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## Reasons and results of nonapplicability of education technology in vocational and technical schools in Turkey

Lütfiye Dahil<sup>a\*</sup>, Abdurrahman Karabulut<sup>b</sup>, Ibrahim Mutlu<sup>c</sup>

<sup>a</sup> *Istanbul Aydın University, Vocational School of Higher Education, Istanbul 34295, Turkey*

<sup>b</sup> *Afyon Kocatepe University, Faculty of Technology, Afyonkarahisar 03210, Turkey*

<sup>c</sup> *Afyon Kocatepe University, Faculty of Technology, Afyonkarahisar 03210, Turkey*

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### Abstract

Education and technology are two basic elements in order to obtain skilled labor. Education provides a continuous improvement with willing and permanent changes in the abilities and behaviors of an individual. Technology is a discipline that provides the link between science and practice and occurs in a certain aim and order that are target - driven.

Modern education gives an education based on the practice that makes the students active by using new technologies. The productivity of improving the workforce based on the skilled and sectoral expectations also depends on this.

To use education technology provides a permanent education because the person first teaches and after he/she obtains the ability of practice in the effective and permanent learning. For this reason, to learn something by making and living is the most effective method. Infrastructure, lack of technological equipment, the level of instructors can cause to fall behind the technological development in the service and production sector of vocational and technical schools in Turkey.

Vocational and technical schools cannot achieve their education objectives based on the practice, because they cannot use the education technology properly. As a result of this, the loss of skilled labor that has the ability of using the information technologies that is important for the development of a country can occur.

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### 1. Introduction

Information and communication technologies that have been developing rapidly in the current century cause obligatory and radical changes in educational field as well as every field. It is inevitable that developments in

information and communication technologies has to be with technological equipment which will meet expectations of the sector together with progressing in coordination with educational programs in order to not fall behind the contemporary education level. Computer forming the basis of these technologies has been started to use in education and teaching environments through internet and social network.

In our day, there is an intense competition in global market. It's gaining more and more importance to grow man power has the quality to meet expectations of business world in this competition. If education system will fail at growing qualified man power, the price for this failure shall be paid either by enterprises thereby training their available employees with a very high cost, or by society thereby standing for purchasing of goods and services of poor quality (Dahil, Karabulut, 2013).

Educational technology is evaluated as a whole systems that put data of different sciences into practice within large educational fields such as special purpose, method, instruments, measurement and evaluation, and ensure that manpower will be used in proper situations in the best way, problems of education will be solved, quality and productivity will be increased (Gürğün, 2014).

By means of information technologies, country borders have removed by globalizing and free circulation of qualified labor force has come into existence. As a result of this, institutions have had difficulty in graduating qualified individuals, who have proper knowledge, from academies which give vocational and technical education. Raising students who has these qualities in accordance with expectations of the sector depends on use new information and communication technologies efficiently and productively by the educational personnel in these institutions.

As is the case with every education field, it is very important to use computer and internet technologies in preparing students for life, according to today's conditions and technological development and with information and skills for expectations of the production sector, in academies that give professional and technical education. In the period where computer and internet technologies are used as learning and teaching instruments, demand and thoughts of students for using information technologies have an important place in evaluating reflections of technology on education.

Academies with vocational and technical education have undertaken a mission to raise qualified manpower for production sector that has served locomotive purpose in country improvement. However, there are many factors which hinder the current mission undertaken by these institutions. Expectations of the market are changed by the reasons related to technology and cultural life, employees seek to new things according to the origin of information source they are fed. Therefore, it has become difficult to say that an expectation that was applied in the past can be applied today. Education institutions have improved slowly in terms of understanding these new situations and at acting point.

