From Khan Octagon E-Learning to the Orbital E-Education, A New E-Education Framework for Iraqi Higher Education (IHE)

Amer Saleem Elameer  
School of Distance Education,  
Universiti Sains Malaysia, Penang, Malaysia  
amerelameer@yahoo.com

Rozhan M. Idrus  
School of Distance Education,  
Universiti Sains Malaysia, Penang, Malaysia  
rozhan@usm.my

Abstract - The new world in 2011 is completely another world from ten years ago and continues to change. Traditional e-learning was a revolution in the world of educational technologies. The international case studies of Iraq by UN organizations state that “New methodologies in teaching, particularly methods that promote creativity and practical experience are urgently needed”. E-education has a different definition which includes e-learning and e-teaching with different managerial and strategic measures required to support the education process. In accordance to the results we obtain from a survey, after analyzing the data and studying the Iraqi higher education status, we find that IHE need a special e-education framework not e-learning only. For that purpose, an orbital e-education framework is designed which covers all the education dimensions in IHE. Iraqi Academics welcome the orbital e-education framework and would gladly encourage its adoption and application. Three out of four (72 %) agree that it covers most of the e-learning issues, and are happy to see attention been given to areas not previously dealt with in earlier frameworks: stability, sustainability, modularity, and standard ability of learning. It promises to be an exemplary model of how technology and academia can work hand-in-hand.

Keywords - e-education, e-learning, Iraqi higher education(IHE), Khan Framework, Orbital E-Education Framework

I. INTRODUCTION

E-Education is the combination of eteaching and e-learning together with different managerial and strategic measures required to support teaching and learning in an internet environment. It includes all the Iraqi education dimensions at local, national, and international level of education. Designing an e-education system for IHE which will enhance education (TEE) opportunities in IHE universities is the main objective of this e-education research.

Education in the future will be delivered by different methods, and technology will transform and dictate the format. The power and effectiveness of these new tools and methods are always associated with electronic learning methods, pedagogy, technology, interface designs, institution, management, equity and ethics. The big and most important challenge is how we can acquire and disseminate the knowledge via all the rapid useful advancement in technology. We have to find the best approach to achieve that in a very simple way that let it be useful and can be adopted by others in their e-learning process designs.[1]
To change the situation in IHE, we need to build a complete education system with the student or the learner at its center.[2-4] Researches and all the up-to-date educational theories have proven that and encourage to design learning environments centralizing the student or learner.

The educational elements in Iraq which must be considered in any framework design and playing a big role in any learning process are: 1- Pedagogy, 2- Ethics, 3- Evaluation, 4- Technology, 5- Interface Design, 6- Institution, 7- Management, 8- Wireless Technologies, 9- Time, 10- Content Control, 11- Human Resources Capacity Building, 12- Evaluation, 13- Learner. (Figure.1).

Fig. 1 All E-Education Dimensions and Elements

The current Iraqi education framework which is a souvenir of the country’s uprising in mid of the seventieth of the last century is progressively out of touch, especially after the war's damages and emerging new needs of society and the learners it serves.

The old traditional model of education, where a teacher transfers knowledge to learners through a lecture, is no longer suitable given the context of today’s progressively dynamic society, and it is wasting time, money and human efforts. A Professor from Leeds Metropolitan University in the UK called Tim Birtwhistle said: "Today's learners are completely different from previous learners. They know how to do multitasking and their learning skills are different from those of their predecessor”. Professor François Fourcade added “They can type faster than I can speak," and it is the truth for the researcher..

e-Education framework is an instructionally designed orbital framework that will be used in IHE to digitize the educational activities and comprehensively covers all the education dimensions in IHE.

Sustainable e-education can be clarified as e-learning that is prescriptive in meeting current and future requirements. The development of the computer networks with its friendly application, the internet, multimedia, on-line instruction, VSAT and other high end ICT peripherals have enhanced and enriched the usage of these technologies in education. The huge, rapid progressions have allowed teachers, lecturers and researchers worldwide to discover the power and capability of these technologies to meet the demand of the new generation of teaching and learning methods. [5].

III. METHODOLOGY USED FOR ORBIT

Case studies researches are mostly, using data which is descriptive in nature. Based on the nature of this research that was conducted by both technologist and educationalist, the both methods were employed and a general ADDIE instructional design research framework was utilized. This case-study research is the result of a thorough, in-depth investigation into the situation found in IHE today. It is also a self-explanatory research using systematic methodology, data collection and analysis, in order to reach targeted results. It also draws from results of previous studies and the combined effort of all the research work have resulted in a comprehensive e-education system comprising a unique e-education framework

The ADDIE model (Analysis, Design, Development, Implementation, and Evaluation) was utilized in the study. Our framework is a result coming from:

1- Searching for the best e-education and elearning frameworks in the previous studies and literatures.
2- An exploratory research of state of elearning and e-education and their future perspectives in our research context about Iraqi higher education.

specially formulated questionnaire was designed and distributed among a group of universities academics to investigate the direction towards e-education elements, management & institutional problems.

