A Strategic Framework for Designing E-Learning System with Focus on University Entrepreneurship

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Abstract

One of the most important issues in the current e-learning systems, is lack of attention to university entrepreneurship topics. This article offers a strategic framework for designing e-learning system with focus on university entrepreneurship. The main goal is strategic conformity of e-learning and university entrepreneurship. In this regard, in addition to considering various aspects of e-learning system design, we will emphasize on cooperation, overlap, and matching three factors includes: government, industry and educational system to create an entrepreneur system. This framework is a strategic framework that without addressing the details, offers the overall road map for e-learning system design and this is one the advantages of this framework. Moreover, according to the second academic revolution and attention to issues of university entrepreneurship, the provided framework has special look at the production and transfer of knowledge and move toward university entrepreneurship.

Keywords: *e-learning, university entrepreneurship, designing e-learning system, strategic framework.*

1. Introduction

In the current era that is the era of knowledge and information, the need for education and learning new technologies is inevitable. Meanwhile, e-learning plays an important role in education of the public and remove existing restrictions on the traditional educational system. Also, the growing and expanding application of information and communication technologies, has contributed to the elimination of international borders and globalization. The field of education did not exclude so that the various universities in the world are looking for teachers and attract students from around the world and gaining international market in this area.

E-learning is subset and common denominator of IT and educational technologies. In e-learning, providing courses and learning is performed through electronic technologies. This type of learning is based on technologies such as Internet, intelligent learning systems, computer-based training systems and multimedia [1].

Entrepreneur university is a university that produce knowledge for society. Original pattern for entrepreneur university is creation and implementation of new and transferable knowledge. Moreover, entrepreneur university plays a key role in economic and social development [2].

In recent years the role of universities and educational systems, have been dramatic changes. In fact, universities in addition to education and research that is their main mission, will play another role that surely is the economic and social development. In other words in addition to education and research, entrepreneurship has been as the main component of the universities roles in recent years [3]. Meanwhile, the frameworks and many models have been presented in order to e-learning system design. Also, models and strategies have been presented in line with creating entrepreneur university. But in the field of e-learning, haven't performed so much activities for designing entrepreneur system. The main mission of the paper is to provide a strategic framework for designing e-learning system with a focus on entrepreneurship. In fact, the main goal is strategic integration and conformity of e-learning and entrepreneurship.

Thus, the first section of this paper, will review the works done in the field of e-learning and discusses about the frameworks and models presented in this context. It will also review existing models and strategies for creating entrepreneur university. The next section, explains the desired framework for designing entrepreneur e-learning system. And finally, the last section of this paper will pay attention to analysis the components of system.

2. Background Work to Pedagogical Framework Design

Obviously, for designing any system, moving toward a particular model or framework, lead to systematic work and will achieve better results. This also applies for designing e-learning systems. Using a help form specifically a defined framework, can determine e-learning system requirements, and make it easier to design [4]. In this regard many models and frameworks are presented, which we will review some of them.

2.1 A Framework for Web-Based Learning

Badrul khan (2001) presented a framework for designing web-based pedagogical system. He believes that with the growth of the Internet, the web has become the powerful, global, interactive, dynamic, and economic interface for distance education and learning. He found that numerous factors help to create a meaningful learning environment, and many of these factors are systemically interrelated and interdependent. He clustered these factors into eight dimensions: *institutional*, *management*, *technological*, *pedagogical*, *ethical*, *interface design*, *resource support*, and *evaluation*. Each dimension has several sub-dimensions. Each sub-dimension consists of items focused on a specific aspect of a Web-based learning environment [5].

2.2 The CSALT Networked Learning Model

The CSALT networked learning model (2001) is developed by Peter Goodyear and his colleagues at Lancaster University. The model is aimed particularly at tutors in higher education and includes a pedagogical framework as well as providing an overview of the broader issues surrounding networked learning. The pedagogical framework defined here introduces four levels of pedagogy: *philosophy*, *high-level pedagogy*, *strategy* and *tactics*. The upper two levels are considered as declarative or conceptual and the lower two levels are regarded as procedural or operational. The model suggests a distinction between the *tasks* designed by the tutor and the *activities* carried out by the learner. The model is also sensitive to organizational context. In addition, the model has strong focus on collaborative learning. This model demonstrates how learning outcomes can be associated with specific supported learner groups and their activities need to be designed with these outcomes in mind [6].

