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Information and communication technology (ICT) in higher education: advantages, disadvantages, conveniences and limitations of applying e-learning to agricultural students in Iran

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Abstract

The use of ICT in education has intensely reformed learning and teaching processes. Furthermore, it has expanded new opportunities for learning and accessing to educational resources beyond those traditionally available. In this condition, the use of ICT in education creates a method of training called E-learning. This paper attempts to investigate advantages, disadvantages, conveniences and limitations of applying ICT in conjunction with E-learning to agricultural students. The paper accentuates the role of ICT on Iranian students in Agricultural Higher Education in particular.

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1. Introduction

A quick look at historical development of educational systems thorough different ages shows that these changes are closely linked to variations in each period. Simple training in agricultural age, classical education in the industrial age and also the transition from classical training to virtual education in the information age or individualism represents both the desired and uninvited changes in education because of the fact that the educational system should reflect the educational needs of society in that period (Miladi & Malekmohammadi, 2010).

In current information society, people have to access knowledge via information and communication technology(ICT) to keep pace with the latest developments. By applying ICT, the possibility of learning without

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constraints of time and place would be achieved which suit the needs of the students. The use of ICT is a symbol of a new era in education. Besides, ICT alters thought patterns, enriches existing educational models and provides new training models. These models shares features of a technology-based training and suggest new learning methods in which the learner plays an active role and also emphasizes self-directed, independent, flexible and interactive learning (Faraj Allahi & Zarif Sanayei, 2009).In this condition, combination of the Internet and computer has created a kind of training called e-learning. In this method, teaching and learning methods move from content-centered to competency-based curricula and they also move away from teacher-centred forms of delivery to student-centred forms(Alestalo & Peltola, 2006; Attaran, 2007). In order to acclimatize the advantages of e-learning possibilities and also condense limitations of this type of training, it is essential to examine thoroughly the features of e-learning for Iranian agricultural students.

2. The use of ICT in higher education

Information and communication technologies consist of hardware, software, network and media for collecting, storing, processing, transmitting and presenting information (voice, data, text and image) as well as related services. ICTs can be divided into two components: Information and Communication Infrastructure (ICI) and Information Technology (IT). The former refers to physical telecommunications system and network (Cellular, voice, mail, radio and television) while the latter refers to hardware and software of information collection, storage, processing and presentation (Sarkar, 2012).

According to UNESCO (2002):

ICT now permeates the education environments and underpins the very success of 21st century education. ICT also adds value to the process of learning and to the organization and management of learning institutions. Technologies are a driving force behind much of the development and innovation in both developed and developing countries.

ICT is considered as a mainstream in higher education. ICTs are being used in many areas such as: developing course materials; delivering content and sharing content; communication between learners, teachers and the outside world; creation and delivery of presentation and lectures; academic research; administrative support and student enrolment (Mandal & Mete, 2012). When applying ICT in higher education, learning is no longer confined within schedules and timetables(Hattangdi & Ghosh, 2008).

In this context, e-learning using ICT facilities are put into existence. E-learning has increased not only the speed of transferring knowledge, but also the method of transferring from one person to another. E-learning is about learning and teaching philosophies and methodologies within the context of outcome-based education, using ICT in the learning environment (Chief Minister Department. Asmal, 2003).E-learning in Iran is still in its infancy and there are only a few online programs. The history of e-learning in Iran at present time has not exceeded more than 13 years. E-Learning is delivered by both the private sector and government organization. There have risen a plenty of virtual universities or centers like University of Tehran, Amirkabir University of Technology, Iran University of Science and Technology, Sharif University of Technology, Shiraz Virtual University and some Islamic virtual colleges and centers like Islamic centers and School of Science of Hadith (Ghasem tabar, 2010).

3. Characteristics of E-learning for agricultural students in Iran

Conventional teaching emphasizes on content, so courses have been developed based on textbooks as a means of teaching for many years, teachers have taught through lectures and presentations and learning activities are designed to combine and rehearse the content. Students have been trained to let others present them the information that makes the curriculum. The use of ICT as an instructional medium is increasing and might likely continue to modify strategies which are employed by both teachers and students in learning process (Oliver, 2003). One of the most important features of e-learning is the students' interaction with learning materials and learning environment. In interactive systems, the learner is involved in interactions which encompass selecting, answering and solving problems. Thereby, the learner is engaged in the process which leads to a deeper and more effective learning process. Learning accompanied with thinking and developing sensitivity to the external environment leads to building confidence and development of learners' characteristics. In general, enhancing and improving the quality of

education and instruction is a vital concern. ICTs can improve the quality of education in a number of ways (Behnam, 2012). E-learning is emerging as an important strategy to provide widespread and easy access to high quality education.

