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Abstract

The e-learning systems play a great role in the modern educational systems. E-learning refers to using electronic applications and processes to learn. The educational content such as courses is delivered via the Internet, Intranet/extranet, audio, video tape, satellite TV, and CD-ROM. The internet and educational websites are used by educators and students to support the learning process. This paper describes a new model that depends on criteria to evaluate several aspects on the educational websites to improve the quality of these websites.

This new model is a practical quality model used to produce an automatic tool for the website evaluation. In this study, there is a group of criteria such as aesthetics, ease of use, identity, interactivity and communication. Each criterion from these criteria will take a real computable and measurable value. This value represents the outcome quality criteria which can be interpreted as the degree of satisfaction required .It defines a measurable score 0 or 1 that will result afterwards in an indicator value, where 0 is poor quality, 1 means excellent quality. The web quality metrics will calculate the quality indicators and provide a set of web quality scores. The automatic tool was applied to real Websites, whose results showed that the educational website which satisfies students' needs should be designed according to a set of efficiency criteria that improve the performance and the use for these websites. Assessing and comparing the complete quantitative results regarding the established goals and user standpoint.

1. Introduction

E-learning is essentially the computer and network enabled transfer of skills and Knowledge. Learning applications and processes include Web-

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based learning, computer-based learning, virtual classrooms and digital collaboration [1]. Online learning for students and for teachers is one of the fastest growing trends in educational uses of technology. Online learning overlaps with the broader category of distance learning, which encompasses earlier technologies such as correspondence courses, educational television and videoconferencing [2].

Web-based learning systems have become increasingly popular in past several years. The major advantage of Web-based learning systems lies within their flexibility. Due to this flexibility, many learning platforms have been moved to the Web [3]. Web based learning environments have increased in popularity because they allow for teaching and learning to occur independent of place and time. Adaptive Web-Based Learning Environments are a form of online instruction which attempt to remedy the challenges of Web-based learning by addressing individual differences [4]. Technology in education has come a long way from traditional tools through print, radio film, TV, VCR, CAI, all the way to CD-ROM's, satellite mediation and the internet.

Computer-mediated communication has several main characteristics. These include hypertextuality, interactivity, multimedia/multisense, absence of defined center (packet-switching), and elasticity of synchronicity [5]. Although there are numerous studies already in existence, there is need for future studies to focus their attention and investigation towards the identification of key variables which affect student learning and the extent of their impact. Research should investigate how much adaptation is needed to build efficient systems which yield optimal learning results [4].

Measuring website quality has been a major concern since the invention of web, Moreover with the advancement of web technology the dimensions to evaluate quality [6]. The past web quality research focuses mostly on the perspectives of Web developers and designers, and not on the web users. In this era of strong competition and customer responsiveness, the users are major stakeholders and should not be disregarded. Only limited academic research exists, but it is fragmented and typically only discusses the meaning of some aspects of Web quality [7]. In order to create good quality systems, web designers should understand how users perceive service quality of various performances attributes such as security, usability, information quality and which ones they value the most[8].

Quality is key term to be considered when developing the Web applications. If this is not adequately measured; there will be little to force users to use Web applications [9]. A "high-quality" Web site is one that meets its owner's and users' requirements [10]. In order to provide better services for users, companies need to invest in Web site service quality, design, evaluation and, at the same time, to control the perceived risk associated with its use [7].

2. The proposed model

The new model on this study aims at designing an electronic Website to evaluate the efficiency of educational Websites by a group of criteria. These criteria are composed of 12 main quality characteristics. The study used criteria such as Aesthetics, ease of use, multimedia, rich content and reputation [11]. This study used the previous criteria, the identity, communication, interactivity, marketing and security criteria were also added from the studies [12, 13]. Each criterion will take a real value-measurable and computable value.To identifies the measurable indicators a web evaluation tool effectively analyzes the HTML source codes and extracts the codes according to the relative definition for the each quality criteria. Also a Website quality criterion will be selected by a specific variable. A simple example of a website quality criterion "No. of images" is derived from the aesthetics characteristic, and it is easily detected by web evaluation tool and checked through a semantic code "<img>" and "</img>" [11].

2.1 Website Quality Metrics (criteria that used)

Web page metrics is one of the key elements in measuring various attributes of web site. Metrics gives the concrete values to the attributes of web sites which may be used to compare different web pages .The web pages can be compared based on the page size, information quality ,screen coverage, content coverage and etc[14]. A website quality metrics is defined by a measurement method and the measurement scale. In order to evaluate the number of measurable physical or abstract attributes for understanding and optimizing websites usage [11]. Web-based quality properties are referred to as non-functional properties of web applications such as performance, maintainability, security, usability, portability, and so on [15]. Web metrics is like a visitor's journey once on the website [11].

2.1.1 Aesthetics

The study of aesthetics is relevant for both design and evaluation of interactive systems as well as for the understanding of the concept in its own right. Previous studies of Web sites aesthetics have investigated several dimensions of aesthetic experiences, with the aim to reach to a limited set of attributes that may be used to aesthetic appreciations of web sites [16]. Websites that are perceived as beautiful are also perceived as usable [17]. The main objective of aesthetic evaluation is to calculate the different score of the Sub characteristics, which indicate the result of indicator measurement by using an Aggregation formula [11].