2.3 The European CANDLE Project

The CANDLE consortium are a European IST[1] funded group exploring collaborative and network distributed learning environments. Part of their deliverables has included a pedagogical framework that focuses upon the interactions that take place between tutors and learners. This framework is based on activity theory and rhetorical structure theory. The activity theory emphasizes on the essential unity of systems, users and their goals, and contexts, including the community in which an activity occurs. The interrelationships between all the elements of an activity (described as the structure of an activity) are key to describing complex systems of behavior such as pedagogy. Rhetorical structure theory is concerned with the choice of particular forms of expression to realize discursive goals. Six dimensions are refined from these two theories: *the purpose of an activity*, *the structure of an activity*, *the context of an activity*, *tools used in the activity*, *objects used in the activity*, and *roles for the participants in the activity* [6].

2.4 The UNITE Pedagogical Framework

UNITE[2] was a 30-month project, partially supported by the European Community under the information society technologies priority of the sixth Framework Programme for R&D. The main objective of the project was to provide innovative approaches to the education of young Europeans by integrating into the curricula of a number of schools in Europe-wide network different state-of-the-art technologies in e-Learning, also taking into consideration innovation in technology and pedagogy. The project was successfully completed in July 2008. The derived framework consists of five components [4]:

- Pedagogical framework context: This includes: an emphasis on the empowerment of learners through the increased interaction/communication that is supported by the system; an interest in the affordances of mobile devices inside and outside the classroom and an awareness of the need to understand traditional practices in order to challenge them.
- Pedagogical approaches: UNITE project intended to promote active learning in collaborative and individual contexts with an emphasis on student autonomy.
- Assessment techniques: Four types of assessment were considered: computer-based assessment, self-assessment, peer-assessment and tutor-assessment.
- Current pedagogical practices implemented in national curricula and national specifics.
- Teacher training: Teacher training was also included in the pedagogical framework design process in order to help teachers get started and support their ongoing work.

Each of the presented models and frameworks, focuses on a particular aspect of e-learning. In addition they have also many commonalities. Table 1 presents the summary of these frameworks and models.

Table 1: Summary of E-Learning Models and Frameworks

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[1] Information Society Technologies

[2] unified e-Learning environment for the school

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131

	Framework or Model	Year	Specifications	Components
1	Framework for Web-based Learning	2001	Considering all aspects of educational system design	Institutional, management, technological, pedagogical, ethical, interface design, resource support, and evaluation.
2	The European CANDLE project	2003	Based on activity theory and rhetorical structure theory	The purpose of an activity, the structure of an activity, the context of an activity, tools used in the activity, objects used in the activity, and roles for the participants in the activity.
3	The CSALT Networked Learning Model (V1.3a)	2004	Strong focus on collaborative learning - distinction between the *tasks* designed by the tutor and the *activities* carried out by the learner	Philosophy, high-level pedagogy, strategy, tactics and organizational context
4	The UNITE pedagogical framework	2009	Design, implement and validate a pedagogical framework for e- and m-learning in secondary schools	pedagogical framework context, pedagogical approaches, assessment techniques, Current pedagogical practices, teacher training

3. Entrepreneur University

As also mentioned earlier, entrepreneur university should be producer of knowledge for society. The main aspects in entrepreneurial pattern of university are creation and implementation of transferable new knowledge. All these contain topics related to R&D funding, inventorship and ownership of patents. Patenting alone is not the evidence of entrepreneurial behavior of the academia, but this is one of the first steps targeted to implement created new knowledge in real business [2].

Tonis Mets (2010) emphasizes on commercialization universities' research. He believes that the previous missions of universities (education and research), have been complemented by a third, economic and social development mission mentioned also as serving society, innovation, or in narrower meaning – technology transfer (TT) activity. The adoption of the third mission is referred to as the second academic revolution and active universities in that process are called entrepreneurial universities [2].

He believes that for creating entrepreneurial university, having more tight links and overlaps between government, industry, and academia as well as between three domains of academia (education, research, and entrepreneurship) is critical. In this context, he has offer the Business model of R&D commercialization for entrepreneurial university in the framework of University-Industry-Government.

