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Lost Skills in Vocational Training of Iran

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Abstract

Rapid flow of change in modern societies has imposed new responsibilities on educational systems, especially the vocational training system. The mission of such an education system is to train citizens for the future. The growth of science and technology have influenced all aspects of human life including occupational fields in such a way that traditional practices have been marginalized or new horizons have been opened up with the emergence of new technologies. Therefore, the simple training of a set of specific skills to apprentices and familiarizing them with a series of limited tools and instruments does not guarantee their occupational success or meet the demands of our time. The present paper adopts an analytical method to find and categorize abilities and skills neglected in the educational system despite their crucial importance to the professional success and realization of self-employment goals and entrepreneurships in Iran.

Keywords: Vocational training, Educational strategies, New competences, Problem solving skills, Design skills

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Introduction

One of the distinguishing features of the contemporary world is its state of flux. Global developments and international phenomena such as globalization, common markets and free trade development, among others, have affected almost all the communities. Meanwhile, the Middle East has been subject to a plethora of nefarious developments including terrorism, war, instability, political tensions, coups, sanctions and so forth, each of which possess the potential to generate direct and indirect fluctuations in the market and jeopardize the stability of many occupations.

Besides, along with the growth of science and technology, indicators of production and consumption patterns have changed. The emergence and spread of new technologies is motivated by the development and growth of communities, which introduce further changes in other aspects of life, including work and employment. For instance, information and communication technology (ICT), virtual space and social media, among others, have significantly affected various areas of human activities including business style. New technologies are continually intensifying the disappearance or recession of some occupational areas, but at the same time opening new professional horizons for communities. For instance, information and communication technology have introduced broad challenges and changes in the field of technical and vocational education so that the past decade has prepared the ground for the introduction and integration of ICT in the vocational and technical education systems (Bavaghar, Ebrahimzadeh and Ghorbani, 2011)

In such a state of flux, the educational system of Iran has failed to keep up with the pace of global processes (Marashi, MehrAlizadeh, and Toosi, 2012), and in particular, the vocational education system has been unable to keep pace with global, regional and national changes and their requirements, therefore, the vocational training curriculum, teaching methods, skills and competencies gained by students and trainees in these courses are not tailored to the needs and requirements of the labor market. In this regard, several studies have documented the presence of a gap between the type and level of vocational training and labor market demands. For example, the results of a study in Malaysia showed that employers were not sufficiently content with graduates of vocational training courses in terms of their motivational skills, interpersonal communication, creative thinking, problem solving, and technical and professional business skills (Mustapha, and Abdulaah, 2004). This means that outputs of vocational education system lack intellectual capabilities and competencies necessary for the new society. A similar line of research can be found in Iran, including Zain-Abadi, Salehi, and Parand (2007) who demonstrated that "outputs of vocational schools are undesirable across the country. The predominance of lecturing methods over problem solving, and paper-and-pencil method of assessment over practice-based assessment along with the negligence of entrepreneurship have underlined the necessity of rethinking and reforming the vocational system."

In addition, some research suggests that outputs of most vocational centers lack pertinent skills and abilities required to find a job in their own area of expertise. For example, Kavosi (2008) in a study in East Azerbaijan province found that only 17.4% of graduates of technical and vocational education schools were employed in areas related to their expertise in private and public sectors,

There is also a host of ambiguities and contradictions clouding goals, philosophy and macro policies, strategies and legal status of undergraduate courses and vocational training. The cognitive and emotional characteristics of most students and graduates are often incompatible with their expectations of their course. The unemployment rate of about 28% of the graduates is symptomatic of more serious issues (Navid and, Barzegar, 2012). In a recent study, Jafari Harandi (2015) showed that Technical and Vocational Centers

