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Evaluation of educational and technical structure at vocational schools

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Abstract

In Turkey, vocational schools are one of the most important educational institutions for breeding well-qualified manpower in higher education level. At present time, the main purpose of these institutions that provide vocational training in accordance with two-year education programs is: to provide the breeding of of well-qualified manpower who may be able to adapt to scientific and technological developments and provide quality production that needed by business life.

In the process of training the students of vocational school in accordance with these qualifications, educational partnerships that are established with the collaboration of both university and industry have become very important. In order to substantiate the necessary cooperation in this partnership Marmara University Vocational School of Technical Sciences has started a project. In this project work, within the inclusion of students, industry and academic staff, three surveys have been conducted in order to collect data. The survey applications that have been carried out included, firstly, the thoughts of the vocational school's students about the education provided in Vocational School of Technical Sciences (T.B.M.Y.O); secondly, their thought of the sector's cooperation with vocational schools and the evaluation of the graduates performances. Thirdly, another survey regarding the adequacy of the training fields and the students of the vocational schools was conducted and it's reviews have been addressed.

Keywords: Vocational school; vocational education; structure.

1. Introduction

For Turkey to take its place among the developed countries and to be a producing country on a world scale, could only materialize this by having qualified manpower who would operate in these fields. The creation of manpower will only be possible with individuals obtaining a career, by renewing their professions over time and by acquiring new skills and demonstrating effectiveness in different professional areas. For this to materialize, the necessary training infrastructure should be established at all levels of education system.

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The process of technology acquisition that ensures the infrastructure establishment can be defined as follows: The definition of a product or production method, it's design, development, production, use and license agreements, support, it's institutionalization by converting it to derivative products and production methods together with acquired new skills and needed information (plant, machinery, equipment, trained manpower etc.) are the activities that are required for the management of all these stages. (Şenel, Gençoğlu, 2003)

Like in at all levels of education, to achieve adequacy and quality is one of the main objectives of training that are provided in vocational schools. In schools, theoretical and practical training is given to the trained staffs that are needed by the related industries. It has been expected for the graduates of vocational schools to contribute dynamic impacts to the development of the economy process. Therefore, every vocational school must be in accordance with professional competence with the training of its graduates had received and the expectations of contemporary human resources. However, the graduates of vocational schools; with their knowledge, applicationary experience should possess the characteristics of human resources that may be sought in the future.

In the process of converting the knowledge to a production, university and industry cooperation is one of the most important tools. The cooperation of university and industry which is a tool that helps to convert the basic and theoretical knowledge which has been obtained in universities, into a practice is also being used in various countries. With this cooperation, the technological information that needed by the industry was transferred from universities to the companies and in return the industry have been providing to universities the opportunity of practical application. This mutual cooperation have been speeding the country's economic development. (Hakkı, 1997)

The workshops, labs, apparatus and its equipment which are needed by universities for training and research developments are required to be upgraded in accordance with the new technologies. The infrastructure that is available in universities will be needed for the training of personnel for the industry has to be evaluated and developed at regular intervals in accordance with industry's recommendations, also, infrastructural arrangements should be made. The compositions of these will be provided through joint projects, workshops and symposiums. .

A project which was aimed to improve the training infrastructure of Marmara University Technical Sciences Vocational School, and supported by Marmara University Scientific Research Projects Unit (BAPKO) titled "The cooperation of Marmara University Technical Sciences Vocational School and industry", has started in June, 2008.

2. Method

In this study, in order to evaluate the training and technological infrastructure in vocational schools, a survey has been applied to vocational schools students, related industry and teaching staff of vocational schools. In this survey students were asked about vocational schools physical status, their thoughts of the curriculum and management infrastructure. On the other hand, in the sector's survey, the graduate students' performances, their weaknesses and strengths were asked. In the survey that was applied to teaching staff, there were questions about vocational schools physical infrastructure and students profiles. Survey results evaluated at computer using SPSS.

3. Results

As a means of data collection survey methods were used and in this context the survey was administered to 979 students who were studying at the Vocational School of Technical Sciences. Students were asked to comment on school, industry and their future. In these study students comments regarding the training infrastructure in the school were taken into consideration. Students were asked to evaluate these statements according to Five Likert Scales.

(1-Strongly agree, 2- Agree, 3-Neither agree nor disagree, 4- Disagree, 5-Strongly disagree). Students mostly answered the questions as I agree that were asked with the headlines; Physical capacity, curriculum and management. (Table 1)

The questionnaire which was administered to 493 industrial enterprises related to schools programs which were within the scope of research are: (Electrical, Electronics Technology, Mechanical, Computer Program, Clothing Technology, Electronic Communications Technology, Fisheries and Acquaculture, Biomedical Equipment Technology, Jewelry and Jewelry Technology). Firms were asked questions to find out the sector's demographic structure along with their comments on the cooperation with schools and charesteristics of the graduates. In this study industrial reviews related to the training infrastructure of the schools were taken into consideration.