The model shows that how university can create value from its own research [3].

Salehi Amiri et al. (2009) have offered five strategies for creating entrepreneur university: *entering the investigation field*, *expanding the activities of industry offices and universities*, *insurance services*, *offering services related to credit*, and *business activities*. They also believe that universities can create opportunities for technology and productivity for people, and guide them to use these opportunities effectively [7].

Clearly, the trends of higher education have experienced great changes in the world. Today, the prestigious universities in addition to providing proper educations and emphasis on effective researches, also have special attention to development and economic growth and university entrepreneurship is an inseparable part of the new educational systems. Figure 1 shows the main actors and domains of entrepreneurial university [3]. For design of entrepreneur e-learning system, should pay special attention to these actors and domains and this is one of the cases that is considered in the proposed framework.
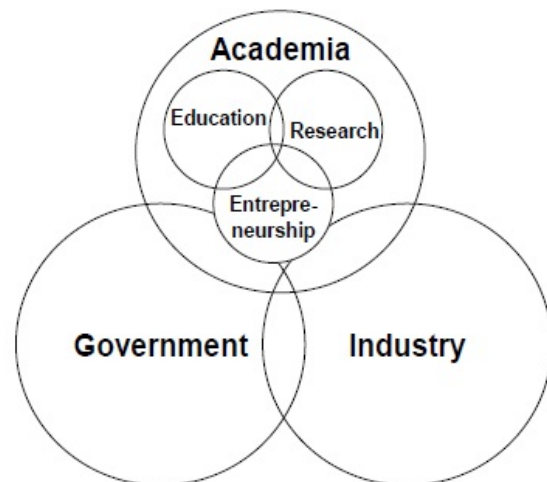

Figure 1: Main Actors and Domains of Entrepreneurial University [2]

Totally, according to the presented models and strategies in order to achievement of the entrepreneur university, and to create the entrepreneur university, the following components are as effective components:
• Investment in research and development
• Special attention to inventions and their commercialization
• Conducting Business
• Providing entrepreneurship trainings

4. Research Method

This research is development and operational in purpose and is descriptive and survey in performance. In fact, by reading documents (discussed models and frameworks in the field of e-learning and the entrepreneur university) as well as polls of experts and professionals in universities, the existing and effective components were extracted and analyzed and finally, the intended framework was designed. The statistical populations of this research are professors and Ph.D students in related areas of research.

5. Framework of Entrepreneur E-Learning System Design

As also mentioned previously, to design effective e-learning system, moving toward a specific framework, is determined the educational system requirements for designer and the system design work will be easier. Also the current frameworks haven't special attention to the issues of university entrepreneurship, and are emphasized on the main components of e-learning systems. According to the mentioned cases, we've tried to provide a strategic framework in order to entrepreneur e-learning system design. In fact the main goal is integrating e-learning and university entrepreneurship and strategic conformity of both of them. The purpose of the strategic framework is to designing overall road map for e-learning system without addressing the details.

Two main aspects are considered to design presented framework .The first one has been reviewed of the models, frameworks, strategies, and works done in the field of e-learning and entrepreneur university. As you previously observed in the second part of this paper, four important models and frameworks on e-learning, were reviewed. Each of these frameworks and models has looked at the e-learning from the special aspect, and haven't considered all the components. Also we discussed about the models and strategies of creating entrepreneur university. In the presented framework in this article, we have intended to combine these models and attention to all the important components in order to e-learning system design. The second aspect has been used of experts opinions in the field of e-learning and entrepreneurship. In this regard, we appointed a separate questionnaire to the professors, students and hard-working experts in the areas of e-learning and the university entrepreneurship. The questionnaires were related to effective components within e-learning system design and strategies for creation the entrepreneur educational system. In consider to these two aspects and achieved results, we offered the desired framework. Figure 2 shows the presented framework.

As can be seen in Figure 2, the presented framework consists of various components that we will explain each of them.