Aes=0.3×img+0.2×pagelayout+0.2×col+0.2×EMP+0.1×controls (1)

Where:

Img: is the total numbers of sub-characteristics of images in the whole websites 0<=img<=1.

Page layout is: the sub-characteristics of the page layout in quality of the whole websites 0<= page layout<=1.

Col: is the sub-characteristics of color of in quality of websites 0<=col<=1.

EMP: is the sub-characteristics of Emphasis, 0 <= EMP <= 1.

Controls: is the sub characteristics of screen based controls that the webpage contains, 0<= Controls <=1.

0.3, 0.2, 0.2, 0.1, 0.2: are the numbers of weights of each sub-characteristic, Sum of weights = 1, and 0< weights <1.

2.1.2 Ease of use

Usability is a term to describe how easy to use a system or a Web design. It analyzes the user experiences, finds the difficulties and finally, provides guideline to solve the problems. Usability is very important to make the optimize use of the created design to fulfill user needs. The essence of usability is mostly to create a user friendly web interface to use the system effectively [18]. Usability refers to how well and how easily a user, without formal training, can interact with an information system or website [19]. The characteristic of ease of use is a high-level web quality element. It has a children level sub-characteristic, and each of them has one or more measurable indicators. Sub- characteristics contain Consistency,

Navigation and links. In order to effectively measure the quality of ease of use, a formula is proposed by calculating the aggregation of sub-characteristics and considering the means of weights for each of them [11].

EoU=0.3*nav+0.3*Lin+0.4*Consis (2)

Where:

Nav: is the sub-characteristic of Navigation, 0 <= Nav <=1.

Lin: is the sub characteristic of links, 0 <= Lin <=1.

Consis: is the sub-characteristic of Consistency, 0 <= Consis <= 1.

EoU: is the characteristic of Ease of Use, 0 < EoU < 1.

0.3, 0.3 and 0.4: are representing the weights of each number of sub-characteristics. Sum of weights = 1 and 0< each weights <1.

2.1.3 Multimedia

Multimedia has become an important characteristic for the quality of Websites. The elements of multimedia contain the animation images. The user can hear or see: music, sounds, videos, flash, and more. Without this integration of Web attributes, the quality of website to connect with the customers will ultimately suffered. . The main aim of multimedia evaluation is to show the degree of multimedia quality in the live website and important indicators are considered by the means of weights. The formula can be expressed as follows [11].

Media= Mediafile * 0.2 + 0.2 * text + 0.3 * onemedia + 0.2 * thumbnail + 0.1 * plugin (3)

Where:

Mediafile: represents the measurable indicator called Mediafile. Its scoring is "0" or "1". "0" means poor quality and "1" is excellent quality.

Text: represents the measurable indicator called text. Its scoring is "0" or"1". "0" means poor quality and "1" is excellent quality.

Onemedia: represents the measurable indicator called One Media in One Page; its scoring is 0 or "1". "0" means poor quality and "1" is excellent quality.

Thumbnail: represents the measurable indicator called Using Thumbnails; its scoring is "0" or "1". "0" means poor quality and "0" is excellent quality.

Plugin: represents the measurable indicator called Plug-in Support. Its scoring is "0" or"1". "0" means poor quality and "1" is excellent quality.

Media- Media produces Multimedia characteristic, 0 <= Media <=1.

The weights proposed for each indicator are 0.2, 0.2, 0.2, 0.3, 0.1 Sum of weights =1 and 0< each weights <1.

2.1.4 Rich content

Good content effectively communicates its intended message to its intended audience. In order to create effective content of your own, you need to have a clear understanding of each of these parameters and how they relate to one another [20]. Web content generally refers to the information in a Web page or Web application such as text, images, forms, sounds and etc [21]. Rich content is a high level characteristic which has four measurable indicators in this study. In order to evaluate the quality of content, the rich content characteristic is calculated through an average formula [11].

Rcontent=0.2×bulletin+0.2×search+0.3×content+0.2×AutoRefsh++0. 1× service (4)

Where:

Bulletin: represents the measurable indicator called Bulletin Boards; its scoring is "0" or "1". "0" means poor quality and 1 is excellent quality

AutoRefsh: represents the measurable indicator called Avoiding Auto-refresh; its scoring is "0" or "1". "0" means poor quality and "1" is excellent quality

Search: represents the measurable indicator called search; its scoring is "0" or "1". "0" means poor quality and "1" is excellent quality

Content: represents the measurable indicator called content; its scoring is "0" or "1". "0" means poor quality and "1" is excellent quality

Service: represents the measurable indicator called Information Guide and the different services that the site produces; its scoring is "0"or "1". "0" means poor quality and 1 is excellent quality

Rcontent- produces Rich Content characteristic, 0 <= Rcontent <=1.

