

## The Necessity of Using Integration Approach of ICT in the Curriculum Planning

Seyd Kazem Alavi Langroody<sup>1,\*</sup>, Mahdiah Sadat Mirrahimi<sup>2</sup>

<sup>1</sup>Assistant Professor, Department of Educational and Psychology Sciences, Faculty of Humanities,  
Yazd University, Iran.

<sup>2</sup>MSc. Students in Curriculum Planning, Department of Psychology and Educational Sciences, Yazd University, Iran.

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### ABSTRACT

One of the main goals of education in society is to prepare students for the opportunities in environment. It is necessary to make relationship between learning and information and communication technology since the development in ICT. So that people could meet their needs and requirements. what is important in information society especially in the curriculum field, is not just the investment and hardware use of ICT and its use for the storage of information, but the most important issue is how to apply it Which is provided by the integration of ICT in the curriculum. Curricula in today's world can apply the opportunities provided in ICT to improve and rebuild its process. The use of ICT in schools is a way for understand the new goals of training including, continues Education Development, skill and ability to be engaged in collaborative knowledge and problem solving by the help of different counterparts and specialists. The goal of using ICT in the curriculum, is to improve the quality of teaching and learning. In this Meta-analyze article we have tried to explain the need for use and bending the ICT and the curriculum and its advantages and disadvantages.

**KEYWORDS:** Integration Approach, Information and Communication Technology, Curriculum planning.

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### 1. INTRODUCTION

With the emergence and development of information and communication technology, global developments are more rapidly expanding especially for information and knowledge. Today, access to information and the ability to use it effectively is an important factor in achieving optimal living conditions [1]. Therefore, due to the need of individuals and communities, information acquisition skills together with reading and writing skills, are the main indicators of literacy. Leo (1997) believes that in recent years we have entered an era where the form and function of literacy is changing quickly and continuously because of the emergence of new technologies for information acquisition (the age of information). However, the changes in the future occur with more speed and intensity [2].

Preparing students for using environmental opportunities, has always been one of the most important goals of educational systems and its realization requires the revision of the school curriculum. What is important in the intelligence community especially in the curriculum is not only the investment and use of hardware and ICT tools for storing data [2]. Therefore, it is requires certain convergence among knowledge, information and technology to meet the present and future needs of community. Information and communication technology is not just a tool but also a new approach toward curriculum and what is to be emphasized in the classroom, is to teach learning skills to Students in the sense that students could exactly recognize their information requirements [2].

ICT is considered in the field of education twice and in two steps, and its effects, consequences and applications is recognized. At first step, as a symbol of modern civilization and in the second step as a new technology in the field of education. Once as a resource to achieve the goals and again as an instrument to achieve the goals (Fig 1) [3].

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\*Corresponding Author: Seyd Kazem Alavi Langroody; Assistant Professor, Department of Educational and Psychology Sciences, Faculty of Humanities, Yazd University, Iran. Email: [kalavi@yazd.ac.ir](mailto:kalavi@yazd.ac.ir)