These are the basic elements of the proposed e-education framework that could face the implementation of e-education projects in IHE, the benefits that will be gained by universities and higher education sector, and the technological problems. Attention was accorded to the Malaysian national elearning strategy which proved to be a successful strategy among other countries from middle-east or Islamic developing countries.

IV. THE ORBIT FRAMEWORK DESIGN

We divide the e-education elements into three main trajectories and they are: 1- Technological, 2- Organizational, 3- Educational, and each trajectory has its own elements related to its functionality and characterize by its main function.

After studying each element and its direct effect on the student in the e-learning process, we found that the framework is very similar to the mechanics of orbital motion of the electrons that are moving in circular orbits at constant speed around a nucleus. When we finally understand electron movement, we discover that each electron actually moves in a "wave pattern" where bodies ( learning elements ) with a slight difference in mass orbiting around a common center ( student as the core of the learning process ). Hence, we reshape the framework to be orbit shape with the three trajectories and called it Orbital also. Consequently, we call the design orbital e-education framework.

We believe that learning is a complete systematic operation because it’s dealing with human beings, regardless of race or ethnicity. Any systematic operation needs to be stable from the beginning to its final goal, and learning must be a stable operation in every step of its way.

In all the investigated models, we never found any framework dealing with this element that could affect and destroy all the learning process, because most of the designers’ backgrounds are stable and consistent.

In Iraq, it is a completely different case, and nothing is stable at all. A small example, in Iraqi higher education undergraduate studies, they invent the third trial exams for those who fail to reach the exam’s rooms in the fixed time and date.

This is in the face to face traditional learning process, and more stability is needed in an electronic learning process. The procedure of making valid connections among multi learning dimensions is at the core of elearning. From that stand point, stability becomes a very important element if we are designing or trying to design e-learning or education activities in unstable countries where everything is not stable or going to be stable in the near future. We also believe that adopting such a stable framework could push strongly towards stability of the learning process.

We believe that technology is the base and the foundation for our framework. Therefore, we give this trajectory the main position inside the design and build all other elements according to its up-to-date new technological breakthrough after the ICT revolution which changes all old standards and concepts. These trajectory's elements are:

4.1-Technological Trajectory:

The e-learning elements here must be scalable and stable and the elements are: Technology, wireless technology, interface design, and human technological resources capacity building. As shown in Figure.2.

One computer to one learner is the best, but it is a very difficult formula to reach in any learning institution, especially with the same specifications. Internet speed, or
bandwidth, is a crucial issue for performance in large education networks.

Studies have shown that the introduction of high-access computing can change the nature of instruction (Fisher et al., 1996), and the strategies to learn with technology may not be the same ones as required for standard assessments of learning (Means & Olson, 1995).

“E-learning should ensure sufficient bandwidth is available to support the type of online learning applications being used and to ensure learners have opportunities for face to face experiences in conjunction with their e-learning”.

ICT technology is the base for our framework and it is the main trajectory that we build our system on and without it there is no e-education. In the Technological trajectory we have four dimensions and they are:

4.1.1-Technology:
The technological dimension of e-learning examines issues of technological infrastructure in e-learning environment. These include infrastructure planning, hardware and software. According to that plan, the changes in Iraqi education system will be complete 180 degree turn around and everything will be up-to-date and new, taking into consideration that most emerging technologies do not widely have adopted standards (hardware or software).[6]

4.1.2-Human Resources Capacity Building
MacDonald et al. (2001) stated that if people did not have positive attitude, knowledge and skills of ICT, the e-learning program would fail. Knowledge and skills have a direct impact on using e-learning. Since most of Iraqi universities suffer from the lack of required skills, and we think Iraq needs to increase the trust in ICT which we think will reshape the education system completely.[7]

4.1.3-Interface Design:
The interface design refers to the overall look and feel of e-learning programs. The interface design dimension encompasses page and site design, content design, navigation, accessibility, and usability testing (). It is a very important element because it can lead to success or failure of any framework.

4.1.4-Wireless Technology:
The growing development and application of wireless Information and Communication Technology (WICT) opens new windows and opportunities for educational improvement to redesign the organizational and educational settings and shapes to increase polychronic process, i.e., the possibility to deal with several tasks simultaneously. There is also a social context that includes different cultural formation, situation and mood, degrees of proximity and mutual recognition among people, etiquette and other elements that define what is or is not allowed in certain situations.

![Fig. 2 The Technological Domain in the Orbit E-Education Framework with its main Technological dimensions and sub-dimensions components](image)

4.2. Organizational Trajectory
The e-learning elements here must be standardized according to the progressive university standardization. The elements are: Institutional, Management, Resources, and Time. As shown in Figure.3.

Standardization is an important and critical success factor for technology enhanced learning research and application, as it enables technical and semantic interoperability between E-Learning content and infrastructure.

Also the organizational standard must be stable, and not to be influenced by the changing winds of society if it is to become better. The Stability of the university is one
of its basic academics characteristics and we can observe very clearly how the rules and regulations of big name universities like Cambridge, Oxford, UCL, etc., remain the same for many long years and this a big indication of organizational stability for these universities.