The weights proposed for each indicator are 0.1, 0.2, 0.3, 0.2, 0.2 Sum of weights =1 and

0< each weights <1.

2.1.5 Identity

Identity information shall provide users recognition about the Web Site Owner Company/Institution and the Web Site. As this evaluation approach targets web sites of companies and institutions in a scope of business eleven basic questions are determined. All subsequent pages of the websites should also display the ownership information in summarized form. The page title of the homepage must be complete with the name of the country included [22]. The identity characteristic is calculated through an average formula by using the four measurable indicators comparing the difference for each indicator, important is considered by means of weights [11].

Identity=0.2×sitemap+0.1×e-mail+0.3×copyright+0.1×helpaids+0.2×contacts (5)

Where:

Identity: the sub-characteristic of identity, the final result of identity is 0<= identity <=1

0.2, 0.2, 0.3, 0.1, 0.1 are the weights proposed for each indicator

Sitemap: represents the measurable indicator called map that explains the whole websites links and main pages, its scoring is zero or "1"; "0" means poor quality and 1 is excellent quality.

E-mail: 0f Staff or organization- represent the e-mail address of the educational website or organization, the final result of e-mail is 0 <=e-mail <=1.

Copyright: represents the measurable indicator called copyright, its scoring is "0" or "1"; "0" means poor quality and "1" is excellent quality.

Helpaids: represents the measurable indicator called copyright, its scoring is "0" or "1"; "0" means poor quality and "1" is excellent quality.

Contacts: represents the measurable indicator called contacts, the contacts like fax-telephone-physical address and so on, its scoring is zero or "1"; "0" means poor quality and "1" is excellent quality.

2.1.6 Communication and infrastructure

It has been found that many of user's access websites from home computers in the evening because they are too busy to surf the Web during working hours many factors contribute to Web site performance, most of which are at least partially outside the control of the site designer [23].The following formula shows the regular expression to calculate the communication criteria [11].

Communication=0.3×Meta+0.1×plugin+0.2×anno+0.3×loadtime+0.1× comfile (6)

Where:

Communication: The sub-characteristic of communication, the final result of identity is

0<= communication <=1.

Meta: represents the measurable indicator called Meta tag, the result of it is 0<= Meta <=1.

Plugin: represents the measurable indicator called Plugin, its scoring is "0" or "1"; "0" means poor quality and "1" is excellent quality.

Anno: represents the measurable indicator called anno its scoring is "0" or "1"; "0" means poor quality and "1" is excellent quality.

Loadtime: represents the measurable indicator called Loadtime. Its scoring is "0" or "1"; "0" means poor quality and "1" is excellent quality.

Comfile: represents the measurable indicator called comfile, the result of size is 0<= size<=1.

2.1.7 Interactivity

Interactivity is another evaluation topic including the features of interactivity between web site visitors and the web site. Interactivity features provide to obtain information or services web site user demands. Without using this means a web site may go no further than an information provider that does not show concern for web site visitors' changing demands [12]. The following formula shows the regular expression to calculate the Interactivity criteria [11].

Interactivity=0.3×bulletinboard+0.3×contacts+0.2×FAQ+0.1×printero ption+0.1*row/column of textarea (7)

Where:

Interactivity: produces Interactivity characteristic, 0 <= Interactivity <=1.

0.1, 0.1, 0.3, 0.2, 0.3: are the weights are proposed for each indicator.

Printer option: printer-friendly version available. Represents the measurable indicator called Printer option, its scoring is "0" or "1"; "0" means poor quality and "1" is excellent quality.

Contacts: E-mail communication is available and fax or address. Represents the measurable indicator called Contacts, its scoring is "0" or "1"; "0" means poor quality and "1" is excellent quality.

FAQ: pages are available Represents the measurable indicator called faq pages, its scoring is "0" or "1"; "0" means poor quality and "1" is excellent quality Row/column of textarea-the text area should contain row and column.

2.1.8 Marketing

Most of the time a website developer does not get the number of visitors he had anticipated Search Engine registration is very complex and professional assistance should be considered to ensure your website is listed to maximize the visits to your site. If the developer belong to any related purpose associations that feature online directories ask for a link back to the website. Even if he has to pay something for a link it may bring additional targeted traffic his way [23]. The following formula shows the regular expression to calculate the Marketing criteria [11].

Marketing=0.2×sitebookm+0.1×e-mailfr+0.3×webtraffic+0.2×updates+0.3 × freeser (8)

Where:

Marketing- produces marketing characteristic, 0 <= marketing <="1"

Sitebookm: asks users to bookmark your site. Represents the measurable indicator called bookmark your site its scoring is "0" or "1"; "0" means poor quality and "1" is excellent quality [23]

E-mailfr: asks users to e-mail your site friends. Represents the measurable indicator called email the site; its scoring is "0" or "1"; "0" means poor quality and "1" is excellent quality

Web traffic: show the counter for number of visit of the website. Represents the measurable indicator called web traffic; its scoring is "0" or "1"; "0"means poor quality and "1" is excellent quality

Updates: capture visitor e-mail addresses and request permission to send updates. Represents the measurable indicator called updates; its scoring is "0" or "1"; "0"means poor quality and 1 is excellent quality

Freeser: develops a free service on the website. Represents the measurable indicator called free service; its scoring is "0" or "1"; "0" means poor quality and "1" is excellent quality

0.2, 0.1, 0.3, 0.2, 0.3 are the weights proposed for each indicator, Sum of weights ="1" and 0 < each weights <1.