Another important thing is business continuity. It is known that technological and global affects has threatened continuity in business life. When global affect is described in terms of country economy and employees, developmental level and geographical position of the country should be taken into consideration. As the members of OECD, Turkey has focused on liberalization of product markets, social security systems, policies of active labor market, and new developments in education system as primary structural reforms. This struggle has an additional importance in terms of ensuring that the problems related to education system will be solved, teenagers will be prepared for life and demands of labor markets in this new period (Tübitak, 2005). In spite of that, employment rate stays behind OECD countries. As one of the reasons for this, an important part of our country's population is formed by young people. Therefore, it is likely that teenagers, who has attended in several education activities but cannot be employed, will be pessimistic in terms of future expectations. In addition, it should be remembered that these teenagers will create a threat for country, in economic sense, because they cannot attend in a good life of individuals who are raised in social manner and invested. The reason is that working life creates confidence and respect feelings for individuals, and supports the feeling of belonging to a society (Dereli, Kabataş, 2009). Improvement in employment life of youngsters has a great importance in this respect.

## 2. Periodical improvement of education technology

Objects supporting the education have been found according to current conditions as the education has become necessary in early periods of the life. In 1950's, education technology fell behind the industrial technology because important needs were met in that period (1st period). Afterwards, developments, innovations that were accompanied by 2nd World War made progress in comparison with the previous period (2nd period). In that period, dilemmas appeared in education, the 1st one is the traditional education that has come until today and the 2nd one is education conducted by technological instruments. Expenses of the 2nd education are high but its educational contribution is more. The 1st education doesn't meet the need due to developing technology (3rd period). As for this period, it can be said that it is a period ensuring efficient learning by combining two different teaching methods coming from 3 periods (4th period). As for this period, it is to place combined education technology in the educational content. In other words, purpose is to create a technological structure for education by an educational system in which not only a part of visual and auditory instruments but also whole instruments work (<http://melek2552.wordpress.com>). According in Table 1. shows to years of education technology the periodic changes.

Table 1. Development in Educational Technology (Information and Communication Technologies)  
In terms of learning concept

Phase Name	Function	Product
1960-1970 Behaviorist Learning Concept	Algorithmic Regulating Of Information	Programmed Education
1970-1980 Cognitive Learning Concept	Restructuring Trying In Learning In Mental Process	Learning Process Design
1980-1990 Constructivist Learning Concept	Unifying New Information With Previous One	Structuring The Meaning By Student

(<http://kisi.deu.edu.tr>)

## 3. Essential principles in educational technology

Educational technology, achieving goals application methods, in terms of content and functionality is based on certain basic principles. Main purpose in the application of educational technology, learning is the realization of a fully trained individuals. Adaptation of technology in education, provide development based on scientific principles is one of the basic principles. The target of the methods and techniques used in the application of science and technology, based on research involving holistic view has to do. For the success of the training program, increasing the effectiveness of teachers and students mutually technology supported in this activity is necessary to ensure continuity. Technological methods applied in training the individual level, the lack of success in the past and the future success of eliminating the negative impact on the success of the new applications that increase must be enabled in functional ways.

One of the most basic principles of teaching, the student has taken training as a result he desired to be given by the specified destination at a sufficient level of knowledge and skills are to be permanent. The most important way of making this happens, learning by doing and experiencing is the use of performing all possible senses. The material and information technologies used in the learning environment to student learning that learning can be made permanent will contribute very important when traditional educational applications based on information technology in student-centered educational applications taken a requirement have become inevitable. Effective learning and teaching in the context of educational technology is shown in Figure 1.

