

## **Evaluating the Effectiveness of E-learning: Based on Academic Staff Evaluation**

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### **Abstract**

E-learning has become a popular learning method used in many local and international universities and in many educational institutions. The initial achievements of e-learning platforms and the online learning environment demonstrated outstanding advantages in distance education. However, it is necessary to conduct an evaluation of the educational process, and in particular an effective assessment of the learning environment via online-based e-learning platforms. Where this study aimed to identify the evaluation of the effectiveness of e-learning from the point of view of the teaching staff in the Technical Institute of Babel and the Technical Institute Al-Mussaib. To achieve the objectives of the study, the researchers prepared a questionnaire containing (32) questions, after verifying the tools of reliability and validity. The results of the study revealed that the evaluation of the effectiveness of e-learning was average and above average in some paragraphs of the questionnaire. The percentage (84,070) of faculty members use computers and smart phones to publish academic content through the use of the home internet, at a rate of (95,575) in the form of creating educational content in several forms, including video, audio and text at the same time.

### **Keywords**

Evaluation, Effectiveness, Information Technology, e-learning.

## **Introduction**

In light of the development of information technology, the successive changes in the e-learning platforms and the continuous updates on Cloud Meetings, the growth experience and knowledge acquisition of many of the world's population in dealing with the Internet, especially education from the distance many people have come to live in the era of the scientific and technological revolution, which has had many positive effects on life, as a result of this increase in information available in all areas and technical developments in the field of education, we note that electronic education has become a requirement for many learners and teachers in search of modern educational methods and models that suit their experiences to meet the challenges in the current circumstances. Where E-learning can be considered as e-learning based on the Internet and information technology media. It includes acquiring knowledge and skills using electronic technologies such as computers and the Internet (Kahiigi, et al 2008).

(Hareton, 2003) defined e-learning as any form of using web and internet technology to effect learning as a comprehensive concept. (Henderson, 2002) defined it as distance learning using computer technology. Summary (E-learning is one of the modern methods of distance learning using modern technology through the use of communication mechanisms, multiple means, and electronic libraries, which is an effective way to exchange information in all its forms between teaching bodies students with the least effort, cost, and time (Repman,1996). So, e-learning has become, at the present time, an urgent need for many universities by encouraging teachers and learners to use e-learning platforms and encouraging teachers to design e-courses and build interactive educational content from the management of teaching and learning activities, which is one of the most important elements of education on the approved dimension on the educational technology based on the Internet and networks environment. And by adopting a learning management system based on electronic learning platforms.

## **E-learning Evaluation**

(Al-Ghareeb, 2009) identifies four methods used in the evaluation process of e-learning programs, namely: Questionnaires, interviews, (Interviews), Observation and Application, and E-tests (Bruce, 1995). (Abdel Aziz, 2008) believes that e-learning programs can be evaluated through (short exams), Essays and achievement files (E-Portfolios) (Benson, 20023). (Amanda, 2006) believed that regular and informal tests, self-evaluation, interviews, learners 'observation and feedback can be used in the e-learning evaluation process (Hareton, 2003). As the evaluation process is a vital and important element, it

helps in preparing the teaching bodies and provides them with the necessary information in support of the e-learning process and the decision-making regarding the continuation and development of the educational process. The faculty views on e-learning play a fundamental role in how to evaluate the educational process from a personal perspective and their educational experiences that they have acquired during the past years in education. The faculty views on e-learning play a fundamental role in how to evaluate the educational process from a personal perspective and their educational experiences that they have acquired during the past years in education.

### **E-learning Interaction**

(Judi & Long, 1996) indicates that there are four types of interaction in e-learning which are (learner and content interaction, learner interaction with the supervisor, learner interaction with learner, and learner interaction with himself (Repman, 1996). According to (Alaa Sadeq), he believes that interaction in technology-based e-learning programs is interaction with educational content using a two-way interaction, he confirms that distance education systems depend on the use of means of information transmission and communication technology to transfer educational content to students. There are many questions related to the effectiveness of e-learning, including what are the contributions that achieve success in e-learning or what are the factors that determine the success of e-learning, there are some studies looking at teachers 'or learners' behavior associated with the effectiveness of e-learning, but these patterns were not sufficient to measure the effectiveness of e-learning interpreted.