2.1.9 Reputation

A website's reputation is much like that of an individual or organization. It validates through the positive previous experiences, through the third-party endorsements such as the ranking services that are shown on the websites, or indirectly through the recommendation from another websites' link [12]. Reputation is a high level quality characteristic to calculate the score of indicators through an aggregation formula [11].

Reputation=0.3× Domain+0.3×Publicity+0.2×traffic+0.1*update+0.1*physical address (9)

Where:

Reputation- Produces reputation characteristic, 0 <= Reputation <=1.

Domain- represents the measurable indicator called Domain Name, its scoring is "0" or "1"; "0" means poor quality and 1 is excellent quality.

Publicity- represents the measurable indicator called Information Publicity, its Scoring is "0" or "1"; "0" means poor quality and "1" is excellent quality.

Traffic - represents the measurable indicator called web traffic, its scoring is "0" or "1"; "0" means poor quality and "1" is excellent quality.

Update- represents the measurable indicator called date of update, its scoring is "0" or "1"; "0" means poor quality and "1" is excellent quality.

Physical address- represents the measurable indicator called address, its scoring is 0 or 1; 0 means poor quality and "1" is excellent quality.

The weights are proposed for each indicator they are 0.3, 0.3, and 0.2, 0.1, 0.1

Sum of weights = 1 and 0< each weights <1.

2.1.10 Security

Even if a management team is generally aware of the security risks associated with a web application, some ideas remain a stumbling block to fully understanding problems and making the right decisions to protect a web environment. Web application security is not a given. To the contrary, if a specific action is not taken, the solution used most likely contains vulnerabilities which may affect the confidentiality, integrity and accessibility of the application and data involved [24]. Securing legacy web applications poses several challenges. Securing legacy web applications poses several challenges first, any manual analysis /fixing attempt requires extensive effort [25]. There is a clear need for protecting network connected devices against attack [26]. The following formula shows the regular expression to calculate the security criteria [11].

Security=0.3×idpass+0.3×copyr+0.2×reg+0.1×digitalsig+0.1×ssl (10)

Where:

Security- produces security characteristic, 0 <= security <=1

Idpass: represents the measurable indicator called id and password, its scoring is "0" or "1"; "0" means poor quality and 1 is excellent quality

Copyr: represents the measurable indicator called copyright, its scoring is "0" or "1"; "0" means poor quality and "1" is excellent quality

Reg: represents the measurable indicator called registration, its scoring is "0" or "1"; "0" means poor quality and "1" is excellent quality

Digitalsig: represents the measurable indicator called registration, its scoring is "0" or "1"; "0" means poor quality and "1" is excellent quality

Ssl- represents the measurable indicator called secure sockets layer, its scoring is "0" or "1"; "0" means poor quality and "1" is excellent quality

0.3, 0.3, 0.2, 0.1, 0.1 are the proposed weights for each indicator, Sum of weights = 1 and 0 < each weights <1

The criteria and sub criteria that are used for evaluating the educational websites in my study will be showed in the following figure:-

