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Relationship between Student's Gender and ICT Dimensions

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Abstract

The lack of a suitable performance evaluation instrument is among the causes of unsuccessful promotion of organizational productivity by managers. In order to evaluate efficiency, Data Envelopment Analysis (DEA) was applied in the present research as a supplementary method for the traditional method of analyzing performance and financial statements. The sample includes all active companies in machinery and equipment industry listed in Tehran Stock Exchange between 2010 and 2014. Results indicated that the efficiency of these companies has followed a descending trend from 2010 to 2014. The average efficiency in this industry has increased in 2014. Nevertheless, machinery and equipment industry has been inefficient during these five years.

Key words: performance, efficient, inefficient, Data Envelopment Analysis

Introduction

When a student's optimal way of learning is dissimilar to the instructional mode of the teacher, the student's academic accomplishment is sternly limited. Students' awareness of their learning power should be integrated into ICT. The lack of tolerance for the diverse ways that students learn must change in order for education to become more equalized and let all students experience success, affirmation, and joy of learning. When curriculum, instruction, assessment, and pedagogy are studied through MI perspective, there are numerous ways for a student to learn(Hodge, 2005). ICT supported learning gives us possibilities to better adapt learning material, pedagogy, and learning styles to different intelligence profiles and also taking into consideration that different personal intelligence can be further developed through training (Hodge 2005). ICT can play a significant role in the creation of student-centred learning environments. Computers may serve as tools for helping learners to build knowledge. The use of ICT may foster co-operative learning and reflection on the content (Hodge, 2005). ICT provides opportunities to access an abundance of information using multiple information resources, and viewing information from multiple perspectives**.** ICT may also make complex processes easier to understand through simulations. Furthermore, ICT may serve as a tool to curriculum differentiation, providing opportunities for adapting the learning content and tasks to the needs and capabilities of each individual student. The teacher is a crucial factor in the process of introducing ICT in the classroom (Hodge, 2005); as well as in deciding how ICT will be used (Hodge, 2005). The selection and use of software by teachers can have a significant impact on the learning environment. It needs not to elaborate on the fact that, numerous factors influence the extent and speed of social and economic development not least political stability, physical infrastructure, basic literacy and basic health care. Although there is no suggestion that ICT can eliminate the need for these or offer a panacea for all development problems, detailed analysis of experience around the world reveals ample evidence that, used in the right way and for the right purposes, ICT can have a dramatic impact on achieving specific social and economic development goals as well as play a key role in broader national development strategies. The best cognitive understanding and practice can be captured and communicated by ICTs and applied to the task of growing minds in ways that improve the quality of learning for many, rather than few children. ICTs can give teachers access to great conceptualizes - inside and outside their own ranks - to assist them in planning and programming cognitive development. Best of all, the interactive capacity of ICTs provides more opportunities for students to engage as create and manipulate in the learning process. ICTs support us in bringing together aesthetic as well as scientific considerations, allow us to overlay knowledge and meaning with skill and competence. (Stanford, 2003) acknowledge that there are fundamental differences in the way in which technology integration is approached and implemented between the more developed countries and the developing countries. They point out that for developing countries; the focus is always on acquiring basic utilities such as telecommunication infrastructure, hardware, software and networks. It is only when these are easily accessible that attention can be given to serious educational and training issues like pre-service teacher education.

Statement of the problem

Unfortunately, in the third world, such as Iran, lack of using ICT on the part of the students, and also lack of skills, knowledge, and background in using ICT, leads to problems such as: disability in communication in this new era, inability in choosing the suitable field of study and occupation an increase in the teaching time, rise of educational expenses, and a decrease in learning pace of the students (Samimi&Arab, 2011). On the other hand, teachers in the educational system should be capable of using ICT at a satisfactory level in their classes, and teachers' role should shift from a mere transmitter to a learning-manager (i.e. guide at a side vs. sage on stage). ICT presents new methods of learning, hence, they should have the ability to take advantage of these tools, and otherwise the country will face an inefficient cycle of incompetent teachers and students.

Research questions

Is there a significant relationship between student's gender (male or female) and ICT dimensions?