### **Method and Procedures**

In this context, we discuss a description of the tools and procedures of the study and the statistical treatments used by researchers.

**Tasks:** Preparing special questionnaires prepared by researchers for the purpose of evaluating the effectiveness of e-learning to survey the opinions of the academic staff at the Middle Euphrates Technical University to determine the effectiveness of education, training and various educational activities.

### **Methodology**

The process of evaluating the effectiveness of education requires the use of sample survey as a basic approach in the study or by the sampling method, a limited number of cases

within the limits of time, effort and capabilities (Shafiq, 1985). On this basis, the researchers relied on using the descriptive and analytical method to collect data from the study sample from faculty members using a questionnaire prepared for the purposes of this study.

### **Study Tool**

To achieve the objectives of the study, the researchers prepared and created a questionnaire, its purpose is to know how and where e-learning is used, and what is the method for giving lectures. As well as creating a questionnaire consisting of (23) items to find out the effectiveness and quality of e-learning. The paragraphs of the questionnaire are divided into three parts. The first part was devoted to the study sample information for faculty members with variables (gender, academic achievement and specialization). The second part was dedicated to knowing how to use classrooms with the variables of place, time, and the technology used, as for the last part, it was a set of questions aimed at identifying the most important factors of interaction and evaluating e-learning. The researchers used the five-point scale (Likert) to judge the arithmetic averages, in order to determine the axes of the questionnaire, weight was given to the alternatives (strongly agree, agree, neutral, disagree, strongly disagree).

### **Problem of the Study**

E-learning has an important role in the continuation of the educational process under the current circumstances that the whole world is going through. As the wide development in the use of Internet networks among members of the global community, the spread of social networking sites, the ease of using modern means of communication such as sound, image and educational films, and the development of e-learning platforms such as (Classroom, Moodle, ..... Etc.) and other means of these means allowed many students and teachers to continue the educational process with less effort and time.

### **Importance of the Study**

This study is useful in improving the performance of the e-learning system and can be used in measuring the effectiveness and evaluation of e-learning at the Middle Euphrates Technical University, especially in the Babel Technical Institute and the Al-Mussaib Technical Institute, the research derives its importance as it keeps pace with the current

events from the quarantine of the spread of the Covid 19 virus and helps the higher authorities in the university to take appropriate decisions to support the use of e-learning.

### **Aims of the Study**

This study aims to reveal the effectiveness of e-learning and evaluate it from the viewpoint of the faculty members at the Middle Euphrates Technical University, the Technical Institute of Babel and the Al-Mussaib Technical Institute.

The current study aims at:

1. Investigate the effectiveness of using e-learning.
2. Evaluating the effectiveness of using e-learning.

### **Limits of the Study**

To achieve the objectives of this study, the researchers created a questionnaire based on Google models, and the link was distributed to the study sample, the teaching staff at the Babel Technical Institute and the Musayyib Technical Institute who actually use e-learning in giving lectures.

### **Reliability of the Study Instrument**

1. The questionnaire questions were presented in their initial form to five arbitrators with experience in scientific research and teaching in order to arbitrate and know the extent to which the questionnaire covered all aspects of the effectiveness of e-learning and to express their opinion on the questionnaire questions. Where the opinions of researchers focused on reformulating some of the questions. The researchers modified the questionnaire questions in light of the opinions of the arbitrators.
2. To verify the validity of the study tools used, the researchers used the reliability coefficient (Cronbach's Alpha) by half segmentation using the SPSS program, through which the discrimination factor was distinguished for each question, where the value of the general stability of the tool was (0.880) and it is a value that enjoys a high degree of stability, and based on the above for obtaining results, one can rely on the questionnaire tool to collect information and draw conclusions and trust them. See Table (1).