5.1 Rules and Practices of Higher Education

On the tip of the pyramid of presented framework, the relevant laws and rules and practices of higher education located in that country is placed. It means that before do anything you must have special attention to existing rules and methods. In fact, this component is as a mover for e-learning system design. In this

regard should be considered various cases. Issues such as: national curriculum and education, higher education policies, educational methods and techniques available in universities, technical infrastructure in the country, and current assessment techniques for students. It must be noted that, in addition to the mentioned cases and consider them in the design process, we should try to change some existing attitudes and also use modern educational methods and approaches [4].

5.2 Context

The other cases in the beginning stages of design should be considered, is attention to the existing and considered context. The context involved a wide range of concepts, some of which include: society cultural backgrounds, technology, motivational factors, Student's financial constraints, and the contexts used by the design team (e.g., interest in the use of mobile learning or special attention to the increasing interaction between students and professors). In fact, the context has determined effective cases on desired framework and is discussed as a basis for system development [4,8,9].

5.3 Mission and Goals

Before designing any educational system, we should determine the mission and goals of the Institute. For example, is the institution looking for money or it is looking to increase the level of access to education at any time and any place. This will affect directly on the educational system design.

5.4 Education, Research, Entrepreneurship

The most important part of the presented framework is the design of its main components namely education, research, and entrepreneurship. In traditional education systems, only the two components are considered: education and research. But now serving the community and generate and transfer knowledge and technology and entrepreneurship in a word as an inseparable part of the educational system is considered. Each these three components to a suitable form should be developed for the design of educational system. In addition to this issue, we also note that these three components linked together and have an interaction to each other and design and development of each of them will require attention to other components. Below we examine each of these three components:

5.4.1 Education

Education traditionally is considered as the most important part of any educational system. In presented framework, there are five major strategies for design of the education component: *learner education, teacher training, educational content, learner assessment, and entrepreneurship trainings.*
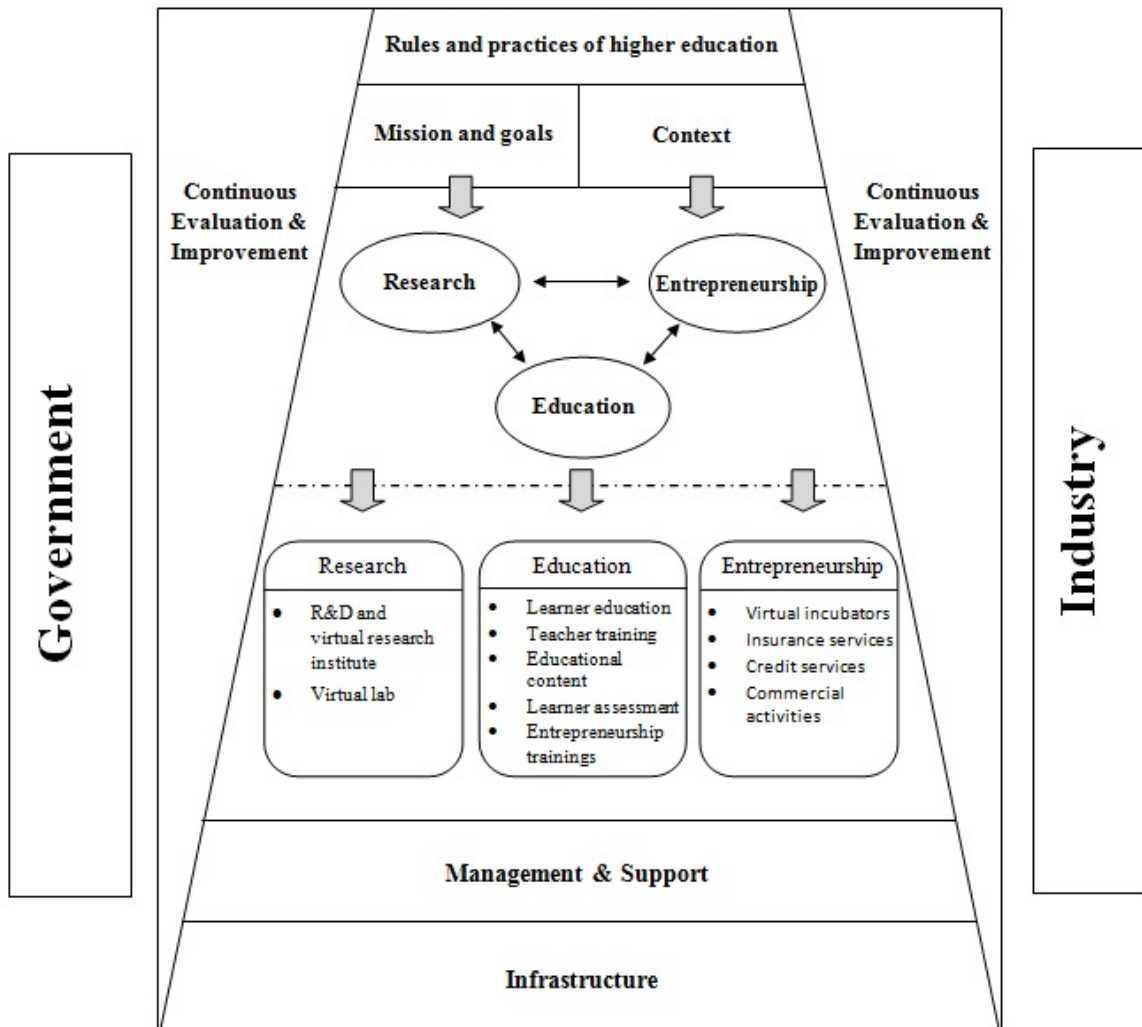
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133