Company officials were questioned in relation school's graduates' performances. The sector was to evaluate these outputs according to five likert scale (Very poor, Weak, Medium, Good, Very good). It has been noted that company officials found all the performances of the graduates to be insufficient. (Table 2)

Table 1. Students thoughts about the provided training at TBMYO (%)

	Comments	Strongly agree	Agree	Neither agre nor disagre	Disagre	Strongly disagree	Un-answere
Physical capacity	T.B.M.Y.O. building is sufficient to carry out courses in the existing programs	7,46	28,60	23,39	18,28	12,97	9,30
	Application environments are clean, orderly and suitable for learning	7,56	26,97	23,70	20,94	11,03	9,81
	Classrooms in existing programs are sufficient to carry out theoretical programs	7,05	28,70	25,23	17,16	11,64	10,21
	T.B.M.Y.O. workshops and laboratories are sufficient	9,60	26,25	19,20	19,82	15,63	9,50
	Practical workshops and laboratories have sufficient machinery and equipment	9,70	22,68	19,82	18,69	19,10	10,01
	There is an opportunity to work with new technology related to my profession.	8,78	25,43	23,80	16,85	13,99	11,13
	Internet Web page is continuously updated	9,50	26,66	18,90	15,53	19,20	10,21
	There are adequate equipment in classrooms that support visual teaching	12,46	34,42	18,28	13,28	10,21	11,34
Curriculum	Workshop/laboratory class hour is sufficient	11,24	31,26	16,75	17,47	13,59	9,70
	The studies are done in accordance with the purpose of vocational schools.	12,16	37,39	21,14	12,05	6,13	11,13
	We are provided with a higher level of education which is different than vocational schools	10,52	32,18	24,31	14,81	7,15	11,03
	Teaching staff are doing the studies according to newly prepared program	8,89	36,16	25,54	12,87	4,70	11,85
	Theoretical information related to my branch is sufficient	7,25	27,89	26,46	17,36	9,30	11,75
	Applicationary information related to my branch is sufficient	6,84	24,82	26,15	18,69	10,21	13,28
	The methods and techniques which enables me to follow new developments is provided	6,95	22,37	29,01	18,49	10,42	12,77
	Teaching staff provide knowledge and skills at the MYO level.	9,60	36,16	24,21	13,69	4,80	11,54
	Workshop and lab teaching staff are aster of subjects	12,36	32,18	23,60	12,36	7,46	12,05
	Teaching staff are helpful in finding solutions to education related issues	7,66	29,42	25,43	15,32	10,01	12,16
Management	Students can register for semester online via internet	10,83	27,07	15,32	12,97	18,08	15,73
	Management has established the organizational structure that deals with beyond students Education and training	10,11	22,37	24,72	19,82	12,97	10,01
	Students do not have trouble reaching the management	8,68	27,58	26,35	18,08	10,52	8,78
	Management is committed to establish a dialogue with students	6,64	23,49	29,52	20,94	10,42	8,99
	Management announces the information related to students	8,07	39,02	20,43	16,24	6,03	10,21

Table 2. The performances of the Vocational schools graduates (%)

Performance ratings	Very poor	Weak	Medium	Good	Very good
Problem detection	25,12	47,78	15,27	6,90	4,93
Team-work skills	19,61	40,69	21,57	10,29	7,84
Self-study skills	18,00	46,00	20,00	9,50	6,50
Life-long learning skills	18,45	44,17	20,87	13,11	3,40
Updating information skills	19,81	42,03	23,67	12,56	1,93
Awareness of professional and ethical responsibilities	23,12	46,23	17,09	8,04	5,53
Performance and timing capability	26,02	37,24	22,96	8,16	5,61
Quality awareness	27,51	43,39	15,34	8,99	4,76

Table 3. The strenghts and weaknesses of the Vocational schools graduates (%)

Strong sides		Weak sides	
Their perception is good	15,52	Lack of information	19,09
Job analysis capability	29,31	Work discipline	18,18
Job responsibilities	13,79	Self-improvement	11,82
High performances	18,10	Responsibility awareness	10,00
Theoretical knowledge competency	23,28	Inexperience	40,91

When company officials were questioned about the graduates strengths and weaknesses, they have evaluated as follows: 'Job analysis capability' skills was the strongest at the rate of %29.31; and 'In experience' was regarded as the weakest side at the rate of %40.91. (Table 3)

