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The interface, usability and interaction as one of the web-page design criteria

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Abstract
E-learning is an alternative to traditional classroom education and is often referred to as online learning, virtual learning, mobile learning, or digital learning.
The rapid development and growth day after day in information and communications technology (ICT) has led to the development and advancement of the Internet, which has led to the emergence of a new type of education, which is e-learning, which relies on Internet, communications and information technology. As a result, the world began to rely on e-learning systems via the Internet, networks, and mobile devices. This has led to it being increasingly developed to enhance the online learning process. Web-based design for e-learning is very important for the Internet, the Interface, usability and interaction web pages to improve performance and usability. It is necessary to identify the factors that have the greatest impact on the quality of these systems. This research aims to study, analyses, research and evaluate the performance measurement of the page model and the objectives of The Interface, usability and interaction using the questionnaire and SPSS analysis for scientific and engineering colleges.

Keywords: ICTs, E-Learning, Web-Page, SPSS, Interface, Web

1. Introduction

E-learning is an alternative to traditional classroom education and is often referred to as online learning, virtual learning, mobile learning, or digital learning.
E-learning is a type of online education, training and knowledge exchange conducted over the Internet. It can be used in different environments, such as academic education, corporate training continuing professional development for individuals and groups, and skills development courses in all different areas of life.
The growth of e-learning has been facilitated by the widespread adoption of computers, Internet and information technology, and has been further accelerated by the COVID-19 pandemic, which has led to increased demand for online learning solutions and various electronic media.
E-learning aims to replace old traditional learning with modern education that is not limited by dates or places. It is available throughout the day and throughout the year at any time and in any place. The tremendous and rapid development in information and communications technology (ICT) has led to the emergence of this type of education based on Internet pages. Since this tremendous and rapid progress and development in information and communications technology has made the world like a small village, the flow of information in the world with ease and speed must be accompanied by a development in style and behavior. People are adapting their circumstances to keep pace with this amazing development in various aspects of life, especially in online learning, which has become available to everyone. This led to challenges in developing the tool, coordinating and designing e-learning pages in an easy, smooth and simple way to deal with them, but they must be safe from risks and hacking and with specific standards that enable users to deal with them.
We find that the Internet and web-based technologies have a significant impact on formal learning and have contributed to improving performance. Face-to-face teacher training is outpacing web-based training today, but the growth in web-based training is still strong. One of the most important benefits of using web-based learning: reduced travel to training sites.

Web-based learning also contains practical components, namely the ability to access training at any time and in any place, and provide training in a timely manner. Alongside these economic and practical benefits come the challenges of designing education that takes advantage which takes advantage of the characteristics and features of the web, and has high-quality educational features, strategies and methods that meet educational needs. In which traditional instructional design models are applied to produce quality education in traditional training environments (face-to-face) to web-based learning.

The introduction of the Internet and new web-based technologies has led to changes in the way instructional design models based on new media are applied. To improve performance, modern resources and constraints must be examined, and questions must be asked and answered. This paper describes the modification of the traditional instructional design model when designing instruction for such new technologies, The Interface, usability and interaction and objectives of the e-learning.

2. Objectives of study

The objectives of this paper are

- To study fixed points for Design Considerations for The Interface, usability and interaction**.**
- To examine and analyzed The Interface, usability and interaction.