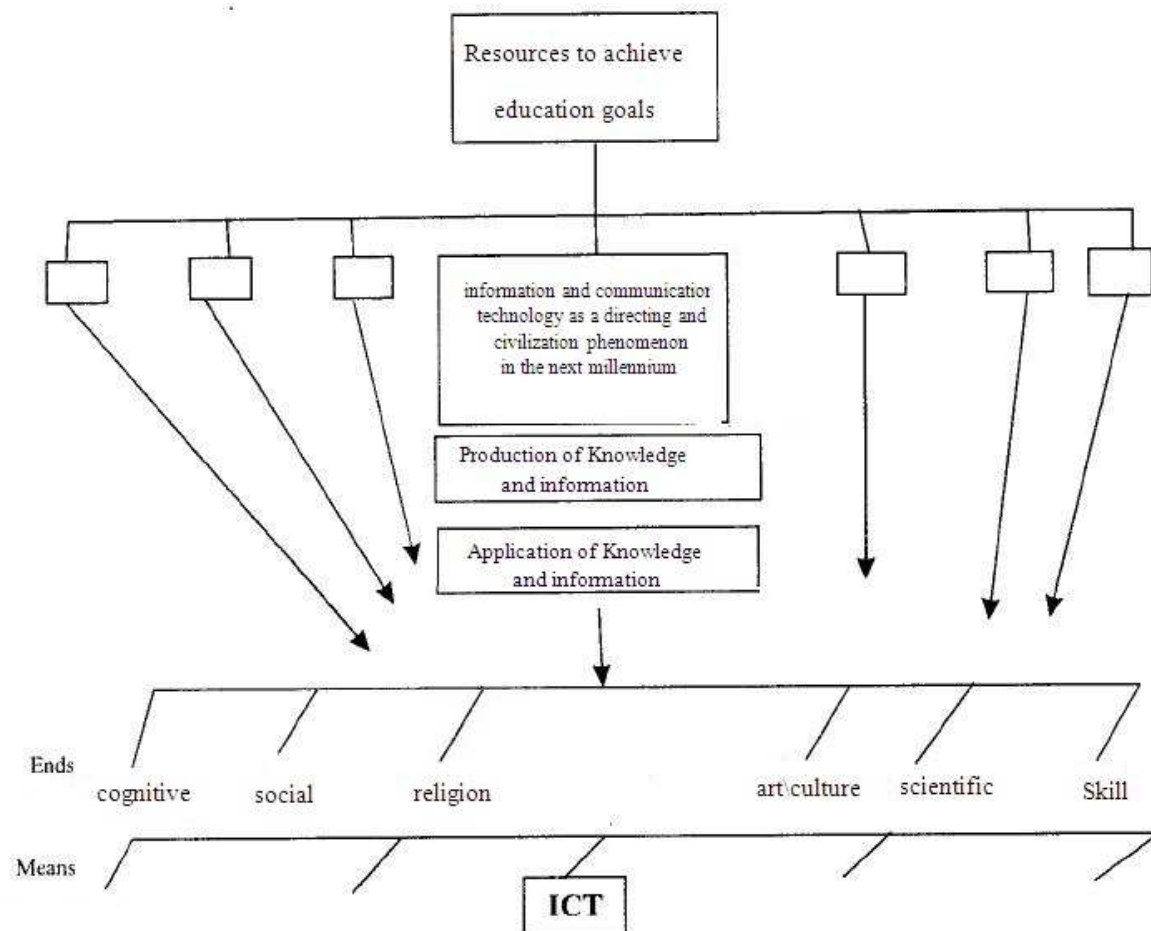


Fig.1: Conceptualization of the educational revolution in the age of information and communication [11].

IT-based curriculum is directly designed based on information literacy and what is important is the ability to turn information into knowledge. Tarckle (1997) states that learners need to match with their constantly evolving environment as a result of introduction of new information technologies [2]. Maybe introduction of agility and dynamism into the school curriculum and the creating rapid reaction to the daily issues is the most important benefits an integrated curriculum.

Integration Approach is based on trying to communicate, connect, and ultimately integration of learning activities of students [4]. Integrated approaches seek for specific organizations of education to provide opportunities for learners to be familiar with various basics, principles, methods and topics in different fields. Integration of technology is Effective only when it includes all aspects of the curriculum and the individual differences of students in the teaching - learning process should be considered [5].

According to above discussion, true understanding of Integration Approach of ICT in the Curriculum Planning will be of particular importance. Student's interest to work with computers makes them more quickly learners. This interest also motivate teachers to integrate technology with teaching-learning process.

## 2. Background of integration

Historically, both in theory and practice, integration is sibling to the curriculum planning (raga, 1997). Evidences show that in the early decades of the twentieth century simultaneous with recognition of the curriculum planning, integration theories were introduced and integrated curriculum were also designed and implemented [4].

### 2-1 stages of historical development of integrated curricula:

**First stage:** pre-1850s where traditional thoughts were the only idea in the field of education and curriculum and a combination of traditional topics were known in the community culture and considered dominant. At that time, the theory of classical humanism which places emphasis on strengthening the mental faculties (based on faculty Psychology), was the basis for education and curriculum workers.

**Second stage:** since 1920 where the major education approaches included project methods and curriculum was based on experience and activity, prepared the context for integrated curriculum introduction.

**Third stage:** in the 1950s with the Spotting spacecraft launch, attracted attention to course disciplines again and the wave of opposition to the progressivist approach to curriculum started.

**Fourth stage:** drew attention again to integrated curriculum such that during 80s, a new phase of study and work on integrated curriculum began and continued during 90s [4].