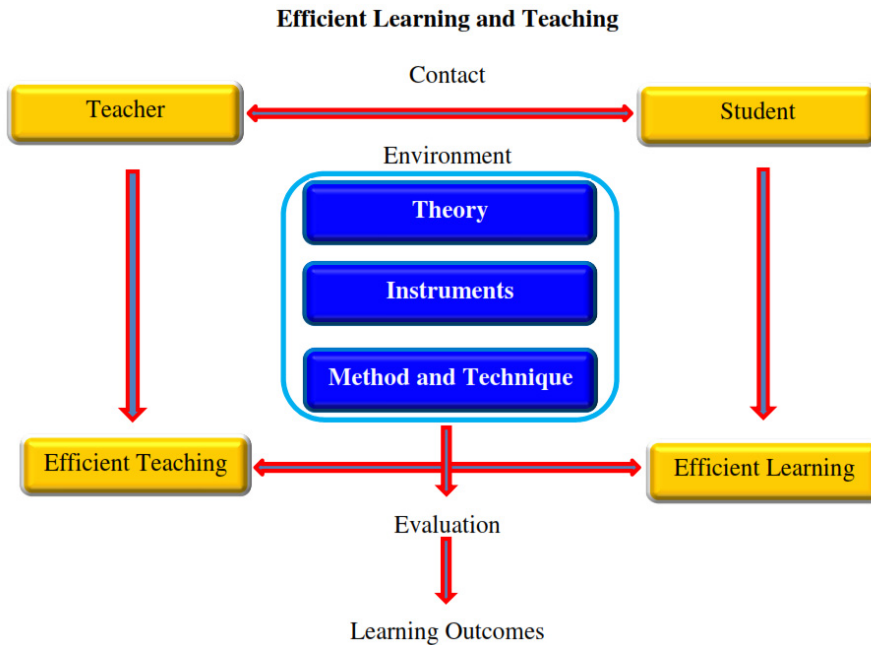


Fig.1. Scope of Educational Technology (It is collected from data of Higher Education Committee. April 2014)

#### 4. Information technology for higher education

Economic, social and cultural changes have caused important changes in education all around the world (Downey et.al, 2005). To find skilled and qualified labor has become an important problem by increased globalizing. As for solution for this problem, it is possible by means of raising individuals with an efficient education system. Nowadays, knowledge workers are the individual who create essential value in economy, provide benefit, and trigger and maintain economic development (Turan, Çolakoğlu, 2008). Nowadays, countries don't think that education is an expense factor, rather treats as an important instrument in order to gain a competitive advantage. Success of a country depends on existence of educated and qualified labor, in an increasing way. An important result of globalizing is geographical borders have been removed; goods and services and also qualified labor can circulate more freely than the previous periods. This free movement of educated individuals has made international accreditation and validity of university diplomas a current issue (Akduman et.al, 2001). In European Union (EU) countries, there are decisions and initiatives in order to make traditional education and teaching environments flexible, compatible and integrated. Nowadays, traditional teaching methods should be more clear and flexible. In this way, education and teaching activities can be maintained in direction of individual need and choices in parallel with individual learning needs (Martinez-Torres et.al, 2006).

Use of information technologies in education and teaching lead to important results not only for students but also lead to significant results for instructors and other educators. Information and communication technologies increase productivity of instructors and educators and allow them to obtain more qualified output and result by making less effort in a shorter period (Turan, Çolakoğlu, 2008). Use of new technologies is not at the desired level in the higher education in Turkey.

Main reasons are that financial incapability, desired education and teaching level has been not reached in higher education, academicians working in the universities are lack of information and practice infrastructure, value of information technologies couldn't be understood completely by managers, academicians and students are not open to new ideas in cultural sense in our country, and also incapability with technical infrastructure (Gökdaş, 2005).

Table 2. Higher education, quantities of student (2013-2014 academic years)

Education Level	Primary Teaching	Secondary Education	Open Education	Distance Education	Total
Vocational	540.607	253.788	935.750	19.988	1.750.133
Undergraduate	1.344.492	400.371	1.609.528	16.297	3.370.688
Graduate	321.205	0	0	7.935	329.140
Total	2.206.304	654.159	2.545.278	44.220	5.449.961

(It is collected from data of Higher Education Committee. April 2014)

When we analyze distributions of current students according to different teaching methods and education levels, for the entire student, 41 percent studies in daytime education, 12 percent studies evening education, 47 percent studies in the Open University, and 1 percent studies in distance education. As for the students in two-year degree programs, 31 studies in daytime education, 15 percent studies evening education, 54 percent studies in the Open University, and 1,1 percent studies in distance education.