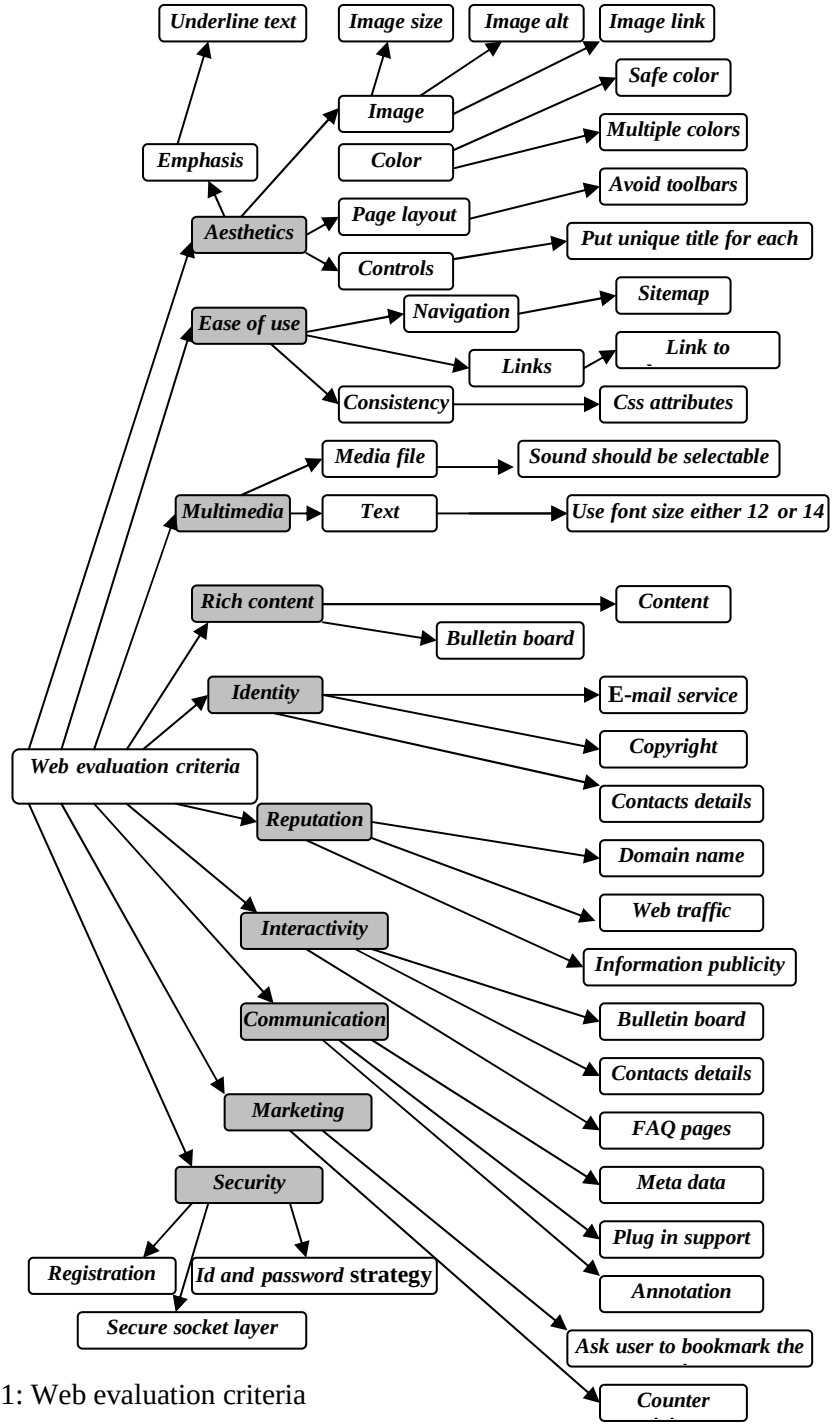

Figure 1: Web evaluation criteria

3. The implementation of Website Evaluation

In the stage of implementation, the web evaluation tool is designed in four levels, tree-traversal layer, parse layer, data metrics layer, and User Interface Layer respectively [11]. Once the effective web evaluation framework and metrics are defined, the structure of the program design is established. The website evaluation tool assesses the websites automatically, achieving the website evaluation process. The design of the evaluation tool is mainly attached to specific parts of the user interface, and easily executed and evaluated at the time when the user interacts with the tool.

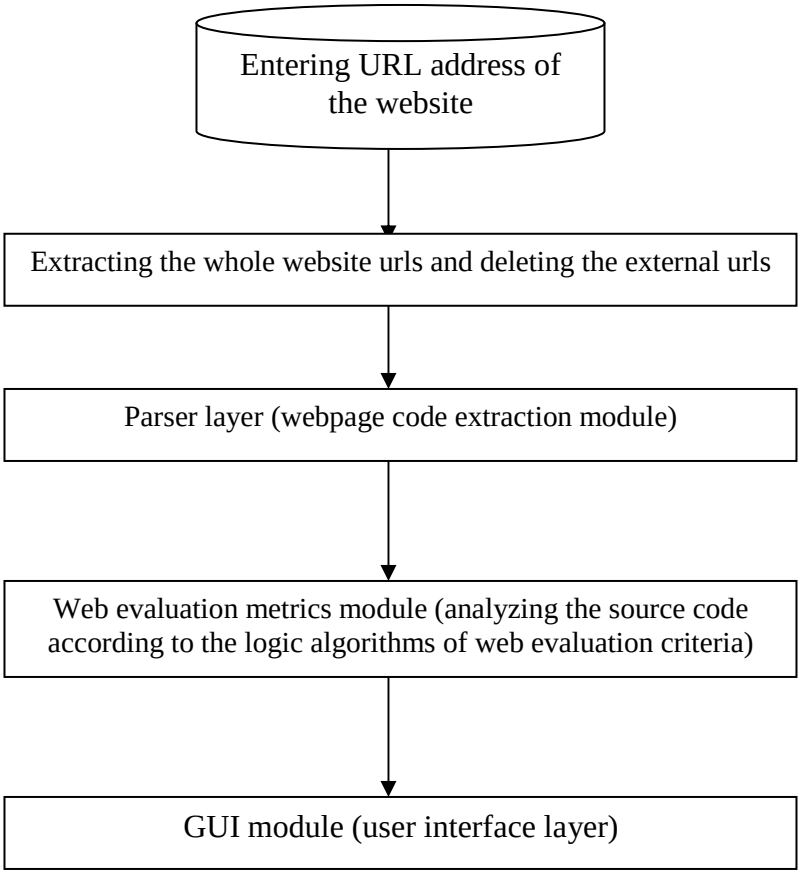

Figure 2: Web evaluation tool

4. Experimental results

This section presents the evaluations results of websites universities such as Cairo University, Alex University, Mansoura University and other sites. This evaluation was done by web evaluation tool. For more explanations, the web evaluation tool examined http://cu.edu.eg/ar/Home , which is the official website of Cairo university. The parser of my tool analyzed the source code and grouped the proposed quality criteria which are then defined in the website evaluation framework. Website evaluation module calculated the measurable indicators through specific formulae after the evaluation and calculating every sub criteria. Final formula has been used to calculate the total value of the efficiency of the website [11].