3. Previous Study

Different type of the research concern the Web-based Learning and Design Consideration to enhance the Web page form such as [1] consider Educational Objectives in E-Learning since 1956 to 2016 based on the taxonomies of cognitive objectives of learning, Devajit Mahanta, Majidul Ahmed looked into the three major e-learning tools, limitation, design issues and suggests that synchronous tools should be integrated into asynchronous environments to allow for "any-time" learning model and also given a remark that E-Learning needs to improve from various barriers [2]. While The E-Learning discussed by A. Pauline Chitra*, M. Antoney Raj in [3]. While The An E-learning System for Quality Education discussed by Ahmad Tasnim Siddiqui, Dr. Mehedi Masud[2] in [4]. While The Impact and Effectiveness of E-Learning on Teaching and Learning by Riah F. Elcullada Encarnacion in [5]. While The User Security in E-Learning System discussed by Hassan Faisal Aldheleai, Hatem S. A. Hamatta and others in [6]. Investigate the effects of E-Learning on teaching methodology and learning at Oman, where the identifying the advantages and disadvantages of e-learning in university education in United Arab Emirates. A descriptive study design was used to randomly select students from Ajman University, are considered in [7]. While The E-learning environment in Egypt by Mohamed Ahmed Hussien Khalaf in [8]. While The Traditional Learning versus Elearning, the European Proceedings of Social and Behavioural Sciences, Future Academy, by Ilie, V. and Frăsineanu, E. S in [9]. While The Online Learning for seniors: Barriers and Opportunities by Mark Notess, and Lesa Lorenzen-Huber in [10]. Web-based education and accessibility discuss a very important topic, web accessibility, was discussed in connection with it Multimedia elements. Therefore, a website can be used as a source Information, as a tool for evaluation, and as a platform for producing and sharing information discussed by Emre Dinc in [11]. While the Status of e-learning in public universities in Kenya. International review of research in open and distributed learning discussed by Makokha, G. L., & Mutisya, D. N in [12]. A Hierarchical Model to Evaluate the Quality of Web-Based E-Learning Systems studied by Abdul Hafeez Muhammad 1, Ansar Siddique 2*, Ahmed E. Youssef 3, 4 and others in [13]. Web-based adaptive presentation techniques to enhance learning outcomes in higher education by Ahmed Elmabaredy1*, Ebada Elkholy1 and Abdul-Aziz Tolba2 in [14]. The analysis has been made between traditional and e-learning methods sighting out certain limitations of the e-learning environment developed explore by [15].

4. Methodology

To achieve the objectives of this paper four phases were done: Phase one a questioner concern The Interface, usability and interaction. The second phase the questioner is viewed for different population samples then the data is collected and analyzed using SPSS software program tools. The results were and discuss as shown below.

4.1. Questionnaire phase

The questionnaire is built to measure the personal characteristics of the respondent such as: gender, academic qualification, place of work, field of study (specialization).

The truth of the questionnaire is to measure the questions of the questionnaire and to verify the veracity of the questionnaire using the arbitrators (The questionnaire was presented in its preliminary form to a group of arbitrators consisting of (6) Questions.

The members of the teaching staff of the Faculty of Engineering, specializing in computer, economics and statistics at the University of Gezira, have responded to the views of the arbitrators to make the necessary deletion and modification in the light of the proposals submitted and thus the questionnaire came out in its final form.

Table 1: Questionnaire Final Form

Number	Item	I strongly disagree	Disagree	I do not know	Agree	Strongly Agree
1	The course and electronic discussions should be easy to use, simple and clear					
2	To design the course and electronic discussions in a way that helps the user to accomplish the tasks he is seeking easily					
3	Help students quickly access the information required					
4	The interface includes sub-menu options that help students easily choose and access information					
5	The interface must be stable so that the interface options, properties, and associated keys remain in place and do not change with screens					
6	Be simple, clear and united in visual presentation					

4.2. Sample of the study

The study sample consisted of academics and heads of administrative departments. The sample was randomized to 81 samples, male 55 samples and female 26 samples to test the internal consistency and stability of the questionnaire. After verifying the validity and reliability of the test, a random sample was taken to show the distribution of the sample of the study, consisting of (81) academic. The Faculty of Computer Science (30) which about (37%) and the Faculty of Engineering (51) which about (63%). The male (55) which about (67.9%) and the female (26) which about (32.1%).