have been unsuccessful in realizing 32% of their external potentials. This is especially evident in formal technical and vocational centers compared to their non-formal counterparts (Khaledi and Raf'ati, 2012).
In this regard, another commonly discussed concept is a knowledge-based economy. Knowledge-based economy is important not only for employers and owners of companies and financial institutions, but also for lower level practitioners, including professionals, graduates of technical and vocational centers and even workers. For example, Salehi and Rahmani (2012) argue that "it is essential for workers to move towards a knowledge-based economy, for they need to keep pace with the requirements of the changing labor market. This new type of economy eliminates specific jobs and renders specific skills obsolete, thereby changing the nature and requirements of jobs. In line with the requirements of knowledge-based economy, World Bank has stressed special qualifications, which shall be discussed in its due place (World Bank, 2003).
Under these relatively unstable conditions, it is expected that vocational centers go beyond the mere training of traditional skills and prepare their graduates for entry into an arena the parameters of which are opaque, turbulent, fluid and unstable. Meanwhile, some research suggests that the current teaching method in vocational training centers is not consistent with these competencies and qualifications. For example, Ghanaei, Mohammadzade, Pakmehr, Hajjar (2014) demonstrated that in technical and vocational schools, the prevailing style of training is listening (which is characteristic of traditional teaching method) whilst the nature of such courses requires change of teaching methods in a way that learning skills and capabilities are developed in trainees and students through the application of modern methods. With regard to the above points, this paper adopts a qualitative and analytical approach to identify and categorize new skills and competencies that are more compatible with the changing and unstable conditions of today's societies and can help graduates to handle future jobs more efficiently.

Design skills as operational strategies

Eggleston (2000) reviewed ten leading studies on vocational training and crafts in Great Britain, reporting a number of strategies for the development of technical and vocational programs and meeting the challenges of contemporary society, the most important of which are presentation of teaching strategies in technical and vocational training and development of design and problem solving skills during the process of vocational teaching.
In the process of teaching-learning practical skills, two types of performance can be identified: design and technology. Design refers to the process of reflection, logical thinking and modeling before, after and during practices, and technology embodies the actual practice of producing and constructing a 3D object or creating a work of art using specific tools and techniques based on the findings of the design stage. Design and Technology can be considered as the equivalent of thinking and acting. Some educational systems, such as Finland and the United Kingdom, classify all trainings related to skills or manual tasks, such as handicrafts, vocational training, and even crafts courses at elementary schools under the title of Design and Technology (Alamäki, translated by Marashi, 2002).
Design in the sense of contemplation and its manifestation in technology as practice and production has been changing parallel to the transition of societies from industrial era to post-industrial era (Kimbell and et al., 1998, p. 244). As Margolin (1989, p. 10) writes, some scholars such as Behrens and Fuller, and design trainers like Gropuse and Moldonado argue that the design factor in the process of vocational training is logically acceptable and can help solve social problems while ensuring the avoidance of any new issues. However, this factor has not received due attention in vocational training. Moles (1989, p.77) critiques this situation, positing that in the view of planners and managers of vocational training, design is merely

restricted to the drawing of a map based on ideas generated somewhere else. In other words, in the prevailing perspective, learners attending technical and vocational courses do not have any opportunity for mental and subjective reflection and modeling before producing a product. In most cases, they are asked to implement pre-determined ideas masterfully whereas design is intended to foster skills of thinking and creativity in students and trainees.

For those supporting the development of a design concept, the requirements of the contemporary world demand that technical and vocational trainings surpass traditional master-apprentice approach (the ATELIER model). According to Kimbell et al, (1998, p. 248) "Many experts believe that it is no longer justified nor appropriate to train people specifically for a job ... that we expect students or trainees to find a job in areas of their expertise is no longer true. "

Increasing flexibility in students and reinforcing the link between disciplines will help a conceptual growth known as "professional skills repertoire". It maintains that we can no longer train learners, interns and students of engineering education in such a way that they expect to acquire special jobs in the future. In fact, graduates of vocational and technical courses and even technical and engineering majors should be prepared to handle diverse occupational opportunities.

In response to the question of how to obtain such an achievement, a research project was undertaken at the University of London over three years. The results revealed that for the growth and expansion of the concept of *job treasury* in students, teaching design skills should be placed at the heart of vocational training (Kimbell et al., 1998). In this regard, an important question is how to teach design skills in a particular field of technical and vocational training and yet expect these skills to be applied to a broader range of jobs?

In other words, we are faced with a paradox related to the general and special nature of design skills. That is, the vocational training system is expected to foster design skills, for example in the field of architecture, and at the same time presume that these skills will be generally applied to relatively similar or dissimilar areas, irrespective of the fact that they have been taught through special assignments related to architecture. To tackle this paradox, Kimbell et al (1998, p. 252) proposed a framework in which design skills were described, and later practiced and learned through specific assignments and tasks, with the possibility to be later extended to other tasks and fields.

