meet the requirements of the industry. A solution to that would be that the ministry should have the students benefit maximum from the equipments available in the industrial companies, instead of a steady purchase of those for the schools.

Another recommendation would be to provide more education to the students of vocational and technical high schools in basic fields. Those students should be then certified in short-term courses for the high-tech machinery and equipments which they will be supposed to use in the companies they want to work. In this way, it will also be avoided to load students with an information bulk which will probably not be needed at all during their career. An example will simplify to illustrate this situation:

A student who has been educated in Machine Technologies field can improve himself by attending a short-term certificate course program as a CNC lathe machine tool programmer if he wants to go to this direction, since he already has the basic knowledge of this field e.g. measurement and control methods, mechanical drawing, materials science thanks to his basic course in Machine Technologies. It would be sufficient for him to get solely the knowledge of features of that CNC lathe tool and how to program it. Another student having had the same basic field education may attend the certificate program of Computer Aided Design (CAD) provided that he wants to shape his career in that direction. Whereas, if the student is educated in all those sub-fields (which is the case right now); the whole technology advances as well as the models and versions of the equipments change before the education is completed. Furthermore, students are loaded a bunch of information during this study, which they will probably not need at all in their future career. Nevertheless, in this case, there will emerge the necessity of certain centers or institutions that are capable of providing this kind of certified education by at the same time meeting the demands of the industry.

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