Educational and Technological Standards of Educational Software Based on Internet

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Abstract: *This research aims This research aimed to provide good standards for the design and development of educational software based on the Internet, which could benefit the organizers of the design and development of educational software, from the point of view of educational technology lecturers, and educational software designers at Al-Aqsa University Gaza-Palestine. The researcher used the descriptive analytical method during the application of research on a sample of specialized lecturers in education technology. The researchers designed the study tool in the form of a questionnaire. Its validity and reliability has been verified. Researchers have achieved a list of educational and technological standards of educational software based on internet.*
Keywords: *Educational Technology, Educational Software, Internet.*

I. Introduction

The Present Era Witnesses a great leap in Technological innovations related to internet and educational software in educational process. These innovations can improve both public and private education jointly with the rest of educational systems. To happen, this will result in learning process to take place inside and outside school classes and during an open time periods.

In education field, new method of internet communication has been to allow multiple ways regarding methods of teaching and learning for each the teacher and the student. Since the educational software based on the Internet expands the potentials of information, experience and skills exchange outside the educational process, this will give students a huge chance in activating his role in acquiring new skills addition to enable them become self-learners. This chance will be reflected through the development of student's intellectual and creativity in matter of research unlike the traditional methods where the student plays an negative role as he will only act as a receiver for skills and experiences.(Izzo Afaneh and others ,2005, p.138. 141) .

First : Electronic learning-based on the Internet:

The researchers define the electronic learning as "Tools, techniques and software on the global Web network, which enable the teacher to circulate the lessons and the objectives, setting up duties and tasks of study, and communicate with his students through multiple techniques, also, it enables the student to read educational content and solving tasks, send tasks and participate in discussion forums and dialogue, and revise his steps in the lessons and obtained grades.

These tools are divided into two parts (Yaser Radwan, 2008):

Asynchronous tools such as: Educational lessons surf, Instant communication between the student and the teacher, files and documents transfer and correspondence via e-mail.

Synchronous such as: text and audio conversation between students themselves and between their teachers.

The most important Electronic learning technologies based on the Internet that led to rapid spread, and ease of handling as offered by: (Ahmed Al-Mubarak ,2005); (Mohammed Khamis ,2003 p.243), are the following:

- Web (World Wide Web).
- Educational software based on the Web.
- Virtual classroom.
- Newsgroups.
- Email.
- Chat.
- Mailing List in education
- Remote access service.
- Research.
  - Access to databases and indexes libraries.
  - Electronic books and references.
  - Academic research and working papers

1.1. Justifications for Electronic learning via the Web:

The Electronic learning, at the moment, is considered the best way to familiarize the learner to continuous learning, which helps him to educate himself lifelong. This will enable him, also, to educate himself and to enrich his information. The flexibility of time and ease of use suit the psychological characteristics of adult learners. The justifications for Web use in electronic learning, which is growing in the world, appears through the points made by the following:(Majd al-Hashemi ,2001 p.172); (Mudar Zahran , Omar Zahran ,2003, p.p 216-217); (Abd Hamayel , Majid Hamayel ,2004); (Mohammed Al-Heila , Tawfiq Mera'i ,2004, p.p.421-422):

1. Multimedia recruitment (voice, image, text, color) in the education process, which helps the learner to interact with them and employ many of senses and refine intellectual skills.
2. Electronic learning via the Web is less expensive than traditional education and this is linked to education economics.
3. Electronic learning via the Web for appropriate approach for adult education and staff training.
4. Improves the level of education and the development of intellectual capacity.
5. Strong management education, training and information exchange, and the integration of education and training systems.
6. Solution of information and educational material inflation problems.
7. Flexibility in time and place, transfer of educational services to remote areas, and access to the largest number of followers in different places.
8. Support learning style based on discovery, development and creative skills among students and to abandon the lecture style, and changing systemize and traditional teaching methods in order to find a class full of activity.
9. The use of interactive technologies and direct contact with learners scattered geographically.
10. Re-use courses in different forms, and development of written materials and curriculum.
11. Take advantage of electronic libraries and the speed to information access.
12. Software development enhancement compared with video systems and CD-ROM.
13. Arabic check module.
14. The progress of Arab language scientifically on the Web.