Figure 2: Strategic Framework for Designing Entrepreneur E-Learning System

5.4.1.1 Learner Education

The purpose of learner education is select and design of educational approaches and methods. Various approaches are considered for learner education in electronic learning systems. Among them are: *blended learning*, *collaborative learning and active learning* [4]. The purpose of blended learning is combining traditional learning methods (e.g., classroom) and online learning. The term of collaborative learning refers to efforts and activities among a group of learners and professors. There are various approaches to collaborative learning that all emphasize to form the groups of students as a mutual cooperation to search and review issues and problems. The purpose of active learning is use of teaching methods that involve learners in the learning process [4]. E-Learning system designer according to the backgrounds and objectives of the Institute and also considering the rules and practices of higher education, should be selected the appropriate approach or even a combination of approaches.

5.4.1.2 Teacher Training

Teachers training refers to training of educational new skills for teachers, learning how to work with designed system, training of new skills in information technology, and face to face meetings and briefings with the teachers [4].

5.4.1.3 Educational Content

Educational content is a very important component, in any educational system especially in e-learning systems. The role of Teachers in e-learning isn't direct training the students but the teacher has the role of facilitator in the process of knowledge transfer and training. Therefore, in these systems, learners will engage in learning process, by taking advantages of educational content. In e-learning, educational content will be presented in electronic form and through the Web, CD, simulations, etc. Also with the help of social networks, wikis, video conferences, blogs, etc. the desired information can be shared and an interactive learning environment can be created. In this context, creating a separate part for educational content is very important and

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www.IJCSI.org

134

necessary [6,10]. Moreover, the importance of using appropriate Learning Content Management System (LCMS) would be felt too. Learning content management system is used for converting the information into collaborative learning content and content presentation in different ways for different educational purposes and various audiences.

5.4.1.4 Learner Assessment

Learner assessment is one of the cases that considered in the presented framework. Traditionally, assessment of learner progress is considered as an inseparable part of each educational system. In the presented framework, four type of assessment is considered: Computer-based assessment, self assessment, peer assessment, and Tutor assessment. In this framework the purpose of computer-based assessment is using of online exams in form of multiple choice questions or anatomical questions. We can held these exams during the semester and on several occasions and also use them at the end of the semester for final assessment of the learners. Self-assessment includes involving the learners in their assessment process. Thus the questions can be raised for them and the learners after answer to the questions, can assess the answers based on learning content and they will know the status of their course. Peer assessment is very similar to the self-assessment. Using peer assessment, the students can participate in the assessment process and actually help each other. By the use of forums, they will express their views about other learners works. Tutor assessment is expressing the traditional assessment form with new technologies. The Tutors can give research projects or practical exercises to learners and eventually send feedback to them by e-mail [4,11].