**Table 1 The stability coefficient of the reaction**

Item-Total Statistics	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
E-learning provides me with flexibility in choosing lessons	105.47	287.162	.307	.878
E-learning provides me with the complete content of education	105.74	280.925	.364	.877
E-learning gives me a variety of methods in choosing a teaching method	106.06	284.755	.301	.878
E-learning gives me a variety of methods in choosing a teaching method	106.50	293.895	.097	.882
E-learning gives me an open time to discuss with students	105.67	296.561	.031	.883
Interesting electronic lessons	105.97	296.758	.009	.885
E-learning is a powerful tool to increase self-learning	105.78	293.102	.099	.883
There are clear and publicized methods that have been adopted to follow up on students	105.67	296.561	.031	.883
I have contentment and satisfaction with continuing e-learning	105.73	293.107	.122	.881
The e-learning environment stimulates the faculty to be creative in proposing new ideas.	105.74	280.925	.364	.877
E-learning allows access to the virtual laboratory with high efficiency.	106.45	297.446	.008	.883
There is effective communication with the contents of the curriculum and between the students.	105.47	287.162	.307	.878
Interaction increases students' acquisition of knowledge and ability to think	105.74	280.925	.364	.877
E-learning develops students' abilities for social interaction and discussion	106.06	284.755	.301	.878
It increases the student's enthusiasm for participation and ideas	105.52	288.787	.249	.879
I have knowledge and competence in using e-learning platforms (Google Classroom)	105.59	284.726	.319	.878
I have the ability and competence to send and receive e-mail	105.46	280.751	.427	.876
Spread various educational materials without a hitch	106.34	272.457	.624	.871
I receive continuous training on how to manage electronic classes	106.53	272.698	.587	.872
E-learning facilitates the process of submitting homework	106.23	272.143	.599	.872
E-learning is more effective compared to traditional education in the theoretical aspect	105.83	278.909	.531	.874
I consider the method for students to download and download lectures easy and simple	106.06	274.719	.541	.873
I do the evaluation process for students through electronic classes	106.28	272.080	.637	.871
The effectiveness of e-learning platforms enhances traditional education	106.11	275.310	.547	.873
Multimedia encourages students to self-learn and gain experience	106.39	278.061	.527	.874
Direct communication encourages the student to have a discussion	106.41	266.672	.699	.869
The university is interested in and supervises e-learning.	105.97	268.348	.708	.869
The university supports the efforts of workers in e-learning	106.65	274.996	.572	.872
The university provides specific procedures to solve e-learning problems	106.30	269.373	.636	.870
The university coordinates with the faculty to develop solutions to the problems of e-learning.	106.02	273.696	.604	.872
The university is keen to provide the academic qualifications and experiences to train the faculty.	106.03	266.133	.706	.869
The university is keen to provide workshops and courses to train the faculty.	106.37	278.932	.487	.874

Reliability Statistics	
Cronbach's Alpha	No. of Items
.880	32

### **The Sample of the Study**

The study population is a group of phenomena that the researcher studies or all individuals and things who represent the problem of research (Obaidat, 2007).As this study consists of a sample of (113) members of the teaching staff from the Technical Institute of Babel and the Technical Institute Al-Mussaib / University of Technical middle Euphrates, where the sample was randomly selected from the study population consisting of 264 members from various scientific disciplines. The researchers communicated with them through the use of social network sites and e-mail and sent a link prepared using Google Forms containing the questionnaire questions.

Table No. (2) shows that the number of the study sample reached (113) individuals distributed from the Technical Institute of Babylon was 55 and 48.673, while the number of the sample from the Musayyib Technical Institute was 58 and 51,327.

**Table 2 The study sample according to the institute**

<b>Institute</b>	<b>No. of teaching staff</b>	<b>Percentage</b>
Technical Institute of Babylon	55	48.673
Musayyib Technical Institute	58	51.327
<b>Total</b>	113	100%

Table (3) indicates the number of male and female members of the sample, as the number of males participating in this study reached 59, 52,212 higher than the female's participation, which was (54) and a rate of 47,788.

**Table 3 Table of the study sample according to the gender variable (the sex of the sample members) Demographic**

<b>Institute</b>	<b>Babil</b>	<b>Musayiab</b>	<b>total</b>	<b>present</b>
Males	30	59	29	52.212
females	28	54	26	47.788
<b>Total</b>	58	113	55	100%

Through Table (4), we note that those with a master's degree had an effective participation in filling out the questionnaire sent, and in Table No. (5) that the technological specialization was the highest percentage of participation according to specialization and a rate of (33.62).