Second : Online Education Programs:
2.1. Online Educational Programs Properties:

Online education programs have a set of properties that are collected from its components as pages, Hyper integrated multimedia, effectiveness, interactivity, organization, diversity, and flexibility to browse and navigation. These properties are as follows: (Esmail Hassounah, 2008):

1. Integration: The integration of web-based education elements to achieve the desired goals of education and learning.
2. Interactivity: It means the availability of user control in the style of presentation and assistance using various interactive, depending on the user's ability and desire to learn.
3. Merging: The integration of web-based elements and educational objects in a particular sequence of a non-linear manner according to the theories of learning.
4. Individuality: Learner is the core of the educational process and not the teacher.
5. Hypermedia: The educational programs of educational objects made up (audio, written text, images or animations, video, hyperlinks).
6. Accessibility/Navigation : When deploying a web-based educational program to the Internet it will be available anytime and anywhere,
7. Globality: web educational program allows students to deal with the biggest offered of science article related to education program level.
8. Engagement: All parties of educational process participate in web learning environment, which enriches the educational situation.
9. Accessibility: Online educational programs are subject to adjust, delete and adding in order to meet the educational and individual needs.
10. Accuracy: Online educational programs present precise, clear and correct information scientifically and linguistically.
11. Feedback: Provide immediate feedback to modify misconceptions to increase the motivation of the learner, and increase the confidence of the learner himself in learning.

As the need is urgent in the Palestinian Community to keep pace with the rapid change in technology and communications revolution, it is crucial to find new education strategy and ways to assist this strategy, such as educational software based on the Internet.

In order to keep educational software based on internet accredited and world-class scale, we must take into consideration the quality when establishing online educational sites. (Tengku T. ,2005) .

Hence, the idea of creating a list of educational and technological standards for educational software based in internet was emerged. This idea is to provide educational software based on internet standards with high quality.

2.2.   Educational software based on Internet standards:

One of the most important international standards for technical development and deployment of electronic learning is SCORM. It has gained popularity among interested people in electronic learning, which facilitated the spread in many of the electronic learning systems, since it characterized by segmentation and creation of the content.

SCORM Means "Sharable Content Object Reference Model". It is one of the electronic learning design models, and defined by Learning and Electronic Training in Saudi Arabia as "a set of criteria which organize the process of development, integration and dissemination of educational and training materials to act as mediator between the authors of educational content and programmers of electronic learning management systems on the other hand."

Sources of Derivation standards for Educational Sites and Methods of Assistance and Guidance:

Researches and studies rely on multiple sources at the derivation of educational software based on internet standards design. By viewing many studies and literatures dealt with educational software based on internet design standards, and previous studies and educational literatures in educational software based on internet, including: Hassan Abdel Ati (2006, 341-342; Tamer Abdel Hafez (2007), "Education Committee Working Group (2004); More, N. & Pinhey, K. (2006), Which dealt with the conditions and requirements that must be provided in educational software standards. It was possible to identify sources to derive educational design software based on internet standards, through the following:
-    Previous studies and research, technology literature.
-     The views of experts and specialists.

Based on the above and in the light of the conditions and requirements that must be provided in the standards, derivation sources, and to identify those relevant standards, the researcher, conducted the following:

II.   Methodology

The researcher used the descriptive analytical method to access the list of the necessary standards that must be met in the educational web pages.

First.   Reading books and references of previous scientific studies both in Arabic and Foreign Language specialized in the field of educational software and technological design; to identify good educational software standards and foundations of a design and methods, and appropriate public teaching methods.

Second. field survey to identify the locations of educational software and educational web based on internet produced for university students and students of the Al-Aqsa University and Palestine Technical College Deir al-Balah, to identify and notify about these software.

Third.   conduct personal interviews with lecturers specialized in design of educational sites to teach some of university courses, to identify the weaknesses and strengths in it, and also to identify the different needs of this group, and that must be considered when building this kind of educational software.

Fourth. preparation of initial standards, by:

a.   Formulation of the design of educational software sites based on internet standards, in form of items.

b.   Items organization and formation.

Fifth.   listing items included in the initial list for the previous educational and technological standards for the design of educational software based on the Internet in the form of a questionnaire, in two main axes, educational standards and its five fields include (53) item, and technological standards includes the main three fields (39) item..