The survey was administered to 42 teaching staff that has been working in the school. The teaching staff was asked questions which allowed them to evaluate the industrialist and themselves. In this study questions were asked to examine the schools infrastructure. They were asked to evaluate these questions according to Five Likert Scale (Very adequate, Sufficient, Undecided, Poor, Very poor). The teaching staff have considered "Lighting, ventilation and heating" to be sufficient among the questions regarding the adequacy of the training areas. The other options were found to be insufficient by teaching staff. (Table 4)

Table 4. Lab and workshop equipment

The quality of the equipment	Very adequate	Sufficient	Undecided	Insufficient	Very insufficient
Size	0.00%	16.13%	3.23%	54.84%	25.81%
Lighting	0.00%	58.06%	6.45%	22.58%	12.90%
Ventilation	0.00%	41.94%	3.23%	38.71%	16.13%
Heating	0.00%	51.61%	6.45%	35.48%	6.45%
Cleaning conditions	0.00%	25.81%	9.68%	35.48%	29.03%
Diversity of devices	0.00%	16.13%	19.35%	45.16%	19.35%
Models of devices	0.00%	20.00%	16.67%	43.33%	20.00%
Frequency of repair and maintenance of equipment	0.00%	6.67%	20.00%	46.67%	26.67%
Lab safety	3.23%	32.26%	19.35%	38.71%	6.45%
Used equipments	0.00%	12.90%	25.81%	54.84%	6.45%

When teaching staff were asked to evaluate the students in terms of training outputs provided in schools, it was emphasized by teaching staff that students that students did not meet the required qualifications. (Table 5)

Table 5. The qualifications of Vocational School's students

Students qualifications	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
They are equipped for vocational training	2.70%	13.51%	35.14%	37.84%	10.81%
Sensitive to country's problems	2.78%	13.89%	19.44%	47.22%	16.67%
They get good secondary education	0.00%	0.00%	16.22%	43.24%	40.54%
They possess responsibitiy awareness	0.00%	8.11%	35.14%	43.24%	13.51%
They possess sufficient motivation	0.00%	0.00%	21.62%	59.46%	18.92%
In harmony with social environment	0.00%	32.43%	21.62%	40.54%	5.41%
Economically well off	0.00%	0.00%	22.22%	50.00%	27.78%
Self-confident	0.00%	8.11%	24.32%	56.76%	10.81%
They can perform effective oral and written communication in Turkish	2.70%	13.51%	18.92%	45.95%	18.92%

In terms of industry, student and teaching staff the considered training infrastructure plays important role in the determination of mutual needs. As long as mutual expectations are shared improvement can be achieved.

4. Discussion

The data obtained from the surveys that have been administered to industry, teaching staff and students has helped the school to gain important feedbacks in terms of developing and strengthening our school's programs infrastructure. Under the project- The cooperation of technical sciences vocational school and industry workshop- which was held on 21-22nd of April, 2009, has given a guidance in the directions of school programs in relation to collaborations between themselves and industry have contributed seriously in determining of all stakeholders views on the education system and their expectations and suggestions. The feedbacks obtained from study's data have

revealed the need for review of physical infrastructure and training programs by the school management has provided future-oriented action plans.

5. Conclusion and Recommendation

One of the most effective tools that our today's societies need in order to keep pace with the technological developments and to become a information producing country is the cooperation of the educational institutions and industrial companies in handling their joint activities.

In order the vocational schools which provide vocational training to be more effective, it is important that the sector and civil society institutions cooperate and determine the qualifications which sector requires from the graduates.

With the cooperation of university and industry, solutions to the enterprises problems such as product development, the need of qualified personnel can be found and resources to help universities researches and to strengthening its infrastructure can be provided. In addition, assistance may be taken on various topics such as training the students in accordance with the need of industry and providing an opportunity to work within the industry.

For this purpose, vocational schools study programs and their study contents should be established with the cooperation of vocational school and industry. Also, by meeting periodically if necessary, it should be updated in line with emerging technologies. And, opportunities should be provided to give studies and seminars to sector's representatives specializing in their subjects within the vocational school, so that students could be provided with the knowledge of new technologies and the sector.

With the available programs in vocational schools, the training opportunities should be researched among the current sector and students should be encouraged to do joint projects with the industry.

The evaluations of the students by teaching staff in subjects such as students weakneses- like creative thinking, decision making, problem solving, reasoning, thinking skills and responsibility, self-managing, sociability, self-esteem, communcating and acquiring personal qualities- seminars and courses need to be organized to help to strengthen students weakest sides.

The teaching staff's evaluation of vocational school's physical structures in terms of the equipments suitability of the technology that are used in workshops and ensuring diversity in line with students desires, educational opportunities can be researched with the support received from relevant sectors.

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