Literature Review

In recent years, policymakers, educators, researchers, and the public have become progressively more interested in the characteristics and quality of instruction at the elementary and secondary levels with the development and articulation of educational goals. They wonder if teaching that goes on in the nation's classrooms supports student accomplishment as outlined in the national education goals. Governmental funds support professional development programs designed to enhance instruction, further evidence of public investment in the quality of teachers' classroom practice. Since the 1980s, general educational goals have developed from. Mastery of the basic skills to include thinking skills, problem solving, and the ability to work efficiently with others (SCANS, 1991). If middle school students differ in readiness, interest and learning profiles, and if a good middle school attempts to meet each student where he or she is and foster continual growth, a one size –fits-all model of instruction makes little sense. Rather, differentiated instruction seems a better solution for meeting the academic diversity that typifies the middle school years (Tomlinson, 1995). In a differentiated class, the teacher uses the following methods: (1) a variety of ways for students to explore curriculum content (2) a variety of sense-making activities or processes through which students can come to understand and "own" information and ideas, and (3) a variety of options through which students can demonstrate or exhibit what they have learned (Tomlinson 1995). In the traditional education realm, the role of the teacher is to provide content and information for students. The information or content that is presented is based on the teacher's curriculum and other relevant information for the class. In the past few decades, educators have used various types of instructional technologies for delivery of instruction to their students. Radio, film, television and video are the instructional media which were most often used. However, the use of these media has not made any significant change in the instructional, communication strategies and produced the results desired by the education (Neo et al., 2007). Teachers should structure the presentation of material in a style which engages the most out of all the intelligences. This kind of presentation not only excites student's bout learning, but it also allows a teacher to reinforce the same material in a variety of ways. By activating a wide assortment of intelligences, teaching in this manner can facilitate a deeper understanding of the subject material (Lazer, 1992). Teachers, therefore, should think of all intelligences as equally important. This is in great contrast to traditional education system which typically places a strong emphasis on the development and use of verbal/mathematical intelligences. Teachers must seek to assess their students' learning in ways which will give an accurate overview of their strengths and weaknesses. ICT for education is necessary in order to develop information, and ICT has to be used to develop educational systems. It empowers society to develop new learning methods, to promote distance learning, to create virtual libraries and universities, to assist with innovation and training (Zolfani et al., 2012). However, any strategy that gives technology an independent role as a problem solver is doomed to fail (Machado, 2006). From an instructional point of view, (Machado, 2006) reminds us that 'it is not technology but the instructional implementation of the technology that determines the effects on learning'. From a learner's perspective, the final variable that influences the learning effectiveness is undoubtedly the learning abilities of the student and the student's involvement in the learning process. Indeed, the relationship between ICTs, institutional managers, instructor and end-users has not escaped unnoticed by other authors (Machado, 2006).

Developing the ICT Workforce

It is essential that there exists opportunities within the community to offer future ICT workers both first-time and continuing training in essential skills such as software programming, hardware engineering and World Wide Web design. These opportunities are fundamental to creating a sustainable ICT industry and support the integration of ICTs into the local economy.

ICT competency

The core of the ICT competencies is embodied in the skills that are inherent in the vision of attainment targets and developmental objectives. They are competencies focusing on the learning process. They enable pupils to use the possibilities of ICT in a functional way so that their own learning process is backed and reinforced. Indeed it is all about ICT as a means for co-operation, independent learning, making differentiated exercises, exchanging information (Allen et al., 2012). For that reason they are explained by or concretized in sub-competencies and classified in a manner that fits in the learning process in the classroom: respectively planning, implementing, monitoring and evaluating. Where they are specific to the core competency, also operating sub- skills or attitudes are mentioned. These sub competencies are only important in relation to the core competency to which they belong. The competencies focusing on the learning process are the core of the ICT competencies in education. A second category of ICT competencies encompasses technical and operating skills. Being able to use the computer, the peripheral equipment, the operating system, the software also requires specific knowledge and attitudes. These technical/operating skills are not an objective in themselves in education. That is why they are called operating or supportive skills. They are best learned when a practical and constructive application comes up within classroom practice. Thus technical skills are never an aim in themselves. Indeed practice teaches us that many children find it easy to master the procedures to work skill fully with ICT or to explain them to each other. Some students will already have acquired a lot of skills outside the classroom (Hall, 2010). Therefore, it is not at all our intention to develop a curriculum with technical/operating skills that has to be systematically mastered by all students. This integration does not have to start at the same time for all competencies. It is possible that schools only start with the "communication" aspect in the upper years of education, while ICT are already used for independent learning and practicing in nursery education. A third category of ICT competencies contains the social and ethical dimension of the application of ICT. These social and ethical competencies refer to the development of attitudes: to cope in a justified and responsible manner with the new technology. They are about complying with agreements, approaching ICT in a critical way, helping each other in case problems occur. They