**Table 4 The study sample for the variable academic achievement (academic degree)  
(Certificate of the sample community)**

Institute	Babil	Musayab	Total	Percentage
Doctorate	13	10	33	20.4
Master	37	43	80	70.8
Other	5	5	10	8.8
Total	55	58	113	100%

**Table 5 Sample of the study according to specialization**

Specialization	females	males	Total	Percent
Administrative	20	9	20	25.66372
Technology	11	17	11	33.62832
Agricultural	15	16	31	27.43363
Medical	7	4	11	9.734513
Other	1	3	4	3.539823
Total	54	59	113	100%

### **Statistical Analysis**

At the beginning of the questionnaire, the researchers asked a set of questions to find out what are the media used and the site used to access the e-learning platforms and what is the appropriate format for giving lectures within the scientific curriculum assigned to them on the e-learning platforms, as follows:

The first question: Use the e-learning platforms by (smart phone only, computer, smartphone and computer together).

The results were that the percentage of computer and smartphone use at the same time amounted to (84,070), the percentage of smartphone use only amounted to (14,159) and the percentage of computer use only (4,424) see Table (6).

**Table 6 The percentages of the media used**

	Number	percentage
Smart phone	5	14.15
Computer	16	4.424
Using smart phone and computer	92	84.070

The second question: From which site can the Internet and e-learning platforms be accessed? (Home, institution, other places)

Table (7) shows that the vast majority of the teaching staff prefer access to e-learning platforms from home, at a rate of (95,575), while the rate of utilization of the institution's resources amounted to (1,769) and the rate of other places amounted (2.65).



**Table 7 Shows the places of Accessing to E-learning platforms**

	No.	Percentage
Home	108	95.575
Institution	2	1.769
Other places	3	2.65

The third question: What are the types of files used in the e-learning platforms?

From the results in Table (8) that the faculty prefers to combine in giving lectures in formats (audio files, text files, video files and simultaneous teaching), and the percentage reached (69.911), while the use of video files only reached the lowest rate (3.539).

**Table 8 Shows types of E-learning that the academic staff used**

Form	Number	Percentage
Audio files	2	17.699
Electronic texts in the form of (word, PDF,PPT)	10	8.849
Video files	4	3.539
Simultaneous teaching	18	15.929
Combining all technologies	79	69.911

Then) the researchers started collecting the data obtained from the study sample answers from Google Forms and saving them in an Excel file and organizing them in a way that allows the use of these data in the statistical program (SPSS) to analyze the study data and extract the results after coding the questions and answers for calculating the arithmetic means and the standard deviation. Calculation (T-test). And to answer the questions of the study, the following statistical methods were conducted.

1. The arithmetic means and the standard deviation for the fields of the study questionnaire

The arithmetic averages and the standard deviation of the questionnaire were calculated, and the results were that the arithmetic mean of the questionnaire reached (3.4188) with a standard deviation of (0.34961). Through the obtained results, we note that the study sample evaluated the effectiveness of e-learning in a medium degree in general Table (9)

**Table 9 The arithmetic mean and standard deviation of the fields of study**

Statistics		
MEN		
N	Valid	32
	Missing	0
Mean		3.4188
Std. Deviation		.34961

Table (10) shows that the paragraphs of the effectiveness of e-learning ranged between an average degree and a weak degree, and the table was arranged according to the highest degree, where we note that the paragraph (e-learning provides me flexibility in choosing lessons), and the phrase (there is effective communication with the contents of the curriculum and between students) Between them) with a mean (3.96) and a standard deviation (1.003). The phrase (I have the ability and competence in sending and receiving e-mail) came second with an arithmetic mean of (3.96) and a standard deviation of (1.157) while the phrase (e-learning provides me with giving me the complete lesson content outline) with an arithmetic average of (3.68) and a standard deviation (1.311) Thirdly, while we notice that the phrase (the university supports the efforts of workers in e-learning) got the lowest arithmetic mean of (2.77), which is a weak percentage and a standard deviation of (1.173)