ICT is a term which was introduced in technology and development planning literature in the early 1990. This concept is a product of interactivity of three domains: at first Information and Computing domains were merged and then, Information Technology was born from the interaction of them [6]. According to Harrison et al [7] research on the impact of information and communication technology on education, ICT makes training deeper and more effective and develops creativity [8]. In a research by Yang Ji (2002) quoted by Najafi [9] in relation to the impact of ICT on learning, it was found that information and communication technology because of its focus on process, increases learning [9].

### **3. Definitions**

#### **3.1 Information and Communication Technology**

It is the set of techniques and tools that helps us to capture, store, process, retrieve, transmit and receive information [8]. It is generally known as technologies to collect, store, edit and transfer various forms of information. High Council of Informatics of Iran (1999) defines: IT is a set interconnecting methods, hardware, software and communication equipment that collect, store, retrieval, process, transmit or supply information in various forms (voice, image and text) [6]. IT is to collect, organize, store and disseminate information by using of computer and communication tools [10].

#### **3.2 Curriculum**

The curriculum consists of a plan in which appropriate learning opportunities to achieve the overall or partial goals determined for the specified population and schools are assembled [11].

curriculum refers to Formal and informal content, content process, apparent and un apparent training by which learners acquire necessary knowledge, learn skills and Change their attitudes, values and gratitude under the guidance of school [11].

Planning as a practice, if done not purposefully, would be unmeaning and hollow. Basically, planning is an attempt to estimate in advance how to achieve a goal. As a result, there are at least three major steps in planning. The first step is to determine and specify the target, the second step is to identify needed means to attain the target (logically) and the third step is to implement the steps necessary to achieve the target. Although these steps, illustrate at least logical steps in planning [12], integrated learning is a new approach in which a combination of electronic equipment and as well as a combination of constant learning styles is used.

#### **3.3 Definition of curriculum planning based on ICT**

curriculum planning based on ICT is the integration of information and communication technologies, including the Web, or planning for teaching-learning process by utilizing information technology and access to web-based learning facilitators [9].

Planning means: "the planned and guided learning experiences and relative results developed under the supervision of school through a rational reconstruction of knowledge and experience for permanent growth of learners in personal and social aspects. the formal and informal content and process by which learners acquire knowledge and understanding methods, learn the skills and change their attitude, valuation and values under the guidance of the school " [8].

### **4. The objectives of the curriculum integration with ICT**

1. Attention to lifelong learning
2. Flexible plans and personalized curriculum to achieve intellectual independence
3. To examine and explore technology application effects on ideology, culture and local values
4. To welcome the multicultural approach
5. Sensitivity to wisdom-ordered orientation, educating religious and moral values and beliefs
6. Effort to artistic and aesthetic nurture
7. Value for question-centered learning
8. Enhancing capabilities such as creative thinking and critical thinking
9. Give emphasize to the development of democratic capabilities (citizenship) such as a sense of coexistence, tolerance and ...
10. Give emphasize to the role of creativity and production in the field of knowledge and information
11. Strengthening national identity and coherence among the various levels of identity (trans-national, global)
12. Strengthening face-to-face interactions as human nature
13. Attention to the interaction with nature and the environment
14. Non-exclusive emphasis on knowledge and information transfer and the development of a moderation method to enhance the understanding of phenomena
15. Attention to international language learning
16. Attention to a new definition of literacy so that involves information literacy [4].

## **5. The most important evolutions in information and communication technologies in curriculum planning include:**

### **5.1 fundamental evolution in the role of teacher**

Teachers are the key factor in the integration of ICT in the curriculum. Preparation of an integrated and supported pattern for professional development of teachers to use ICT in the curriculum, promotion of electronic culture and providing an appropriate model for identification of capable teachers and maintaining them is necessary [2].

### **5.2 The fundamental evolution in the educational tools**

with The expansion of information and communication technology and its deep penetration into society, tools and training methods have also changed. Evolution of these tools and methods is in a way that any person at any time and any place will be able to work and learn with its own facilities.

Some examples of information technology tools that have a key role in this area include: the electronic texts, Bread, video and educational satellite films, communication network, the Internet and Web pages, direct electronic communication, online FAQ, video e-mail, motion pictures and animations [8].

### **5.3 fundamental evolution in the classroom**

for the integration strategies of ICT in the curriculum, it should be considered that the ICT provides a new learning environment for students that teachers have not central role in this environment. Here, Learner and learning quality, has central role. Technology knowledge can be used for computer learning activities, its basic tools and technologies relative to the educational activities [2].