Several different functions are attributed to design, so that each set of design features could be assigned to a category. These functions are placed on a continuum and they forge strategic interrelationships. On one end of this continuum, there are abstract and mental goals and on the other hand, there are special and practical skills that are indicative of thoughts and objectives of the other end of continuum.

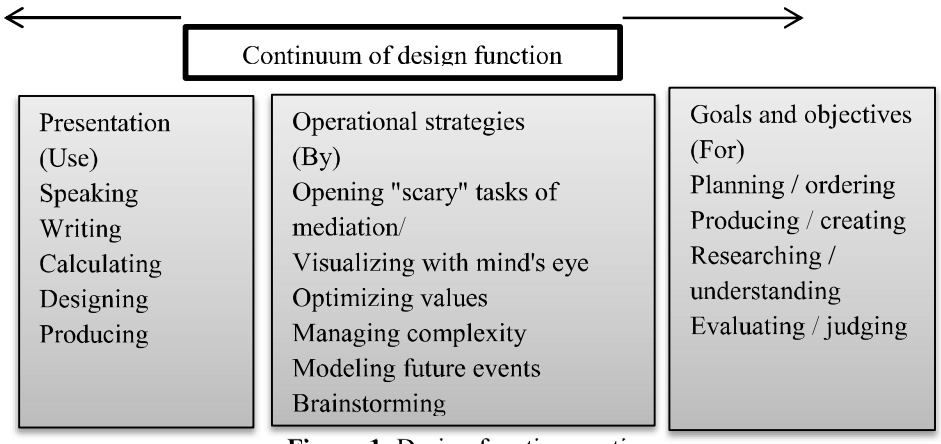

Figure 1: Design function continuum

Although design skills are simultaneously present in all three parts of the continuum, vocational training should be primarily focused on operational strategies and then concerned with practical skills, for this area is basically involved in the application of tools that represent the external form of our thoughts. The masterful utilization of tools is manifested in other disciplines as well and it is not restricted to technical and vocational trainings. As such, Kimbell et al (1998) holds that these special characteristics of design, and therefore the overall value of design training lies at the heart of the continuum, i.e. operational strategies.
This column neither comprises of merely abstract thoughts nor purely practical skills. These strategies fall somewhere between these two groups and are known as strategic and operational activities. In particular, the above research indicates that there are a set of strategic skills at the heart of design ability, which are acquired by trainees and students through experiences. These skills are exactly the ones stipulated by US Secretary's Commission on Achieving Necessary Skills (SCANS) as the axis of employment in the modern world (Allen, 1993):

- The ability to open and control complex tasks
- The ability to identify and optimize value positions
- The ability to model different futures
- The ability to move forward in the face of risks
- Ability to manage complexities

Problem solving skill

One of the teaching models that have received growing attention in the last hundred years is the problem solving model. One of the goals of all educational systems is to raise normal and balanced citizens equipped with a set of features like thinking and the ability to deal with issues of life. To be able to foster self-esteem and self-confidence in students, and prepare them to face real-life challenges, including work and employment and reinforce necessary skills and flexibility, technical and vocational training should pay special attention to this teaching model.
However, the absence of accurate and complete understanding about these processes is felt (McCormic, 1999). Concepts of design and problem solving are corresponding in several respects and they can be used interchangeably in some respects.
However, these two concepts are not essentially the same. There is a subtle difference between these two concepts in that design is permanent in nature whereas problem solving is transitory. It means that in labor areas related to technical and vocational training, the design skill is continually required but problem solving may be called upon under special circumstances or when certain challenges arise. In any case, problem solving, much like designing, pursues a common goal, which is fostering the capabilities and flexibility of graduates to find more diverse jobs and deal effectively with the challenges of the unpredictable world.
Despite frequent emphasis on problem-solving skills, it is still one of the most neglected skills in the educational system. It may be due to the difficulty of achieving this goal. For example Tufnell (1996) in his hierarchy of learning types places problem solving at the top of the most difficult skills:

Problem solving
Procedural learning (procedures)
Principle learning
Concept learning
Differential learning
Facts learning

Figure 2: Hierarchy of learning types adapted form Tufnell (1996, p. 60)

Eggleston (2000, p. 43) quoting from Peter Taylor (1999) and Bransford & Stein (1984), examined the role of problem solving in design and technology, concluding that the starting point of problem solving in school curriculum is that problem solving can be learned. He maintains that an important point in relation to problem solving is that it often remains unlearned because it is not taught at schools. Typically, schools deal with the subject of thinking not the process of thinking. A large number of teachers are not aware of the basic mechanism of problem solving, although they may apply these processes unwittingly. Thus, these processes may never be revealed and consequently brought up and taught at schools.