Conditions and requirements that must be provided in the educational and technology standards for educational software based on internet. Taking into account when deriving the following conditions:

1-   The proposed criteria of educational software and educational characteristics at the existing sites on the Web, and their educational potential.

2-   The proposed standards characteristics of university students, and their educational needs.

3-   The proposed standards, the nature of Palestinian society, and the reality of university education in Palestine.

4-   The psychological and educational foundations, in the formulation of educational software based on internet standards.

5- The proposed standards, modernity, accuracy, comprehensiveness, and build on the scientific and educational foundations.

6- It must be addressed to the separation between the educational and technological standards for the design of educational software based on internet process. This comes in order to facilitate handling and treatment, because each one affects the other, within an integrated and interactive system.

Sixth. presenting the questionnaire to a group of judges, experts and specialists in the field of education and technology and teaching methods, and designers of educational sites, for approval.

Seventh. setting up questionnaire results making the needed adjustments in the light of experts and specialists views of to arrive at the Final list of educational and technological standards for multiple software design based on internet.

Eighth.

III.   Results

Educational and technological proposed criteria that must be met in educational software based on internet design.

First: Educational standards:

1. **General information about educational software and management:**
- Information about the teacher or designer in terms of the name, qualifications, and function, and how to contact him.
- The targeted audience information.
- General objectives of the educational software.
- Previous requirements for the study of the educational code.
- Sources of educational software and tools.
- Topics of educational software and component units and lessons.
- The general plan for each lesson within the educational code.
- List of printed and electronic references.
- Lecturers advertising related to the target group.

2. **Scientific content of educational software and organization:**
- Educational software is objectively clear.
- Scientific content is presented in a logical sequence.
- The educational software content reflects the educational goals.
- The educational software content is free of scientific errors.
- The lessons of educational software can be dealt in both writing and Branching.
- Avoid the use of terms, images, shapes characterized by racial discrimination.
- Learning functions and activities characterized by clarity and precision.
- Content Organization reflects an educational theory correctly.
- Documenting the educational content of the educational software.
- Provision of appropriate projects for the activities of the educational content of the educational software.
- Concepts and vocabulary in the educational software related to the learners capabilities, and fit individual differences among them.
- Educational software offers complete educational content, without refering to other sources to achieve the goals of educational software.

3. **Design screens educational software and tools:**
– Important parts of the educational content and titles screens characterized by one way of text characteristics (change the font style, coloring, text effects).
– Follow the rules of the language: dictation, grammar, and accurately punctuation of the number of scientific content of educational software.
– Software design must takes into account the structure of the learner's educational needs and abilities and the outcome of the language vocabulary.
– Educational software provides opportunities to train the learner to build knowledge individually or cooperatively.
– Line drawings and pictures included in the educational software help to clarify its content.
– Line drawings and images are limited in tables to speed downloading educational software screens.
– Unit screens coordinate with each other in terms of: size, font, color, and background.
– Backgrounds screens Colors are differ from one unit to other, to g discriminate among them.
– Links Included in the educational software Characterized by effectiveness.
– All educational software monitors are linked the main menu.

— Topics of Educational software are linked with selected sites enrichment.
— You can print any part of the lessons of educational software easily.
— Educational software texts are as clear as a result of the discrepancy between the text and background.

4. Scientific content of the educational software learning evaluation:
— Showing appropriate evaluation activities to the acquired knowledge by the learner from the educational software (tests, exams, projects, reports, etc.).
— Participation in discussions will increase the learner acquisition to understand the contents of the educational software.
— Appropriate use of tests and evaluation activities of the learner to acquire the objectives and content of scientific educational software.
— The aim of the appropriate evaluation activities is:
1- The acquisition educational objectives of the educational software.
2- Learner understanding of the contents of the educational software.
3- The interaction of the learner with the contents of the educational software.

5. Learning Assessment through educational software:
— Educational software Screens present evaluation activities with direct impact upon the learner.
— Educational software Screens present evaluation activities to show possession of educational technology Web screens running.
— Educational software Screens present evaluation activities on managing educational screens and the available means of communication.