According to data dated April of 2014 from higher education Committee, quantities of students in the two-year degree programs has exceeded 1.750.000. 540.607 students study in daytime education, 253.788 students study evening education, 935.750 students study in the Open University, and 19.988 students study in distance education (Table 3).

Table 3. According to higher education type and teaching method total quantity of students in two-year education.

Education Level	Primary Teaching	Secondary Education	Open Education	Distance Education	Total
Public Universities	489.749	239.134	935.750	18.411	1.683.044
Private Universities	43.704	13.075	0	639	57.418
Foundation Vocational	7.154	1.579	0	938	9.671
Total	540.607	253.788	935.750	19.988	1.750.133

(It is collected from data of Higher Education Committee. April 2014)

## 5. Reasons obstacle use of educational technology

Demonstrations for academies that give professional and technical education cannot be given according to today's conditions.

Vocational schools have insisted on an education approach based on distant theory rather than hands-on training which is the most important purpose they have had.

Investments are insufficient because of the influence of developing technology on the expenses.

Profile is too low in terms of student who gets professional and technical education.

There is open admission from vocational secondary education to vocational schools.

Technology investment requires a long-term and high-cost infrastructure.

Inspection is insufficient and not serious for foundation vocational schools.

Institutions that give vocational and technical education are far away from meeting expectations of the sector.

There aren't enough instructors with sufficient equipment in vocational schools.

Students, who will get vocational and technical education, haven't got numeral skills which are required for use of technology.

Vocational schools don't have a structure in order to raise their own instructors in a way they will be in accord with market and at an academic level.

Price policy that has been applied to instructors falls behind the market.

Foundation Universities have been working in an unaware, uncontrolled and unplanned way of the expectation of production sector.

Students, who have had vocational and technical education, are more interested in social networks than vocational field from information technologies.

Hands- on training periods are insufficient in terms of raising qualified manpower.

Students attending in vocational schools are children of the families with social-economic problems.

Students, who have had vocational and technical education, don't have sufficient knowledge for working life because their relations with sector are not strong.

As there are no trainings apart from the vocational program in which education is given by flexible education models, it has become an obligatory to go towards certificate programs after graduation.

Negative effect of successful role models is high on individual in terms of gaining vocational roles supporting personal qualities in accordance with their interests and skills.

Hands-on training cannot be in parallel with advanced technology.

Student profiles that are self-confident and have had lifelong learning skills don't choose the vocational schools.

In formal and foundation vocational schools, theoretical education is given instead of hands-on training as there is no sufficient equipment and technological infrastructure.

Instructors, who will be implementer of technologic integration, have many severe difficulties in using technology because average of age of these instructors is high and they haven't sufficient equipment in academic field.

There is no lesson about technology integration according to branches in the schools that give vocational and technical.

Innovations in the education cannot be integrated to education programs instead of new ideas, changes.

In the institutions that give vocational and technical education, rate of the instructors who are interested in technologies and want to improve themselves is at a very low level such as 10%-15% according to statistics.

A large part for need of instructors cannot be met by the sector.

In order that computer technology can be used efficiently in education system, there are inconsistencies of the individuals in terms of perspectives on technology and attitudes against technological instruments.

Unemployment rate is more than, with a rate 9.4%, developed counties.

Districts and towns come into prominence by the amount of students in Vocational schools rather than raising strong vocational-technical instructors which our country needs mostly.

Businesses, where advanced technology is used, are far from the purpose to meet qualified labor.

There is an educational understanding that falls behind the use of technology which will realize community development.

There are problems in order to reach qualified labor because demand of family and environmental factors are determiner for professional choices rather than abilities of individual.