### **5.4 fundamental evolutions in the nature and meaning of the learning**

to Help students to achieve the goals of the curriculum of related fields using ICT as a tool for recruitment and selection, analysis, information providing and new knowledge creation [2].

### **5.5 fundamental evolutions in the design of educational content**

Training theoretical fundamentals of information and communication technology is used to provide public access to information. In the process of e-learning, courses are flexible and can be manipulated. Knowledge of the structure and vast functions of information technologies, consists of collecting, sorting, retrieval, conversion, transmission of information and evaluation of information search results. ICT is assumed as a tool to improve learning of curriculum content. ICT is used in studying of all integration curriculum issues [2].

### **5.6 fundamental evolutions in the design of evaluation system of the curriculum**

in the world of education, evaluation of teaching-learning process is treated as a non-separable element and due to the dynamic nature of educational activities, with any evolution in the process of teaching-learning, an evolution in the evaluation methods would be an inevitable necessity. As we know, measuring and evaluating the training process is one of the main components of education process. Given the developments outlined for educational systems in the age new educational technologies new and different criteria can be used to evaluate the performance of individuals in the educational institutions. In this regard, evaluation system evolutions in education systems can be described [2].

## **6. The effects of the integration of curriculum with ICT**

integration of curriculum with new technologies, will be an important step taken to achieve the goals of education and leads to following outcomes [13]:

### **6.1 the possibility to use an integrated curriculum:**

integrated curriculum, is a program that provides opportunities for integrated learning and studying. In an integrated curriculum, high and solid walls between different fields becomes shorter and more flexible. These types of programs, rather than induction of specific knowledge to students, desire to inspire students, to provide the necessary context for individual students' abilities to flourish and spread by themselves and are independent.

### **6.2 increases the importance and validity of the curriculum:**

Increasing knowledge in an era when the "explosion of knowledge" known, caused to be raised every time a new scientific theories that are more credit than prior knowledge. Therefore, the use of science and knowledge, which is done through information and communication technologies, makes the content of the curriculum in such a way that the degree of validity and significance of the benefit [3].

### **6.3 Increases students' interest:**

a Curriculum which has been directed based on the real needs of students, will increase their interest to learn more. New technologies, because of diversity and high volume of information, can cover the various needs of students and increase their interest in their curriculum [4].

### **6.4 provides knowledge with an appropriate structure:**

utilizing ICT for curriculum planning makes it possible to provide learners for information, concepts and fundamentals of learning content so that they access to scientific information. In other words, new technologies provides students for the rich content of knowledge and learning in the curriculum.

### **6.5 increases the usefulness of the curriculum:**

The effectiveness and application of the curriculum, in fact, specifies its usefulness. A curriculum which supply students with updated knowledge and skills essential to students' future career or assist them in training, is definitely the most useful curriculum.

### **6.6 increases the learning level:**

a Curriculum that is appropriate to the development of mental, physical or emotional growth of learners and takes into account the individual differences of students, enhances students' individual learning. With the help of new technologies

we are able to adjust curriculum content to the individual characteristics of learners and thereby increase their learning.

#### **6-7 Information and communication technologies, make curriculum more flexible:**

A Curriculum content should be prepared so that students path smoothly towards acquiring knowledge based on their favorite skills. A Curriculum to which different kinds of facilities are used in a way that increases the motivation and ability of the students, is very important. New technologies cause the curriculum to be of appropriate flexibility and power to motivate and attract the attention of all students to learn the content of education [13].

#### **7. The Implementation of ICT-based curriculum**

Curriculum implementation is of the critical stages of the curriculum planning. For all plans and programs, if they fail to be successfully implemented cannot make the desired changes. Curriculum implementation method is a function of curriculum planning system: the origin of the curriculum, participants in the process of curriculum, curriculum implementation environment and facilities provided for curriculum implementation [14].

Teachers involved in the implementation of the curriculum, are an important element of education. With attention to changes applied to The educational environment as a result of the use of ICT, changes in teachers and students duties and also in the design of the curriculum and integration of textbooks with information technology is quite likely. Therefore, teachers should be technically trained to prepare for the use of technology in the curriculum. ICT makes learning subjects richer and more interesting, enables students for observation, discussion and analysis and provides more opportunities for communication and cooperation and as a tool, provides more independency in scientific research to students and has a positive impact on teaching and learning of lessons. ICT can be used in different ways: the Internet and CDs as information resources, digital and video cameras to record events, the graphical tools for data analysis and animations and virtual environments for simulation and modeling [15].