directly anticipate the impact ICT can have on the development of (learning) students and that is why they are very important (Drent&Meelissen, 2008). Obviously, these competencies are interwoven with what students do with ICT and are gradually acquired thanks to the permanent effort the teacher engages himself in to draw the children's attention to them. Finally this: these competencies are to be read against the background of primary education, taking into account the potentialities and the limitations related to the age of the children and the material equipment of the average primary school. It should be stressed that it is not the individual teacher who is accountable for the degree to which ICT is integrated at school. The teaching team draws upon a relational approach to determine how fast the school integrates ICT. This varies from school to school. A high-quality use of ICT stands or falls with a well-considered vision of the impact of ICT as a supportive means to reinforce learning. This is teamwork.

Methodology

Participants

For this study all Technical Vocational students of level 1 and 2, studying in Shiraz, Iran were chosen as the main cluster. The adequate sample size in this study is indicated at 375.

Instrument

For the purpose of this study, ICT questionnaire was used as the instrument. This includes ICT dimensions that contain three questionnaires (skill, background, knowledge, competency and readiness).

Procedure

Two types of research procedures were carried out, the first obtaining permission from the relevant authorities. The second procedure involved distributing the questionnaires among respondents. In order to collect the data, the researcher visited the universities and distributed the questionnaires to the vocational technical students that were selected as the sample. Before distributing the questionnaires among the targeted respondents, the procedures and the ethics of conducting research were closely observed and complied by the researcher.

Results of the study

To analyze the research question (is there any statistically significant difference between ICT dimensions and male and female students?) MANOVA analysis was used. The results obtained can be seen in Table 1.

Table 1. MANOVA for differences between gender of students and the ICT Dimensions

Source	ICT Dimensions	SS	df	MS	F	Sig.	Eta Squared
	Readiness	96.450	1	96.450	162 .1.960		005.
	Competency	32.168	1	32.168	145 .2.136		006.
gender	Skill	539.658	1	103 .2.666539.658			007.
	Background	1.916	1	1.916	120 .2.430		007.
	Knowledge	050.	1	050.	007.	93 1.	000.
	Attitude	54.497	1	54.497	531.	46 7.	001.
	Readiness	17716.878	360	49.214			
	Competency	5422.807	360	15.063			
Error	Skill	80149.866	360	222.639			
	Background	283.778	360	.788			
	Knowledge	2429.298	360	6.748			
	Readiness	17813.329	361				
	Competency	5454.975	361				
Corrected Total	Skill	80743.525	361				
	Background	285.693	361				
	Knowledge	2429.348	316				

The result of this test is WILK'S Lambda= 0.182, p= 0.679, F=49.1. Results show that in total there is no significant difference among ICT dimensions in male and female students.