In Iraq, the situation is completely different and nothing is stable at all. The instability comes from changing of Iraqi regime and missing universities stability as a result of the country transforming to democracy.

In the organizational trajectory we have four dimensions and they are:

4.2.1-Institution:
The institutional dimension is concerned with issues of administrative affairs, academic affairs, and student services related to e-learning.

4.2.2-Resources:
The resource support dimension of e-learning examines the online support and resources required to foster meaningful learning.

4.2.3-Management:
The management of e-learning refers to the maintenance of the learning environment and distribution of information and there is no lack of ongoing support from management. Perform meaningful reviews to ensure an environment of continuous process improvement, etc..

4.2.4-Time:
Time is considered a very important dimension in any innovative implementation of e-learning framework, taking into consideration the difference between student capability and individual effort. We can keep time open without limit or end time.

Availability of time must be adequate, if not, compensate time for users to become educated and skilled in how to use an innovation. This condition refers not only to the organization’s willingness to provide time (such as paid time or release time), but the users’ willingness to devote learning time to use the innovation...[8].

4.3. Educational Trajectory:
The e-learning elements here must be modularized according to Iraqi students’ characteristics, and the elements are:

Pedagogical, Evaluation, Ethical and the Content control.( As shown in Figure.4).

In IT and in general, the definition for Modularity is the property of the software (computer programs) that measures the extent to which programs or software have been composed as separate parts called modules.

Modularity in learning is the same concept and it is defined as the property of allowing encapsulating, exposing and separately reusing parts of a learning resource.

The framework has been designed to modularize the digital learning content, and it has been addressed as a part of the concept of learning objects.

The framework presented in this research can be used as the basis for a good foundation for modularization of VLE. By modularizing the VLE, new functional components can be easily added in a way that makes them work as an integrated part of the overall learning environment..

In the Educational trajectory we have four dimensions. The truth is Khan 2009 framework has covered three dimensions completely. We cannot find any missing element in his work in the field of pedagogical, ethical and evaluation as educational dimensions, but the researchers believe that content control should be added as a new dimension to the educational trajectory.

With any technology, the effects of teaching and learning depend on integration with curriculum and instruction.

4.3.1-Pedagogical:
The pedagogical dimension of e-learning refers to teaching and learning. This dimension addresses issues concerning content analysis, audience analysis, goal analysis, media analysis, design approach, organization, and learning strategies.
4.3.2-Ethical:
The ethical considerations of e-learning relate to social and political influence, cultural diversity, bias, geographical diversity, learner diversity, digital divide, etiquette, and legal issues.

4.3.3-Evaluation:
The evaluation of e-learning includes both the assessment of learners and the evaluation of the instruction and learning environment.

4.3.4-Content Control:
The central ideology of learning theories is that learning occurs inside a person. Learning theories are concerned with the actual process of learning, not with the value of what is being learned.

In general, content must be cooperative and collaborative. Each learner has a learning path that caters for learner’s learning needs and interests in a productive manner. Students learn in differing ways and the manner in which information is presented to them affects their ability to learn. Students need to utilize the different learning styles interchangeably during the learning process in order for them to have an effective learning experience.

“Technology-enhanced student-centered learning environments organize interrelated learning themes into meaningful contexts”.

In order to achieve that (Moodle) can help us and it is developed to facilitate collaborative creation of content, organization, control and to manage the publication of documents in a centralized learner learning environment.

As a final result, the e-Learning context, advancement in network technologies, e-Learning technologies, and content development has facilitated multiple content presentations, personalization and ubiquitous learning. [9].

V. ADVANTAGES OF ORBITAL EEDUCATION FRAMEWORK
The instructionally designed orbital e-Education framework that will be used in IHE to digitize education activities and comprehensively covers all the education dimensions in IHE is presented in Figure. 5 with all the dimensions and sub-dimensions details. It has the following advantages:

1- The first framework that pays great attention to capacity building and ensuring well training for productive application.
2- The first framework to study time. In the new world, time is money and in education we cannot keep it open freely without any control.
3- The first framework to study the upto-date wireless technologies and their great benefits to the learning process. It is also the first to identify technology as a factor that can influence learning process or even end it.
4- The first framework to take modularization into consideration.
5- The framework could be useful and applied in any e-learning process, because we have taken into consideration the factors of M-learning, B-Learning and U-learning.
6- The first framework to take scalability into consideration.
7- The first framework to take standardization into consideration.
8- The first framework to take stability into consideration.

VI. CONCLUSION
Many institutions have adopted the Khan framework by renaming certain dimensions while utilizing the eight dimensions in the octagon.[10]

In essence, the design ideas were employed under different names. In this paper, we focus on the Iraqi education environmental factors, such as emerging technologies, including wireless and the need for critical human resources across the board. The learner and content are given prominence as we move towards learner centeredness and the numerous learning resources available in current digital era. Education and learning environments will continue to evolve as will models and frameworks to cater for the constant changes in the learning environment. Our new orbital e-education framework is a testament to the considerations of functionality, scalability and modularity in e-learning framework as we strive for a stable electronic based educational setting.

REFERENCES
Fig. 5 The Complete Orbit E-Education Framework