5.4.1.5 Entrepreneurship Trainings

In the presented framework, entrepreneurship trainings will be presented during the educational course. In addition, entrepreneurship short-term and professional courses and entrepreneurship workshops, should be held. In these courses, learners are familiar with the basic concepts of entrepreneurship, the importance of its role in the creation of small and medium companies and economic development, and learning how to create jobs outside government. These trainings will be presented by electronic platforms and especially with the help of the Internet [7].

5.4.2 Research

Particular attention to research is one of the most important trends in higher education in the world. Today, various Universities support professors and students in their research activities and provide appropriate infrastructure [7].The main foundation of entrepreneurship is production and transmission of knowledge, and this will be possible with special attention to research and investment in this sector. In the presented framework two major strategies are considered for achieving the goals of the research: *investment in research and development (R&D) and creating virtual research institutes, creating virtual labs.*

5.4.2.1 Research and Development and Creating Virtual Research Institutes

As mentioned earlier, research is one of the most important trends in higher education in the world. Traditionally, Research is one of the main pillars of education and university systems. In addition, it can be named as executable processes in educational environment for the growth of entrepreneurship. In an entrepreneur educational system, research plays a vital role [2,7]. By creating virtual research institutes or virtual research environment, we can focused on research activities and give them direction. Virtual research environment, is a Web-based environment in which various researchers from around the world are working together on issues related to their research topics [12]. In the presented framework, the purpose is creating a virtual research environment as a virtual research institute. Among these, we should pay special attention to applied sciences. In addition, we can support the teachers and learners research activities. It must be noted that all the mentioned cases should be done through the Internet and the Web. Internet provides an interactive environment to facilitate interaction and collaboration between teachers and learners. In other words, different teachers and students and learners around the world can exchange knowledge with each other. Thus, in the context of the Internet we can provide a favorable environment for research and development and exchange of knowledge and information and this is the main goal of the presented framework. Obviously, for achieving the research goals, moving toward research-oriented education, will be another effective strategy.

5.4.2.2 Virtual Lab

As we know, many courses in engineering and basic sciences, need to laboratory environment to complete the students learning. Also researchers can test and research on various research topics in lab environments. In fact, using lab is common point between education and research. It is not possible to use physical lab in e-learning environments. One way to overcome this problem is using virtual labs. In fact, the virtual lab is a computer software that simulates experimental experiences in various sciences and make it possible for learners to engage in simulated tests. This lab can be a web-based program or an independent program in the learners personal computer [13]. For designing e-learning system, design and development of virtual laboratories is very important and the presented framework has special attention to this subject.

5.4.3 Entrepreneurship

Entrepreneur educational system must produce knowledge and technology for society. In this regard, in addition to investment in research, it's also essential to plan appropriate mechanisms for entrepreneurship. In the provided framework there is a special attention to entrepreneurship issues. In this regard there are four major strategies: *creation of virtual incubators and technology transfer, providing insurance services to entrepreneurs, providing credit services, and commercial activities.*

5.4.3.1 Virtual Incubators and Technology Transfer

The university incubator is an environment that will be created in order to support of entrepreneurship. In fact, the main purpose is development of new institutions and companies based on research and technology and relying on the university facilities. Connecting research, technology, and capital will be the main role of university. Moreover, it acts as the driving force for flowering entrepreneurship talents, new companies development based on technology, and accelerate technology commercialization. In fact, appropriate capacities for research and industry connection will be created [14,15]. In this regard, can be brought together the entrepreneurs, professors, university graduates, students etc. , and provide them appropriate software, hardware, workshop, and educational facilities and equipments to allow them to test and implement their ideas [7].It is not possible to create a physical location for the growth centers in virtual and electronic learning environments. Therefore, a virtual environment should be designed for it. This environment is designed in the context of the Internet and World Wide Web, and the entrepreneurs, teachers and learners can exchange the information with each other and various facilities will provide for them in form of virtual. Virtual lab is one of these facilities. The presented Framework has special attention to creation of virtual incubators. As a result, one of the main components of the presented framework is designing appropriate virtual environment for incubators. Also various Internet technologies such as e-mail, video conference, and virtual groups can help to establish the possibility of the information exchange and effective collaboration among entrepreneurs, teachers and students. In addition, the process of transferring new technology to the market will be facilitated by creation the virtual enterprises based on research and technology and cooperation with industrial companies. We should also pay special attention to patents and the results of researches and intellectual property. Alongside the patents, should be turned to creation of Spin-off companies. The term Spin-off, refers to businesses those are under a certain brand but in terms of production strategy and business management are completely independent and just work for the company under specific brand [2]. It must be noted that these Spin-off companies, will be virtual with distributed resources.