On the other hand, it is said that the educational effectiveness of ICTs depends on how they are used and for what purposes. And like any other educational tool, ICTs do not work for everyone or everywhere in the same way (Sarkar, 2012). Therefore, it is believed that e-learning in different settings and also depending on different applications have advantages, disadvantages, possibilities and limitations. This paper tries to investigate advantages and disadvantages of e-learning in different conditions.

3.1. Advantages of E-learning

E-learning avoids linear constraints of traditional curriculum. Besides, teaching and learning process can take place in training centers, houses and even remote areas and build an opportunity for learning (Behnam, 2012). Some of the advantages of this type of education for Iranian agricultural Education are mentioned below:

- Time and place access:Users can proceed through a training program both at their own pace and at their own place. They can also access the training system at any time, receiving only as much as they need. In other words, "just in time and just enough"(James, 2002).
- Equity:Karimi (2007) believes e-learning provides opportunities thatagricultural students canaccess to higher education in this field in every situation. Indeed equal access and equal competence is the objective of this education system.
- Enhancing group collaboration:Learners and teachers can be connected together via chatting, voice and video conferences, interactive TV, virtual classes and eliminate physical separation simultaneously. In this way, learners are active in learning and interactive processes(Faraj Allahi & Zarif Sanayei, 2009).
- Direct access to many other training resources:Karimi (2007) statesthe number of copies of a book or magazine is limited. However, digital libraries simply offer electronic copies of resources and students will be able to use them everywhere.
- Enhancing the international dimension of educational services:Learners are able to find out the required information in their field by using ICT and the obtained data is not only limited to information on Persian Language but also in English (Khaleghi, 2010).
- Determining the rate of progression in courses:This feature reduces the level of anxiety of students due to fear of falling behind others in class and also increases satisfaction of gifted learners regarding education system (Hodavand, 2008)

3.2. Disadvantages of E-learning

Although e-learning has many advantages and simplify the process of learning and teaching, it suffers from some disadvantages. Some researchers consider them disruptive in educational process. Some of which are mentioned below:

- Absence of teacher:Compared with traditional methods, face-to-face and lively communication does not exist in e-learning. This can cause negative effects on academic progression and characteristic development of students. However, with continuous and rapid technological advances, this problem is becoming less frequent. Nowadays learners can interact and cooperate well together using information and communication technologies (Behnam, 2012; Yadegarzadeh & Rahimi, 2002). Nonetheless because of the nature of agricultural education, there seems necessary for someone who can master practical courses and supervise students and their operation.
- Access to unsupportive information:In this type of training, learner sometimes access to erroneous information on the Internet which is not scientifically confirmed and therefore unsupportive to refer to. Using this type information may cause confusion and making it difficult for individual learning (Hodavand, 2008).

- Students' assessment and feedback is limited:The Internet provides a wonderful opportunity to get all kinds of information back and forth, but it also makes it harder to assess some types of students' feedback and knowledge (James, 2002).
- Being unsuitable for practical courses in agricultural education:Mirshekari (2006) believese-learning can provide training for students in agricultural education, but education should be such that learners would be able to test their performance and get master in visualizing. There is no advantage in memorizing the content of course as a parrot and transfer it haphazardly to others. In this case, we are just consuming the knowledge and do not get to the deep of knowledge.

3.3. Conveniences of E-learning

When information and communication technology is combined successfully with education, it provides opportunities for individuals which accelerates the speed of learning and generating a person as an independent active learner. These features include:

