

## QUALITY OF TECHNICAL EDUCATION, TEACHER'S INSTRUCTIONAL PERSPECTIVES AND INDUSTRIAL EXPECTATIONS

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### ABSTRACT

*Quality includes some elusive characteristics. It can be defined and described in various ways. Most of the time, we can measure it different methods. It is important to understand, identify and measure of quality. For this aim, there are some **accredit** (accredite) organizations in national and international level. ISO 9000 is known as a global quality assurance and accreditation structure for educational institutions. Teachers use constructivist approaches to teaching and learning for quality of education such as traditional methods, computer technologies, pedagogical orientations and expectations of manufacturers.*

*In this paper, the relationships between quality of education, teacher's instructional perspectives and their use of technology in instruction and expectation of manufactures will be examined for technical employees.*

### 1. INTRODUCTION

Quality is an elusive characteristic. The word "quality" can be defined and described in various ways. However, to improve and assure the quality of the organization, it is important to understand, identify and measure quality.

Generally, the meaning of quality is defined as "a degree of excellence" (Merriam-Webster's Collegiate Dictionary, 1997) --a term applicable to any characteristic. This meaning of quality is very subjective and would vary from person to person.

When discussing quality in business and industry, customer satisfaction is a major focus area. Feigenbaum (1956) defines quality as "full customer satisfaction," Juran (1989) defines quality as "fitness for use, as judged by user", and Deming (1986) defines quality as "...a predictable degree of uniformity and dependability at a low cost, suited to the market." In conclusion, quality should be something that meets customer's needs.

Many countries are working on the design of quality assessment agency for manufacture and higher education. Such an agency has to fulfil national needs and expectations. Looking at the situation in world, during the last 10 years there has been an explosion at quality assessment agencies all over the world, including Turkey. As the size of the global competitive arena increases, manufacturers have been striving to find new means for achieving and sustaining a competitive advantage. It is becoming increasingly important in achieving a manufacturing-based competitive advantage, as the achievement of other goals, such as high quality and timely delivery, becomes more common. New products are emerging all the time at a high speed of development. This is due to dynamic forces such as rapid technological development, greater customer demands, globalization of market, total quality management, business process reengineering, distributed manufacturing and integrated product/process/production information systems using computers. Existing product development processes served the companies during the period of stable market conditions. With the changes in manufacturing industries, the product design strategies and methods should be re-examined to meet the current and future market demands. There is a need to look at the quality of management of various processes such as process planning, production control, education and training, organizational changes and technologies during design phase of the product. Most of the researchers have proposed to develop a product design system using concurrent engineering. But newly researchers have considered the aspects of quality management during the design phase of the product. Quality performances such as scrap level, delivery performance, rework, employee empowerment and motivation, organizational structure, purchasing-supplier relationship, information technology, supply chain management, dynamic process control, process control and ISO 9000 have not been dealt with during the design phase.

The main focus of this paper is problems of manufacturer on quality system and education and quality strategies and how these can complement each other in improving productivity and quality.

## **2. QUALITY IN TECHNICAL EDUCATION**

In the context of technical education, striving for technical quality is not a new strategy. Institutions have always make academic excellence and quality education as their highest goals. Achieving these goals was easier in a time of abundant resources and favorable demographics. The environment has changed. Institutions are facing decreasing enrollments and revenues while costs and competitions for students are increasing. Quality is the responsibility of the individual institutions, and they are expected to be publicly accountable. Therefore, what quality is in the context of higher education. Bergquist (1995) demonstrates that: Quality exists in a college and university to the extent that adequate and appropriate resources are being directed successfully toward the accomplishment of mission-related institutional outcomes and the programs in the college or university make a significant and positive mission-related difference in the lives of people affiliated with the college and university are created, conducted, and modified in a manner that is consistent with the mission (and values) of the institution (p.44).

## **3. TEACHER AND INSTRUCTIONAL PRACTICE**

Teachers bring an established structure of knowledge and beliefs about teaching and learning to the instructional change process which forms an “intuitive screen” through which

professional development and classroom teaching reforms are interpreted (Buchanan, Burts, Bidner, white,& Charlesworth,1988; Clark & Peterson, 1986) . Prior research in several subjects areas has demonstrated that teachers tended to adopt new classroom practices based on whether the assumptions inherent in the new programs were consistnet with their personal epistemological beliefs (Richardson et al., 1991).