5.4.3.2 Insurance Services

Obviously, in order to design and implement an entrepreneur system, the necessity of entrepreneurs adequate support is inevitable. In addition to spiritual supports, material supports must be considered for entrepreneurs. In this context, the special entrepreneurship insurances must be considered for entrepreneurs [7].

5.4.3.3 Credit Services

In order to meet financial needs and to support entrepreneurship, can be engaged in credit and financial activities. Some of the effective strategies in this area are creating funding agency, private banks, and providing financial facilities [7]. It must be noted that the goals and mission of the institution are effective in this case. For example, if the institution is as a state institute and free from financial concerns, and its main purpose is to promote access to education at any time and any place, using of credit strategies will be less important.

5.4.3.4 Commercial Activities

Educational systems, can have an important contribution in the commercial activities. In fact, considering to market needs and participation in national and international projects, can help significantly to promote university entrepreneurship and national development and progress. Presently, there are many undiscovered and disabled markets in national and international levels that we can use them appropriately. Today, information and communication technology have become to one of the most important and the most efficient sciences in developing human societies. Also learners have unique interest to this side. Thus, with providing an appropriate context for growth of potential talents in these areas, and enough support of learners, can be involved in further growth of this industry and this will ultimately led to the development of entrepreneurship in this sector [7]. This is one of the goals of presented framework.

5.5 Management & Support

Appropriate management and support of e-learning process, will have a positive impact on results. The purpose of management and support is to design the management processes and to create the support team. Also it is necessary to supply or design the appropriate learning management system. Learning Management System is a software package that is responsible for management of teaching and learning. In fact, it is a strategic solution for planning, presentation and management of all educational events. The learning management system, focus on managing the learners and tracking the progress of them in educational activities. Learning Management System is a platform to achieve the set of distributed resources and educational activities. This tool will automate the educational planning management. According to the mentioned definition, the main tasks of the learning management system are: tasks related to registration and learner's information, tasks related to course management, tasks related to tracking the progress of learners, and tasks related to reports. Another task in this layer is design and implementation of a digital reference library, that it can help us to access to the online articles, e-books, etc., through the internet.

5.6 Infrastructure

One of the basic conditions for designing any system, is providing the suitable infrastructure. In the presented framework, the infrastructures have been also considered as a substructure of the system. In the presented framework, the purpose of infrastructures is to create a suitable infrastructure for communicational networks in order to easy communication between learners and the system. In this regard, providing access to broadband internet is essential. Clearly, government and

IJCSI International Journal of Computer Science Issues, Vol. 9, Issue 1, No 1, January 2012
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www.IJCSI.org

136

industry are responsible for this. These two sectors together with effective collaboration, will provide a suitable infrastructure of communicational networks.

5.7 Continuous Evaluation & Improvement

In provided framework, has been special attention to continuous evaluation and improvement, so that is involved in all stages of e-learning system design. The main goal is to improve the system quality. In all stages of system design, and even after delivery and run, it is necessary to have adequate attention to the system evaluation and its improvement. This is very important and we can design a separate system for this purpose. In this regard, the various indicators of different aspects of the system must be considered. Performance and quality indicators, educational, research, entrepreneurship, networking, software, and learners satisfaction, are such important cases. As we mentioned, continuous evaluation & improvement is one of the most important parts of the presented framework, and we should design a separate system for it.

5.8 Government and Industry

To create the entrepreneur educational system, cooperation, overlap, matching and connecting three factors includes government, educational system, and industry, is necessary [2]. So the government and industry are two main wings in the presented framework that play a key role in all stages of system design and specially after performing the system. In fact, the government by providing and performing the appropriate laws, support, monitoring and evaluation of all matters, adoption of the appropriate policies to facilitate the transfer of knowledge and technology, as well as financial support, will support the university entrepreneurship. [2,7]. Also the industry with appropriate investment, the use of experiences, and using his ability to create different and diverse markets, can provide the conditions to establish the small and medium enterprises with high productivity [7]. Obviously, achieving the objectives of entrepreneurship will be possible with the effective collaboration of these three factors and this is one of the main goals of the presented framework.