4.3. Tools: SPSS software used to analyze the results

4.4. Data Collection

Table 2: Data Collection

Number	Questions	I strongly disagree	Disagree	I do not know	Agree	Strongly Agree
1	The course and electronic discussions should be easy to use, simple and clear	0	2	1	24	54
2	To design the course and electronic discussions in a way that helps the user to accomplish the tasks he is seeking easily	0	1	3	23	54
3	Help students quickly access the information required	0	2	2	21	56
4	The interface includes sub-menu options that help students easily choose and access information	0	1	1	21	58
5	The interface must be stable so that the interface options, properties, and associated keys remain in place and do not change with screens	0	1	3	20	57
6	Be simple, clear and united in visual presentation	0	1	0	25	55

5. Results and Discussion

After analyzing the collected data for 6 questions to measure the Interface, usability and interaction using SPSS software program. The following results were obtained in terms of tables.

Table 3: The questionnaire result

Number	Questions	I strongly disagree	Disagree	I do not know	Agree	Strongly Agree
1	The course and electronic discussions should be easy to use, simple and clear	0	2	1	24	54
2	To design the course and electronic discussions in a way that helps the user to accomplish the tasks he is seeking easily	0	1	3	23	54
3	Help students quickly access the information required	0	2	2	21	56
4	The interface includes sub-menu options that help students easily choose and access information	0	1	1	21	58
5	The interface must be stable so that the interface options, properties, and associated keys remain in place and do not change with screens	0	1	3	20	57
6	Be simple, clear and united in visual presentation	0	1	0	25	55
7	Average	0	1.333333	1.666667	22.33333	55.66667
8	STDEV	0	0.516398	1.21106	1.966384	1.632993

Table 4: Distribution of the sample by Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	55	67.9	67.9	67.9
	Female	26	32.1	32.1	100.0
	Total	81	100.0	100.0	

5.1. Male Result

Table 5: Male Result

Questions No	Strongly Disagree	Disagree	I do not know	Agree	Strongly Agree
1	0	2	1	14	38
2	0	1	2	14	38
3	0	2	1	13	39
4	0	1	1	12	40
5	0	1	2	11	41
6	0	0	0	15	40
Average	0	1.166667	1.166667	13.16667	39.33333
STDEV	0	0.752773	0.752773	1.47196	1.21106

5.2. Female Result

Table 6: Female Result

Questions No.	strongly disagree	Disagree	I do not know	Agree	Strongly Agree
1	0	0	0	10	16
2	0	0	1	9	16
3	0	0	1	8	17
4	0	0	0	8	18
5	0	0	1	9	16
6	0	1	0	10	15
Average	0	0.166667	0.5	9	16.33333
STDEV	0	0.408248	0.547723	0.894427	1.032796

From the table no 2 the result show that The Interface, usability and interaction is strongly agree with average of 55.66667 with standard deviation of 1.632993 while agree with average of 22.33333 with standard deviation of 1.966384, while I do not know with average of 1.666667 with standard deviation of 1.21106, while disagree with average of 1.333333 with standard deviation of 0.516398, while strongly disagree with average of 0 with standard deviation of 0. From no 4 shows the male results is strongly agree with average of 39.33333 with standard deviation of 1.21106. From no 5 shows the female results is strongly agree with average of 16.33333 with standard deviation of 1.032796.

From the above we observe that the result finding for the questionnaire is strongly agree for all member of the pupation sample which agree with others papers. Based on the adjusted questionnaire results, it is found that learners regard the Interface, Usability and Interaction the web, a well-designed, user-friendly learner the form of The Interface, Usability and Interaction the web therefore becomes one of the critical factors in determining whether learners will enjoy using the web.

6. Conclusion

The study analysis to investigate and evaluate the performance measurement the Interface, usability and interaction, it is found that learners regard the Interface, Usability and Interaction as being the most important dimension. A well-designed, user-friendly learner interface therefore becomes one of the critical factors in determining whether learners will enjoy using the web-passed have been done using questionnaire and SPSS analysis for scientific and engineering Faculties.

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