#### **8. The ICT-based Evaluation of curriculum and academic achievement**

Learning process with adopting the technology, certainly considers the important element of evaluation. In such circumstances, curriculum performance or training program success are automatically determined through computer technology (Goldberg 2002). As a result, teachers produce and distribute electronic and computer tests and record and analyze their content using computer software. One of solutions to the integration of technology and software environment with evaluation, is providing a set of technology-based assignments [4].

Assignments can be prepared in both individual and group manner. Results can be stored as an Excel, Word or PowerPoint file or any other software or e-mailed. Evaluation can be done in three parts: input evaluation, completion and final or summative evaluation as online and in some cases, using training soft wares containing test or computer software environments and results are feed backed to students at the same time. ICT provides the opportunity to evaluate the students' work through a combined method instead of using pen and paper and in a student-specific manner [4]. One of evaluation types Based on information and communication technology includes: evaluation of educational learning (course learning). By using of information and communication technology, we are able to evaluate the learners both through formative evaluation and summative evaluation. In formative evaluation learning processes and developments will be determined, so that if the learner fails to acquire needed score in one of the earlier stages of learning, continuing education and training is not possible and he is forced to return to the earlier stage. Self-evaluations of students in ICT-based training systems, work as a viable alternative to the traditional evaluation. Students through self-evaluation of their learning and skills and the results determine their educational and learning path. If they pay no attention to their faults and shortcomings, it would not be possible for them to pass next stages. Self-evaluation has several important outcomes:

Feedbacks to the learner are real and without bias and help learners to find out the extent of their learning.

In this type of evaluation, learner anxiety can be minimized because the assessment results are completely private.

Self-evaluation and recognizing imperfections and faults, motivates individuals to reform and eliminate their faults [15].

#### **9. the assessment of information and communication technology skills**

Hip (2004) has specified three types of information and communication technologies that must be evaluated in the development programs of ICT in education systems as follows:

The first type are basic skills that aim at using computer software. The second type refers to a set of capabilities that students can develop during the deployment of software on their own.

The third type consists of advanced information and communication technology skills such as programming and system design that are essentially taught in professional schools [16].

#### **10. Attitudes toward the role of information technology in the curriculum**

Reformational point of view: This point of view considers technology not as a cultural issue but as an educational technology for education, as a tool for promoting development in curriculum and gradually revolutionizing teaching-learning methods. This point of view aim at modifying traditional education methods and mechanisms and focuses all of its attention to these processes. As Dr. Mehrmohammadi in the article entitled "Rethinking the reasons and concepts of education revolution in communication age" illustrates: this perception of information technology can be considered of performance type [2]. This concept refers to the fact that we should act in the context of improving methods and implementations. However, it is clear that submerging in questioning seas like "how performance works" is a neglect of the main mission that is not justified and leads not to an appropriate conclusion.

Evolutional point of view: This point of view is limited to the methods and means of education and curriculum-aimed. This view, tries to create an evolution in the field of education. From this point of view the goals of education are under constant evolution because of new and modern needs. New goals require different contents, educational experiences and materials. Curriculum planners should not look for different traditional goals and implementation resulting in the creation

of people that have no efficiency in contemporary societies. This approach is focused on the effectiveness and refers to the fact that the context of education programs and curriculum should follow these evolutions [17].

### 11. Barriers in front of the use of ICT

barriers which come from socio-political Policies and approaches toward ICT:

- Cultural barriers related to the use of computers in education systems.
- Economic barriers that make it difficult for providing needed infrastructure.
- Structural barriers that do not allow changing in the operation of IT [17].

### 12. Conclusion

Curriculum planning is a process leading to the production of the curriculum. The most important components of Curriculum are the objectives, content, implementation and evaluation. Applying ICT for curriculum planning provides for an integrated curriculum, increases the curriculum importance and content, increases student's interest in learning and provides students with the appropriate structure of knowledge, increases the usefulness of curriculum and student achievement and curriculum flexibility. In order to successfully implement ICT-based curricula, the central role of teachers and preparing them for the use of technologies should be considered. In the evaluation of academic achievement and ICT based curricula, educational goals and objectives and appropriate tools should be considered. It must be noted that the ICT should not only be used as a tool for implementation but also as a new learning environment for students that enhances the student's cognitive and questioning skills, and the ability to achieve information and analyzing it to find the right answers.

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