Discussion

The research question of this study was: is there any statistically significant difference between ICT dimensions and male and female students?. The results of multivariate analysis of variance to investigate this hypothesis stated that, overall there was no statistically significant difference between ICT dimensions in male and female students. The result of this study is consistent with the research findings such as Emadi Far (2007); Abdullah Zadeh (2010) Adam (2002) .However it is not in line with the result of some researches such as Formatks, 2006, Norman, 2002 and Hafkin, 2003). According to Haier et al (2007) women are considered as the key players in social - economic development. Researchers have attempted to identify the main indicators to measure gender differences in the use of ICT. They have concluded that the barriers to access and social - cultural, education, skills, gap in the use, access and control of financial resources, media and content, age and type of technology (Haier et al, 2007) are the main indicators of gender differences in compatibility and access to ICT. Although in some countries, women are better than men in some areas of ICT (Markaskait, 2006). However, there is a general tendency in the whole world, especially in developing countries toward superiority of men over women in ICT (Formateks, 2006, Norman, 2002 & Hafkin, 2003). Although, the researches mentioned are partially indicative of the superiority of men over women in ICT, the use of technology by women has increased gradually (Gupta, 2008). For example, Holakiya, Holakiya, and shotori (2003) in a study entitled Gender and Internet use in Africa concluded that women's participation in Internet usage is still low, so that it was expanded from 12 percent for Senegal, to 38 percent for Zambia (Holakiya et al, 2003). But the research findings indicate that the gender gap among young educated population compared to the older population is lower than in other countries (Tankeo, 2005). In other words, the interest in ICT among women, compared to before, especially among women is lower than men (Gay, Mahoon, Donish, Alyyn, & Alyyn, 2006). McLaren and Zapala (2002) believe that the ICT access and application patterns are multifaceted. Factors such as income level, age, sex, occupation, family type, geographical location are important factors in determining the effective model (McLaren et al, 2002). In general, the results obtained in the present study are promising. Because of the lack of gender differences in ICT dimensions means that gradually the gender gap in learning and interest in ICT will replace with equality and equal opportunities in education and learning IT. Because women constitute half the population, no gender gap in IT means that the ability and the potential of women can be used in the economy and efficiency of society. We should always care about interpretation and making conclusion of this hypothesis. Because the sample for this study was limited to students in vocational schools, and not the entire society. Certainly because ICT constitute the core part of the curriculum in vocational schools, no difference between males and females in this sample does not indicate that there is no difference in the entire Iranian society. But an optimistic view of this hypothesis is that, the findings of this hypothesis suggest that women have the abilities and potential to be skilled in ICT like men or in certain areas and issues, they act better than men. No gender difference in ICT dimensions in the age of technology is an indicator of using underlying potentials that for many years is ignored in economy and technology of various countries, especially in third world. Women's skills in ICT enable them to associate with the requirements of the 21st century and be able to take advantage of their capabilities in the industry and economic efficiency of IT World.

Implications

Iran has many governments and non-governments technical and vocational schools and most of them have their own plan for implementing ICT and MI education programs. The findings of this study provide an insight to teachers to evaluate the relations of the ICT dimensions and MI components in this period of time. Moreover, the findings of the study provide additional support for the use of the MI and ICT framework in Iranian technical and vocational schools. As a result of the study, it has been shown that there is relationship between the ICT dimensions and MI components. Teachers can advocate for MI and ICT that features these dimensions and components better meets students‟ needs. Moreover, the results of the study can help schools to create better programs and support services that foster more effective learning environments. In addition, the findings of the study can solve problems in teaching and learning practices in technical and vocational schools. In addition, this study seems to understand the current opportunities of different schools in Iranian schools. Likewise, some research has attempted to explore the possible disciplinary gap in schools. It also acts as a comparative research for the conventional ICT in different dimensions from different disciplines to different schools. Hence, teachers, instructional designers and instructors should encourage educational programs that may increase MI and ICT in technical and vocational schools. Individual instructors should gain insights into their students' perceptions, expectations, and preferences, thus aiding them in developing strategies for projecting presence in technical and vocational schools, for designing and organizing courses, for communicating and otherwise interacting with students, for facilitating active learning, and for determining how to use available technologies. Such insights may result in instructors‟ increased success in utilizing instructor presence, as well as increased satisfaction and success for students. Program designers and educators should link online learning components with traditional face-to-face learning components in ICT subjects. They need to integrate practical methods that can be used in schools including cooperative learning, project-based, and problem-based learning. It is confirmed that cooperative learning, project-based, and problem-based learning activities can minimize student's isolation and enhance better understanding of the curriculum design. Hence, designers, educators and instructors may provide the good opportunities for male and female students in schools to meet their educational needs.

Recommendations

1. The further research should use wide-range of academic and non-academic samples and a wide-range of age may be used to investigate the problem in depth.
2. The various aspects of ICT can be investigated to determine the relationship in depth.
3. The results of the current study (Effective IQ) can be used to investigate influence of ICT learning, in experimental and controlled design in order to understand the causal impact of these factors on IT learning.

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