Final web=0.2* Total EoU+0.1* Total Aesthetics+0.1* Total identity+0.1* Total reputation+0.1* Total Rcontent+0.1* Total

Multimedia+0.05* Total communication+0.1* Total interactivity+0.1* Total marketing+0.05* Total security (11)

Where:

Total EoU: the total score of the ease of use sub criteria.

Total Aesthetics: the total score of the Aesthetics sub criteria.

Total identity: the total score of the identity sub criteria.

Total reputation: the total score of the reputation sub criteria.

Total Rcontent: the total score of the rich content sub criteria.

Total multimedia: the total score of the multimedia sub criteria.

Total communication: the total score of the communication sub criteria.

Total interactivity: the total score of the interactivity sub criteria.

Total marketing: the total score of the marketing sub criteria.

Total security: the total score of the security sub criteria.

0.1, 0.1, 0.1, 0.05, 0.1, 0.1, 0.1, 0.05: are the weight are the proposed weights for each indicator.

The web evaluation tool was used for evaluating the educational websites such as Cairo University, Alex University and other sites. The results are shown in the following table1:

Table 1: The other criteria in the web evaluation

University	Aes	EoU	Rcontent	Multimedia	Identity	Marketing	Reputation	Security	Interact	Com	Res
Cairo	0.61	0.67	0.34	0.8	0.256	0.88	0.6	0.53	0.5	0.2	0.57 %
Azhar	0.98	0.54	0.175	0.57	0.21	0.33	0.25	0.42	0.27	0.32	0.42 %
Ain Shams	0.52	0.75	0.29	0.79	0.40	0.61	0.4	0.6	0.25	0.45	0.52 %
Assiut	0.48	0.79	0.29	0.91	0.35	0.79	0.4	0.6	0.21	0.73	0.6 %
Sinai	0.54	0.34	0.299	0.64	0.10	0.859	0.597	0.43	0.5385	0.541	0.45 %
Kafr El-Sheikh	0.63	0.66	0.36	0.66	0.358	0.919	0.585	0.446	0.43	0.206	0.56 %
Alex	0.63	0.84	0.64	0.65	0.435	0.999	0.6	0.46	0.4	0.329	0.6%
Mansoura	0.52	0.337	0.667	0.51	0.51	0.65	0.6	0.442	0.364	0.45	0.6%
Umm Al-Qura	0.52	0.915	0.24	0.48	0.26	0.749	0.5	0.55	0.318	0.378	0.51 %
Kuwait	0.73	0.55	0.359	0.81	0.362	0.98	0.8	0.60	0.488	0	0.55 %

5. Results interpretation

In order to fairly evaluate the degree of aesthetics in a website, each Sub-characteristic has to define a weight. Sub-characteristics in Images, page structure and Color attract more attention than others. The images Weighs 0.3, the colors, emphasis, page structure weigh the same 0.2 according to the formula of evaluation, relative criteria and the result of aesthetics is 0.61 in the evaluation for Cairo University as an example. In the same way, In order to fairly evaluate the degree of ease of use in a website, each Sub-characteristic has to define the weight. Sub-characteristics in consistency attracts more attention in the ease of use that weighs 0.4, most of website received full marks, this means the consistency is excellen, the navigation and links need improvement. Navigation and links weigh the same that is 0.3, as the formula of evaluation and relative criteria, the result of the homepage of a Cairo university EoU is 0.78. In multimedia, In order to fairly evaluate the degree of quality in a website, each Sub-characteristic has to define the weight. Sub-characteristics onemedia in the page attracts more attention and weighs 0.3. That received full marks; the Mediafile, text and thumbnail weigh the same, as the formula of evaluation and relative criteria, the result of Multimedia is 0.8. The Rich content of Cairo University received 0.34.

The homepage of it does not contain agenda or calendar and a sitemap but the page contains links to other relevant sites. The rich content of Azhar University received 0.175. The homepage does not contain a bulletin board and search engine. But it contains digital library, agenda, bookmark or rss feed. The rich content of Alex University received 0.64. The homepage contains agenda, link to bookmark the page and the auto refresh option is not present but the homepage does not contain Printer option and bulletin board. On the same way, the other websites of universities, the homepage of it contain some aspects and don't contain the others. So, the homepage of all websites that I applied my evaluation tool on it need improvements to make its content more rich for students. The identity of Cairo University and Azhar University websites received 0.256 and 0.21. The homepage and some of children pages don't contain sitemap but contain e-mail of the staff and the university, services for users or students and copyrights. Alex University website received 0.435. This means that Alex university website is better than Cairo University and Azhar University websites in the identity criteria. This may be caused by the number of good children pages in

identity is more than the two universities sites. On the same way, the other websites of universities, the homepage of it contain some aspects that are related to identity criteria and don't contain the others. The copyrights criterion attracts more attention than others do that weighs 0.3. The sitemap and contacts criteria weigh the same 0.2 According to the formula of evaluation and relative criteria, the other sub criteria weigh the same 0.1.