6. Components Analysis of the Proposed Framework

As mentioned earlier, in order to design the presented framework, first we extracted related components by study and review the models, frameworks, strategies and work done in the areas of e-learning and university entrepreneurship and also by experts and technical specialists assistance. After analysis of the significant dimensions by researchers and experts, the most important and the most applied components were identified. Then some questionnaires were provided to identify the rate of effect and operational level of these components. Factors and effective components, the number of respondents, the average scores, and reliability of research questions, are shown respectively in table 2.

As can be seen in Table 2, to determine the reliability of the questionnaires, the Cronbach's alpha coefficient is used.

After the analysis of the components and designing the desired framework, in order to validate the proposed framework, a questionnaire was prepared and the opinion of 30 experts, were collected. The statistical results obtained from the data collected, represents that totally 86.3 percent of the experts, have diagnosed that the proposed framework is very good and well, and hence, the above framework has been approved by experts.

Table 2: Effective Component of the Presented Framework

IJCSI International Journal of Computer Science Issues, Vol. 9, Issue 1, No 1, January 2012
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www.IJCSI.org

137

Effective components	Number of respondents	Average scores	Standard deviation	Cronbach's Alpha	Effective components	Number of respondents	Average scores	Standard deviation	Cronbach's Alpha
Rules and practices of higher education				0.928	**Contexts**				0.876
Higher education policies and national curriculum and education	85	3.45	1.19		Cultural background	85	3.50	1.38	
Technical infrastructure in the country	85	3.30	1.08		Motivational factors	85	3.57	0.96	
Current assessment techniques for students	85	3.48	1.15		Student's financial constraints	85	3.48	1.26	
Mission and goals				0.830	**Research**				0.878
Institute mission	85	3.37	1.02		R&D and Virtual research environment	85	3.80	1.009	
Institute goals	85	3.42	1.03		Virtual lab	85	3.67	1.01	
Education				0.899	**Entrepreneurship**				0.877
Learner education	85	3.44	1.36		Virtual incubators	85	3.95	1.09	
Educational content	85	3.94	1.12		Insurance services	85	3.87	1.07	
Learner assessment	85	3.57	1.20		Credit services	85	3.78	1.10	
Entrepreneurship trainings	85	3.87	1.16		Commercial activities	85	3.98	1.06	
Management & support				0.804	**Infrastructure**				0.813
Development of a learning management system	85	3.63	0.79		communication networks	85	3.47	0.97	
Design and implementation of digital reference library	85	3.43	0.80		information infrastructure	85	3.22	1.14	
Continuous evaluation & improvement				0.820	**Government and Industry**				0.891
Development of an operational evaluation system	85	3.60	0.86		Support for SMEs	85	3.45	1.05	
Development of evaluation indicators	85	3.35	0.85		Appropriate investment	85	3.42	1.004	

7. Conclusions

Advances in information and communication technology, had great impacts on various sectors including education, so that in the recent two decades, e-learning and virtual education as a modern educational system and away from the limitations of traditional systems, is well-known among the various social groups. One of the significant issues in current e-learning systems is lack of attention to university entrepreneurship issues. In this article we offered a strategic framework in order to design

IJCSI International Journal of Computer Science Issues, Vol. 9, Issue 1, No 1, January 2012
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138

the entrepreneur e-learning system. The main goal has been strategic conformity of e-learning and university entrepreneurship. In this regard, we emphasized on various aspects of e-learning system design. The main axis of this framework was design of three core components of the educational system, namely education, research, and entrepreneurship. In addition, we learn that the government and industry are as two major wings in design of entrepreneur e-learning system. This framework has a strategic vision and will provide the overall road map for designers, managers and policymakers of e-learning systems and this is one the advantages of this framework. In addition, the presented framework has special attention to production and transfer of knowledge and technology and commercialization of research activities. In summary, achievements of this research are:

- Integrity of entrepreneurship and e-learning
- Design a strategic framework for e-learning
- Provide a new framework for entrepreneur e-learning system design

In the future, development of the presented framework and attention to the details of the components will be considered.

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