**Table 10 The arithmetic means and standard deviations of the paragraphs of the questionnaire**

Phrases	N Valid	Missing	Mean	Std. Deviation
E-learning provides me with flexibility in choosing lessons	113	89	3.96	1.003
There is effective communication with the contents of the curriculum and between the students	113	89	3.96	1.003
I have the ability and competence to send and receive mail	113	89	3.96	1.157
It increases the student's enthusiasm for participation and ideas	113	89	3.9	1.035
I have knowledge and competence in using e-learning platforms (Google Classroom)	113	89	3.83	1.164
E-learning gives me an open time to discuss with students	113	89	3.75	0.996
There are clear and publicized methods that have been adopted to follow up on students	113	89	3.75	0.996
I have contentment and satisfaction with continuing e-learning	113	89	3.69	1.053
E-learning provides me with a complete lesson content outline	113	89	3.68	1.311
The e-learning environment stimulates the faculty to be creative in proposing new ideas	113	89	3.68	1.311
Interaction increases students' acquisition of knowledge and ability to think	113	89	3.68	1.311
E-learning is a powerful tool to increase self-learning	113	89	3.65	1.202
E-learning is more effective compared to traditional education in the theoretical aspect	113	89	3.59	1.049
Interesting electronic lessons	113	89	3.45	1.217
The university is interested in and supervises e-learning.	113	89	3.45	1.239
The university coordinates with the teaching staff to develop solutions to the problems of e-learning.	113	89	3.41	1.177
The university is keen to provide the academic qualifications and experiences to train the faculty.	113	89	3.4	1.333
E-learning gives me a variety of methods in choosing a teaching method	113	89	3.36	1.218
E-learning develops students' abilities for social interaction and discussion	113	89	3.36	1.218
I consider the method for students to download and download lectures as easy and simple	113	89	3.36	1.247
The effectiveness of e-learning platforms enhances traditional education	113	89	3.32	1.205
E-learning facilitates the process of submitting homework	113	89	3.19	1.26
I do the evaluation process for students through electronic classes	113	89	3.14	1.194
The university provides specific procedures to solve e-learning problems	113	89	3.12	1.317
I publicize various scientific topics without obstacles	113	89	3.09	1.199
The university is keen to provide workshops and courses to train the faculty	113	89	3.05	1.133
Multimedia encourages students to self-learn and gain experience	113	89	3.04	1.101
Direct communication encourages the student to have a discussion	113	89	3.02	1.323
E-learning allows access to the virtual laboratory with high efficiency	113	89	2.97	0.959
E-learning gives me a variety of methods for preparing electronic test	113	89	2.93	1.075
I receive continuous training on how to manage electronic classes	113	89	2.89	1.256
The university supports the efforts of workers in e-learning	113	89	2.77	1.173

T-test to find differences between the study sample responses to the variables (work place)

**Table 11 Independent Samples Test**

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Data	Equal variances assumed	11.569	.001	.764	2087	.445	.040	.052	-.062	.141

Through Table (11) for the (t) test for differences between the workplace in evaluating the effectiveness of e-learning, the following shows that there are no statistically significant differences in estimating the potential effects between the two work sites as the value of the probability value test is equal to (0.445), which is greater than the level of Significance (0.05). This means accepting the null hypothesis that there is no difference between the averages of the sample answers from Babel Technical Institute and Al Musayyib Technical Institute. The researchers believe that the absence of differences is due to the fact that the two mentioned institutes enjoy the same roles and activities used in e-learning platforms.)

**Results**

Through the statistical analysis, the study revealed that the level of evaluating the effectiveness of e-learning in the Technical Institute of Babylon and the Technical Institute in Musyab from the viewpoint of the teaching staff in general is medium and some of the questionnaire statements were characterized by weakness in some activities. These reasons are due to the weakness of evaluation activities and the absence of specialized programs in Perform some duties. Also, some faculty members suffer from poor response to some students' inquiries about the educational material due to poor attachment of educational materials in e-learning platforms. Also, the weak support of the university for the teaching staff by providing halls dedicated to electronic education has led to most of the teaching staff practicing e-learning from home, as a result of the fluctuation in the availability of internet service within their educational institutions and thus negatively affects the interaction between the teaching staff and the student. Some teachers depend on attaching educational materials to e-learning platforms in a textual

form reduces students' interaction with educational content. The study also reveals that the e-learning experiment from the faculty point of view is successful under the current circumstances and can be used through developing skills and increasing training courses. Related to e-learning and openness towards using information technology, and also increases students' effectiveness by publishing academic content in video format for applied educational content.

## **Recommendations**

1. Develop plans and intensive training programs in the field of e-learning.
2. Providing the infrastructure by providing electronic classes dedicated to e-learning in each scientific department.
3. The necessity of building an e-learning program in a university and building its own educational platform.
4. Emphasizing on the faculty to publish educational content in several forms.
5. Emphasis on giving educational content simultaneously on e-learning platforms by using Google MEET or ZOOM) .

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