The marketing of Cairo University website received 0.88. The homepage and some of children pages contain at least one out of page link, ask users to bookmark your site link, promote the website in new groups' link and link to social groups such as facebook and twitter. The marketing of Azhar University website received 0.33. The homepage and some of children pages contain mail address for the staff link. But the web traffic and the groups for the website on different social websites like facebook and twitter don't exsit. The marketing of Alex University website received 0.999. This means that the Alex University is better than the Cairo University and the Azhar University in marketing. On the same way, the other websites of universities in this study, the homepage of it contain some aspects that are related to marketing criteria and don't contain the others.

The security of Cairo University website received 0.53. The homepage and some of children pages contain Copyrights statement. But privacy policy and secure socket layer are not used. The security of Azhar University website received 0.42. The homepage and some of children pages contain the id and password strategy and Copyrights statement. But e-mail, physical address, and secure socket don't exist. The security of Alex University website received 0.46. The homepage and some of children pages contain id and password strategy and Copyrights statement. But printer option, secure socket, and physical address don't exist. On the same way, the other websites of universities in this study, the homepage of it contain some aspects that are related to security criteria and don't contain the others.

6. Conclusion and future work

In this study, a web evaluation tool was designed for evaluating the educational websites. This tool depended on criteria related to some aspects about websites such as aesthetics, ease of use, multimedia, identity, interactivity and communication. The tool is a webpage contains textbox for typing the URL of the site that will be evaluated and then click go button. The tool checks the html source code to extracts the codes according to the

relative definition for the each quality criteria. The criteria were established based on the user's perspectives and satisfy user's needs. The web evaluation tool checks the homepage then the children pages and then calculates the overall score of the of efficiency degree for the evaluated website. The calculation for the whole quality of the website is defined by the root page that take a weight 0.5 and the total children pages take 0.5. The result is from 0 to 1, 0 represents poor quality and 1 means excellent quality. To automatically evaluate the quality of a website by using a web evaluation tool, there are still some problems for example , sometimes the source code of the webpage that the web evaluation tool need it for analyzing according to specified criteria is hided or encrypted. Some defined quality criteria are not analyzed completely by the web evaluation tool, because most of websites are designed by many classes (object-oriented function). Many WebPages are designed by other web languages not by html language and this also cause a problem for the web evaluation tool that extract the html tags to check according to specified criteria to evaluate the efficiency of the page and then the whole website. So, the search field in the website evaluation is still Mysterious and Need for more research or study. Improving the research of websites quality metrics and website evaluation tools will be continued in future study.

References

[1]- Dr.P.Nagarajan1and Dr.G.Wiselin Jiji. (2010): online educational systems (e-learning), International Journal of u- and e- Service, Science and Technology, Vol. 3, No. 4.

[2]- Barbara Means, Yukie Toyama, Robert Murphy, Marianne Bakia and Karla Jones. (2010): Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies, U.S. Department of Education.

[3]- Yu-Cheng Shih, Pei-Ren Huang, Yung-Chi Hsu and Sherry Y. Chen. (2012): a complete understanding of disorientation problems in web-based learning, The Turkish Online Journal of Educational Technology, volume 11 Issue 3.

[4]- Fethi A. Inan, Raymond Flores and Michael M. Grant. (2010): Perspectives on the Design and Evaluation of Adaptive Web Based Learning Environments, contemporary educational technology, 1(2), 148-159.

[5]- Sheizaf Rafaeli and Gilad Ravid. (2012): Online, Web Based Learning Environment for an Information Systems course: Access logs, Linearity and Performance, Hebrew University, Mt. Scopus, ISECON '97.

6- Rajeev Saha and Sandeep Grover. (2011): Quantitative Evaluation of Website Quality Dimension for Web 2.0 Environment, YMCA University of Science & Technology, Faridabad, Haryana, Vol. 4, No. 4.

[7]- Vera Silva Carlosa, Ricardo Gouveia Rodriguesa. (2012): Web site quality evaluation in Higher Education Institutions, University of Beira Interior (NECE Research Centre), Convento de Sto. António, 6201-001, Portugal.

[8]- Yaşar Tonta and İrem Soydal. (2010): Performance Evaluation of Web Information Systems, Hacettepe University, Department of Information Management, 06800, Ankara, Turkey.

[9] - Ambreen Nazir, Ayesha Raana and Ali Javed. (2013): Activity Based Quality Model for Evaluating Web2.0 Applications, I.J. Modern Education and Computer Science.