Many educational policy makers assume that modern technology is an approach to instruction that is “ teacher proof” (David, 1991 1994; Sheingold, 1991) and teachers’ pedagogical perspectives limited how technology was used in the classroom. Educational technology, however, is a tool that can be used to support a variety of approaches to instruction. Computer programs are used in traditonal classroom . Teachers can select and use educational software, as they select and use other instructional materials, to match their personal instrucional philosophies-whether traditional or reform-oriented. Educational software development draws on a variety of instructional approaches. Instructional software, like other curricular and instrucional materials, is based on both didactic and constructivist conseptions of teaching and learning(Niederhauser, 2000). Drill and practice-based Integrated learning systems are used widely in technical education by mechanical programmed. Instructional designers use the computer as a tool for hierarchically structuring a sequence of activites. The computer displays a problem for the students (stimulus) who, in turn, responds with and answer (response). The computer then provides feedback to the student regarding whether he or she has provided the “right” answer (reinforcement) . Teachers can easily integrate such drill and practice computer activities into their established didactic routines.

#### **4. QUALITY AND INDUSTRIAL**

Is there such a thing as a universal definition of quality, where all people at all times would recognise it? Most people would say there is no universal definition. In recent years, there has been an awakening among manufacturers over the fact that action to create a high degree of quality in products, processes and services has become their major task to effectively face the challenges posed in the global competitive environment. Quality professionals all over the world have started to emphasize that any significant breakthrough with regard to the quality of product, process and service can be achieved and sustained only when the entire firm is behind quality. In Turkey 1800 firms are using one of the techniques of quality and have got a certificate on quality (TSE). Their aims are different to establish quality system for to competition, customer wishes, to export, to developing their manufacture system, to marketing. They have got some internal and external problems on improving and productivity. The administration policy, some economical problems or education of quality, unwillingness of employee, insufficient raw material, require long time, planning for implementation and diagnosis of failures etc. While the fact is that all over the industrial world in Turkey, there has been a continuous growth of quality using. Many manufacturing firms still find that they are not getting the outcome which they ought to get. ISO 9000 is consistent with the general principles of total quality management (TQM).

The key steps of quality management in manufacturing are:

- \* quality is the first priority;
- \* the next process is the customer;
- \* use of facts and data based on statistics;
- \* cross-function management;
- \* consumer orientation; and

\* respect for human beings.

TQM helps to improve manufacturing processes and CE helps to improve product development process taking into account all the upstream and downstream operations such as marketing, engineering, production and distribution and their effectiveness and efficiency to achieve business performance objectives.

## **5. QUALITY STUDIES IN TURKEY**

In Turkey; quality studies have been started in the early of 80s. There were national standards working either in industry or service sector until 1985, when the adjusting of national standards to international peers started. In 01.01.1993, CE mark has been defined. Customs Union talks began in 1994 and were finalised on 6 March 1995 at the Turkey-EU Association Council. Turkey's efforts towards harmonising its legislation with that of the EU are under way. Turkey is also in the process of harmonising its laws with EU legislation eliminating technical barriers to trade during a transitional period which is expected to last five years, as foreseen in the Customs Union Decision. Effective cooperation between Turkey and the EU in the fields of standardisation, calibration, quality, accreditation, testing and certification will be achieved as part of this process.

In the city of Sakarya, there are a lot of industrial companies and they have many problems about quality of manufacture and some personnel's education. In this work we have dealt with the problems of quality of manufacture and the personnel education in the city of Sakarya as one of the most industrial cities in Turkey. Within this context, we investigated to reveal whether there is a correlation between the quality of manufacture and the quality education in the background of technical workers. Beside this, we looked for any correlation between the quality of manufacture and the understanding of quality, awareness of developments in the area of quality studies in industrial companies, too.

## **6. CONCLUSION**

Teachers who are adopting instructional reforms with computers when the focus of skill-based software is inconsistent with their pedagogical orientation. Computer technology, in and of itself, does not embody a specific pedagogical orientation. Different types of software can be used to address a range of educational goals. Drill and practice and tutorial software can be effective in helping students develop specific skills. Interactive, exploratory and tool software can support teachers as they implement reform-oriented constructivist practices. To date, computers have been primarily used as teaching machines, rather than serving as a catalyst to spur the instructional reform movement. Teachers need assistance in becoming more aware of how computers can be used to help their students meet a range of instructional objectives for quality of education.

Another side, in this work we have dealt with whether there are any significant and one-to-one correlation between the quality, quality education, quality of manufacture and the understanding of quality by companies and workers, expectations of companies from the educational background of workers, job satisfaction of workers. We have taken into account the following recent problems emerged in Sakarya: the Marmara Earthquake in August 1999 that affected Sakarya at most, and the economical crisis happened in Turkey in February 2004.

We have concluded the following facts:

- Quality understanding of companies is significantly different than what workers understand.
- The companies employ technical workers who have been well educated for quality and adopted it do easily implement the quality of manufacture and deploy it across the companies.
- Many companies have economical problems and limited manufacturing opportunities, that is why; they get lower priority to quality.
- In school; according to the students and manufacturer, quality education is insufficient.
- About quality, the students want to learn and modify the course syllabus accordingly; adopt effective teaching methods and ensure that lecturers are trained to use them.
- Automotive and all manufacturing sectors are need qualified employee.
- Economical crisis affects about quality requirements.

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