There isn't any conscious professional guidance due to current exam system and lack of guidance service.

There is no compliance between education programs applied in the schools with vocational and technical education, skilled and technical labor reached by these programs, and needs of the market in terms of quality and quantity.

Profession standards cannot be determined in vocational education and there is traditional methods used in forming curriculum programs independently of working life.

Students with low profiles prefer vocational and technical schools.

To try to realize educational purposes by means of old technologies,

From the year of 2001, individuals without ability and tendency to use information technologies have to get vocational and technical education because of open admission from secondary school to vocational schools.

It is predicted that schools giving vocational and technical education should benefit from environmental foundations in accordance with law numbered 2809, but they remain incapable of this subject.

Candidates, who took very low points from YGS (the transition to higher education examination), choose the schools with vocational and technical education, and a student who want to get this education will most likely fail in an education in parallel with advanced technology.

Education conducted with lessons applied by 64 credits in vocational schools is quite insufficient in terms of following and applying new technologies.

In the schools with vocational and technical education, there are workplace apprenticeship applications in semester and summer holidays between 240 and 480 hours, hands-on training is conducted, and so these institutions have difficulty in meeting the expectation of sector.

There is no sufficient infrastructure education and application in the vocational and technical institutions which apply evening education.

In direction with cooperation of Industry-University, there is no regulation related to bring the experts, who have worked in industry, in the university.

There is a limitation in the salaries given to instructors for hands-on training.

It hasn't been made a decision on which model will be applied in vocational and technical education system in our country. While vocational technical secondary schools apply Dual system which is applied in Germany, vocational schools carry out education – teaching according to American system.

According to European Qualifications Framework, Vocational Schools that give a 5<sup>th</sup> level education admit students by central placement instead of skill examination.

Instructors and student have no time and place freedom.

In the institutions with vocational and technical education, project assist is little if any.

## **6. Conclusion**

Compliance between knowledge, skill and abilities of individual and properties required by the job is a serious factor that has influence on motivation of individual for job and the success in working life. Professional attitude will be correct if individual knows the qualities required by job by means of his interests and abilities. However, vocational schools have stayed behind in terms of raising individuals in accordance with technological developments in order to reach vocational and economic satisfaction on the basis of sector expectations in qualified



labor market. After the reasons mentioned above, it isn't not likely to obtain an improvement depending on production sector in the country. Vocational schools in which there is misunderstanding both vocational and technical education policy and technical education based on technology and final an educational understanding that will meet the expectations of the sector, keep youngsters busy in daytime education for 2 years in the our country where we have a young population as 20 percent. Besides, amount of the student registered in open university is higher than those who attend in daytime education and rate of the student graduated from vocational schools has remained at 26, 2 percent level. These situations are important losses which should be solved immediately for production sector that has advanced technology integration based on practice. In addition, expectations of students of vocational school and instructors and product sector don't accord so it stays as an important problem in applying advanced technology to vocational and technical education.

As vocational and technical schools are without hands-on training based on physical infrastructure and renewable technological software which are necessary to use information technologies, an economy based on production, which is the most important principle, cannot be realized. Therefore, education and teaching efficiency cannot occur with increased participation, communication and interaction suggesting use of technology in education. When the influences of information technologies are analyzed more closely, it will be seen that instructors of higher education are lack of sufficient knowledge to give hands-on training and are unaware of abilities to follow technology closely and apply advanced technology.

Use of internet and other information technologies should be used in order to increase quality in education instead of accelerate the education. Vocational and technical education parallel with advanced technology should be planned and regulated according to purposes and goals. However, in today's vocational schools, there is theoretical education that doesn't force instructors and students instead of hands-on training that follows technology. As a result of this, graduated student is an unqualified intermediate staff for qualified labor market.

New technologies and computer-managed instruction have remained as a supplementary of traditional education and teaching methods.

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