[10]- Luisa Mich, Mariangela Franch, and Loris Gaio. (2009): Evaluating and Designing Web Site Quality, National Chung Hsing University, IEEE Computer Society, 1070-986X.

[11]- Zihou Zhou. (2009):" Evaluating Websites Using a Practical Quality Model", master thesis, De Montfort University.

[12]- Ahmet saker genc. (2006):"website evaluation", master thesis, the Middle East technical university, department of information systems.

[13]- Jehad Najjar. (2002):"Business Rules & WSDM Methodology of Web Design", Master thesis, Vrije University Brussel, Faculty of Computer Science.

[14]- Yogesh Singh, Ruchika Malhotra and Poonam Gupta. (2011): empirical Validation of Web Metrics for Improving the Quality of Web Page, (IJACSA) International Journal of Advanced Computer Science and Applications, Vol. 2, No. 5.

[15]- B. Liburne, P. Devkota and K. M. Khan, "Measuring Quality Metrics for Web Applications", in 2004 IRMA International Conference, New Orleans, USA, August 2004.

[16]- Panayiotis Koutsabasis and Theano G. Istikopoulou. (2010): Perceived web site aesthetics by users and designers: implications for evaluation practice, University of the Aegean, Department of Product & Systems Design Engineering.

[17]- Katharina Reinecke1, Tom Yeh2, Luke Miratrix1, Rahmatri Mardiko3, Yuechen Zhao1, Jenny Liu1 and Krzysztof Z. Gajos. (2013): Predicting Users' First Impressions of Website Aesthetics with a Quantification of Perceived Visual Complexity and Colorfulness, Paris, France, ACM 978-1-4503-1899-0/13/04...$15.00.

[18]- Md. Ismail Faisal. (2012): Practical Approach in Web Design and Usability Issues, master thesis, university of applied science.

[19]- Julie M. Rinder. (2012): The Importance of Website Usability Testing, Master thesis, University of Oregon.
[20]- University of Bristol. (2012): Writing effective and accessible web content, England.
[21]- Oludewa Ogbe. (2010): The Creation of a Basic Rich Internet Application that Satisfies the Accessibility Requirement of Screen Reader Users, Business Information Technology.
[22]- Prithviraj chavan. (2009): guidelines for Indian government websites, national informatics centre, India.
[23]- Olga De Troyer. (2002):"Web Design Guidelines for wsdm", master thesis, Faculty of Science, Vrije University, and Brussel.
[24]- Michel et al. (2010): web application security, web application security group.
[25]- Prithvi Pal Singh Bisht. (2011): Improving Web Security by Automated Extraction of Web Application Intent, PhD thesis, University of Illinois, Chicago.
[26]- Darren Fitzpatrick. (2009): Intrusion Detection and Security Assessment in a University Network, master thesis, Dublin City University

الملخص العربي

نظم التعلم الالكترونى تلعب دورا بارزا فى نظم التعلم الحديثه . التعلم الالكترونى يشير الى استخدام التطبيقات والعمليات الالكترونية فى التعلم . المحتوى التعليمى مثل الكورسات التعليمية يتم تداولها على شبكة الانترنت،الانترانت،الاكسترانت وايضا يتم نقلها فى صورة صوت- شريط فيديو- لقطات لاقمار صناعيه تلفزيونية وعبر اسطوانات مدمجة.

الانترنت والمواقع التعليمية تستخدم بواسطة المعلمين والمتعلمين لدعم العملية التعليمية . هذا البحث يقدم نموذج جديد يعتمد على مجموعه من المعايير لتقييم العديد من الجوانب فى المواقع التعليمية لتحسين كفاءة هذه المواقع.هذا النموذج عبارة عن مقترح عملى للكفاءة يستخدم لانشاء اداة اتوماتيكية لتقييم المواقع .

فى هذه الدراسة توجد مجموعه من المعايير مثل النواحى الجماليه للموقع،سهولة الاستخدام ،الهوية، التفاعليه التى يسمح بها والاتصالات الخ.

كل معيار من هذه المعايير ياخذ قيمة حقيقة محسوبة و مقاسة .هذه القيمة تعبر عن نتائج قياس معايير الكفاءة على هذه المواقع والتى تعبر ايضا عن درجة الرضا والقناعة المطلوبة . كل قيمة تحدد درجة مقاسة اماصفر او واحد. صفر يعبر عن ضعف الجوده والكفاءة بينما واحد يعنى كفاءة ممتازة .

من خلال نتائج قياس مجموعة المعايير يتم تكوين مجموعة من الدرجات المتعلقة بكفاءة الموقع التعليمى .

تم تطبيق الاداة الاتوماتيكية على مجموعة من المواقع التعليمية واظهرت النتائج ان المواقع التعليمى التى توائم احتياجات الطلاب يجب ان تصمم طبقا لمجموعة من معايير الكفاءة والتى تحسن من اداء واستخدام هذه المواقع . لتقييم ومقارنة النتائج الكمية النهائية يجب الاخذ بعين الاعتبار الاهداف المراد الوصول اليها والمعايير المطلوب تحقيقها.