6. Flexibility and facilitated the use of educational software
— Logging on by the learner direct and easy.
— A simple educational software design, and keeping away from information and scientific content traffic.
— Educational software offers a set of instructions to help, guide and direct the learner to use and deal with the pages of educational software, and content of education is characterized by clarity and flexibility.
— The content of educational software is downloaded quickly.
— Display screens show a map of the educational software screens and their relationship to each other.
— Integration of the use of multimedia (voice, image, video) with the educational content of the educational software.
— The learner surfs between the screens in flexible and convenient way.
— Educational software Screens allows the learner get out of the educational screens at any time and any part.
— Educational software Screens enables the learner to complete the study of the educational contents of the pages at the point (partial) that he stops at.
— Provide educational programming guide for the use of educational materials and programming in clear way.

Second: Technological standards:
A- Interaction with educational software elements:
— Screens offer a variety of methods for the learner to interact with the content.
— Screens allow tools that enable synchronous and asynchronous interaction between the learner and his peers.
— Screens offer a variety of opportunities to interact with the learner educational content lecturer at any time.
— Screens provide graphical interface allows the learner to interact with it well.
— Screens provide the learner with total degree as a result of its response to the questions of self-evaluation.
— Screens provide activities to interact with all educational content (between three _ four pages).
— Screens provide learner immediate feedback.
— Screens offers activities strengthen the weaknesses of the learner.
— Screens provide practical activities rather than memorization acquisition objectives and educational content.

B- Educational software interface screen:
— The use of educational software screens appropriately to serve the educational content, not distract the attention of the learner.

- Number of colors must be no more than six colors.
- Educational software screen must not exceed computer monitors screen space.
- Educational software screen should contain buttons to enables the learner to navigate through the page group (Previous Page - Next - Home).
- Assembling control buttons at the bottom or top of the page bar.
- Screens contain buttons to enable the learner to display multi-media (moving image, sound, and video) that serve the educational content.
- Develop appropriate blank spaces between the learner's own controlled buttons.
- Control the main lists of screens to show or hide its contents.
- Educational software Screens allows the learner to overcome the educational pages of educational group screens and allow him to return to it at a later time.
- Provide assistance and guidance to the learner during learning process.

C- Educational software screen elements:

1- Written texts:
- Readability of written texts by the learner in the educational software screens to serve educational content.
- Written texts contrast with the background of educational software screens.
- Taking into account the space between paragraphs of text and titles of educational content of in educational software screens.
- Use a specific font and style of each of the headings and paragraphs regarding written texts of all educational software screens.
- Use different styles for titles, subtitles and paragraphs related to educational content in the educational software screens.
- Taking into account the combination of text and image, if there is a need; to serve the learner acquire educational content related educational screens contents.

2- Fixed Images:
- The use of clear fixed images linked with the educational content of the educational software screens.
- Not to exaggerate in the size of images, and to adopt one size for all educational software screens.
- Adoption of a common format for images in all educational software screens; as a rectangular image, whether horizontal or vertical.
- Images should be linked to the issue of educational content, and reflect one educational and behavioral goal.

3- Videos:
- Use the pop-up screens, when viewing a video clip or a sound clip to exploit the larger screen space in order to serves the educational content.
- The integration of the use of video clips, commensurate with the goals of educational content screens to attract the attention of the learner.
- The use of one and suitable size of the videos in all educational software screens, so as to achieve a clear picture for the learner.
- Provide video clips with control buttons to enable the learner to display video clips in flexible way.

4- Educational software menus :
- The stability of options and menus of interaction interface in one place and do not change if the screen changed.
- Taking into account the levels of menus, so that no more than two consecutive menus.
- Written texts must contrast with screen background menus of educational software.

5- Educational software screens spaces:
- Distribution of elements inside the frame in parallel, while maintaining the principle of unity.
- That use of a single design for all educational video clips screens within the educational software screens.
- Taking into account the organization of screen components to the design of the of the frame in logical manner.
- That uses of a single design for all forms of educational screens within the educational software screens.

IV.   Conclusion

Researchers have achieved a list of educational and technological standards of educational software based on internet that could benefit the organizers of the design and development of educational software standards. Researchers recommended the following.

1. Create a center for the development of educational software based on the internet provides technical and educational services to students and faculty members of the Palestinian universities, particularly universities in Gaza. This center must include of specialists in education technology, curriculum and teaching methods, computer and software team.
2. The responsible on the production of educational websites and educational software must benefit from the list of standards reached by the researcher, to produce educational software based on internet.

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