- Allowing greater access to more students and more efficiency with better information:The learner with Internet access is able to access online libraries, journals, conferences and online virtual classrooms, and through this will achieve a high volume of the latest information (Faraj Allahi & Zarif Sanayei, 2009;Markovic, 2010; Sarkar, 2012).
- Offering the combination of education while balancing family and work life:According to Bjork, OttossonandThorsteinsdottir (2008) "The participants can participate and complete coursework in accordance with their daily commitments. This makes an e-learning education a worthwhile option for those who have other commitments, such as family or work and/or cannot participate easily".
- Travel cost and time saving:Learning is conveying information directly to the learner instead of the other way around (James, 2002). Karimi (2007)states this decrease in travel costs ultimately lead to a gradual reduction in the cost of education
- Easy access to higher education:This method of education is appropriate for attentive students who are not accepted in universities because of limited capacity. Because in e-learning something called capacity constraint does not exist which is beneficial for all people across the country who are eager to take agriculture courses (Hodavand, 2008).
- Cross platform: Web based training can be accessed by web browsing and software on any platform such as windows, MAC, UNIX, etc. Basically, you can deliver your training course to any machine over the Internet without having to develop a different course for each unique platform (James, 2002).

3.4. Limitations of E-learning

E-learning can enhance the speed of learning and simplify its process (Faraj Allahi & Zarif Sanayei, 2009). However, in many communities, several restrictions on this type of training is imposed which reduces the speed of its growth or impedes using it.

- Novelty:It may take long time designing and developing web based training (WBT) courses at the beginning. Because of its recent emergence to the training area, new technologies always require time, experience, and money in order to take full advantage of its capabilities. The great thing, however, is that learner would learn new skills and knowledge with each new course (James, 2002).
- High costs for establishment, enquiry for high funding to conserve:Providing hardware instruments is costly which is sometimes difficult to afford. This problem is much worse for developing countries. Cost of data transfer per kilometre is around 5100Rials (about $0.5)overseas, while the cost of data transfer based on existing tariff per kilometre is 450000Rials (about $36) from Bazargan border to Tehran. This means that the cost of data transmission in Iran is 88 times more expensive than other countries. In addition to this, maintaining and

supporting computer systems require individual experts and organizations that require high expenses (Sharif, 2014).

- The Net is not right for all training:E-learning is not appropriate to be used as teaching method in every field. Some, such as agriculture, are required to carry out practical activities and observing events. Also Mirshekari (2006) believes due to different climate conditions in different parts of the country, a unique education in agriculture cannot be delivered to students from all over the country. Training methods should be in a way that practical and productive thinking skills of students grow in the end. It means the person will be able to devise the problem and finds its solution.In other words, in an efficient and practical education system, the learner has to be encouraged to find a method to solve the problems curiously and expand his understanding which requires practice and is based on the learner's activity.

- Low bandwidth:Our country is located in a continent which has ranked the third highest speed of Internet among other continents. Hong Kong is in the first place with 54.1 Mbps glaring in the world. The next is South Korea with an average speed of 48.4 and Japan with 42.2 Mbps as stated by Blommberg (2013). While Iran average speed of downloading is 2.2 Mbps ranked 168 among 188 countries. This velocity is not suitable for the implementation of e-learning(Sharif, 2014).

- The need for computer literacy:The first step to apply e-learning in education is to master in working with computers and consider computers as a main instrument in this method of training. By doing so, e-learning can be considered as a valuable method. Our country is now offering e-services which is expanding instantly, but due to the lack of familiarity with these services, their use is not yet widespread (Hodavand, 2008).

- The Need to learn English Language:E-Learning aims to educate the society and bring equality in accessing information. People in the most remote locations can also have access to updated information (Chief Minister Department. Asmal, 2003). But the requisite to use this vast knowledge is to be proficient in the use of English Language that this ability is not true for many people in Iran (Hodavand, 2008).

- Lack of access to computers and Internet in all areas:The number of households that have computers is,176,171 or 2/35 % of households. The number of households that have Internet access equals to 4,336,567 or 1/21 %, respectively (Results of a survey from Internet users, 2010). While necessary prerequisite for learning is easy access to computers and the Internet in the workplace and houses for all learners.

4. Conclusion

The use of ICT is a symbol of a new era in education. Besides, ICT alters thought patterns, enriches existing educational models and provides new training models. These models shares features of a technology-based training and suggest new learning methods in which the learner plays an active role and also emphasizes self-directed, independent, flexible and interactive learning.Educational effectiveness of ICTs depends on how they are used and for what purposes. And like any other educational tool, ICTs do not work for everyone or everywhere in the same way. E-learning has many advantages, disadvantages, conveniences and limitation for agricultural students in Iran.Because of some infrastructural problem and for the nature of teaching and learning in agricultural field, acclimatizing E-learning as a teaching method is forfeitted in many cases in Iran.

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