Complementary skills

Although design and problem solving are key skills, there are other competencies and skills required to enter the labor market. For example, as mentioned earlier, knowledge-based economy requires employers and professionals who can keep pace with new requirements of this type of economy. Therefore, the World Bank (2003) divides competencies underpinning knowledge-based economy in three categories: technical competence, methodological skills and interpersonal competencies. Technical skills include literacy, foreign language, mathematics, science, problem solving and analytical skills. Interpersonal skills consist of teamwork, leadership and communication skills. Methodological skills also require each individual to have a special way of learning to pursue lifelong learning and to deal effectively with risks and changes in a reasonable manner (World Bank, 2003).

Salehi and Rahmani (2012), in keeping with problem solving skills and technology, present a set of competencies necessary for employment in the world market, some of which are shown in Table 1. The comparison of this list with that of the World Bank's demonstrates their similarities and overlapping points. For example, interpersonal skills such as teamwork and communication are present in both lists. Problem solving skills are also integral components of lists of that ilk. In the list presented in Table 1, communication, teamwork, management, planning and learning are the most important competencies discussed along with problem-solving and design. Although these competencies are labelled with new titles, but upon closer scrutiny, one can see that they overlap with design skills and problem solving so that they are essentially the same.

Table 1: Requirements of employment in the global labor market
(Adapted from Salehi and Rahmani, 1391)

Communication	Listening and understanding Speaking transparently Writing in accordance with the needs of the reader Negotiating responsibly Sympathizing Understanding internal and external demands of customers Encouraging effectively
Teamwork	Ability to work with people of various age, sex, race, religion or political orientations Working individually or cooperatively Ability to define the roles of team members Utilizing group skills under various situations such as a crisis Identifying the strengths of team members ... Self-management Prospects and personal goals Evaluating and improving personal performance Awareness and confidence in personal ideas and perspectives Putting in practice ideas and personal perspectives Bearing failure or temporary failures Accountability …
Planning	Time management and prioritization of tasks Innovation and decision-making Determining project objectives in a clear and attainable manner Participation in ongoing planning and improvement Gathering, analysis and organization of information. Planning for the use of resources such as time, money, etc. Understanding basic business systems and their relationships Allocating people and resources to tasks.
Learning	Managing one's learning Contributing to collective learning in the workplace Using different media for learning Passion for continuous learning Willingness to learn at every opportunity Readiness to embrace new ideas and techniques Willingness to learn new skills ...

Rapid and sometimes unforeseen changes mount greater challenges to educational programs and put new responsibilities on the shoulders of the educational system, including vocational training system. Graduates of vocational centers, besides knowing special skills should be flexible and capable to deal with unforeseen issues.

Teaching methods and skills adopted in technical and vocational systems should be differentiated from other systems. However, considering that the number of students and vocational trainees is usually one-quarter to one-fifteenth of students in other majors (Memari, 1995), the majority of research in the field of education are centered upon fields other than technical and vocational. Therefore, special teaching-learning processes that lead to the growth of special competencies and skills in graduates have not received due attention.

According to Eggleston (2000, p. 41), vocational instructors and trainers borrow a large part of issues related to teaching and classroom management from approaches developed primarily from other courses. Shield (1992) argues that in technical and vocational processes, life skills such as problem solving, thinking skills,

team work and reinforced confidence have to be taken into consideration as the foundation of life in the new world. Inclusion of design and problem-solving skills has been at the heart of vocational training over the past two decades. Design and technical skills are extended over a range of general to specific skills. Although these skills are learned through practicing special tasks and assignments, they can be transferred to other situations and areas. It is this property of these skills that foster students' flexibility and assist them in confronting complex and complicated situations.

Design skills are mainly focused on operational strategies, which are neither too abstract nor too specific and functional. These strategies teach us how to raise students' awareness. Multiple versions portray a clear future, teaching them how to move towards the future with risk taking. The development of skills in question has to be included in vocational curricula. The difficulty of achieving this important objective does not justify its omission from the vital technical and vocational education system.

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