Evaluation of E-Learning Program versus Traditional Education Instruction for Undergraduate

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ABSTRACT: In fact, education and learning are interrelated concepts and this means that we cannot separate one from another. Education, on the one hand, in its general sense is a form of learning in which the knowledge, skills, and habits of a group of people are transferred from one generation to the next through teaching, training, or research under the guidance of others. Learning, on the other hand, is the process of gaining these knowledge, skills, and habits by learners themselves, without the guidance of others. The **aim** of this study is to evaluate an e-learning program versus traditional education instruction for undergraduates through the review of the advantages and disadvantages of each, with a view to address some of the disadvantages of e-learning. The researcher used the **descriptive approach** to make both the comparison and the evaluation. To evaluate e-learning versus traditional learning for undergraduates, the researcher used three major tools; namely, SWOT analysis, Comparisons, and Questionnaire. On the one hand, the researcher used a sample consisting of 30 students (both males and females) at the Egyptian E-Learning University (EELU) to evaluate the trend towards E-learning. On the other hand, the researcher used a sample consisting of 30 students (both males and females) at the Egyptian University of Ain Shams to evaluate the trend towards Traditional Education. The **results** of the study showed that there are significant differences between the advantages and disadvantages of both Traditional Learning and E-learning in favor of E-learning. The study **recommended** the use of Blended Learning (B-Learning) for it addresses the deficiencies of both e-learning and traditional learning.

KEYWORDS: Traditional Lecturing, E-learning, M-learning, Distance Learning and Blended Learning

I. INTRODUCTION

In fact, education and learning are interrelated concepts and this means that we cannot separate one from another. Education in its general sense is a form of learning in which the knowledge, skills, and habits of a group of people are transferred from one generation to the next through teaching, training, or research. Education frequently takes place under the guidance of others, but may also be autodidactic. On the other hand, learning is the process of gaining these knowledge, skills, and habits by learners themselves.

In fact, education can be delivered using various methods which gives various types of learning including: (1) Traditional Lecturing is usually defined as actions under the guidance of the teacher aiming at bringing some relatively permanent change in the way students think, feel act; (2)E-learning (Electronic Learning) is usually defined as education based on modern methods of communication including the computer and its networks, various audio-visual materials, search engines, electronic libraries, and websites, whether accomplished in the classroom or at a distance; (3) M-learning (Mobile Learning) is usually defined as learning by means of wireless technological devices that can be pocketed and utilized wherever the learner's device is able to receive unbroken transmission signals; (4) D-learning (Distance Learning) is usually defined as all learning that takes place where there is no face to face interaction between students and between students and teachers; (5)B-learning (Blended Learning) is usually defined as enriched, student-centered learning experiences made possible by the harmonious integration of various strategies, achieved by combining face-to-face interaction with information and communication technology (ICT).

This paper compares between traditional lecturing and e-learning as two different teaching methods for acquiring knowledge, evaluating the effectiveness of an e-learning program versus traditional education instruction through the assessment of the outcome scores of a questionnaire of different views on using e-learning and lectures in education.

There are many advantages of e-learning for both learners and teachers. For learners, learning is self-paced and gives students a chance to speed up or slow down as necessary, convenient for students to access any time, any place. Learning is also self-directed, allowing students to choose content and tools appropriate to their different interests, needs, and skill levels (Favretto, Garamia, &Guardini, 2005). For the teachers e-learning makes tutoring can be done at anytime and from anywhere. Online learning systems can be used to determine learners' needs and to assign appropriate materials for learners to select from so as to achieve the desired learning outcomes (Anderson &Elloumi, 2004).

On the other hand, there are some disadvantages of e-learning. For example, the learners need to have access to a computer and the Internet and need to have computer skills to deal with programs such as word processing, Internet browsers, and e-mail.

As the aim of this paper is to evaluate e-learning program versus traditional education instruction for undergraduates, it would be appropriate to give a glimpse of the meaning of evaluation first. Evaluation is a systematic determination of a subject's merit, worth and significance, using criteria governed by a set of standards. The primary purpose of evaluation, in addition to gaining insight into prior or existing initiatives, is to enable reflection and assist in the identification of future change. Evaluation is often used to characterize and appraise subjects of interest in a wide range of human enterprises, including the arts, criminal justice, foundations, non-profit organizations, government, health care, and other human services (T. D. .Sarah, 2012)(D. Reeve, J; Paperboy, 2007).

II. STUDY METHODOLOGY

E-Learning is used in countless educational organizations and corporate environments. E-Learning has many advantages as well as some disadvantages. It is very important to have a complete picture of all the advantages and disadvantages of e-learning, when you're deciding whether e-learning is the best approach for your situation. The evaluation of an e-learning program versus traditional education instruction for undergraduates is decided through the review of the advantages and disadvantages of e-learning; we also seek to address some of these disadvantages.

The main goals of the study are to review traditional education and e-learning, to compare between them, and to produce an evaluation which is based on the advantages and disadvantages of each. During the review of the advantages and disadvantages of e-learning, we seek to address some of these disadvantages.
In order to evaluate e-learning versus traditional learning for undergraduates, the researcher used the following **tools**:

A.SWOT analysis

Table (1): SWOT Analysis of the E-Learning Questionnaire answered by students at the Egyptian E-learning University

Strengths	Weaknesses
1) Overcoming the restrictions of time and place.	1) Slow connection.
2) Accessing information accurately.	2) Poor quality of connection.
3) Acquiring problem solving skills by self-reliance.	3) Poor design and production of educational material.
4) Considering the individual differences between learners.	4) Lack of regular courses for developing the skills of lecturers.
5) The educational material is retained and memorized in the learner's mind.	5) Students are engaged with other websites.
6) Confidence using the program.	6) Reduces the role of teachers in the educational process.
7) The spread of education on a larger scale.	7) Lack of internet at home for all students.
8) Increase in academic interaction among students, and between students and lecturers.	8) Lack of maintenance services in campus.
9) More use of information by students and lecturers.	9) Fear of using electronic means for lack of previous experience.
10) Allows research in electronic libraries.	10) Neutrality, unfeasibility and lack of clarity.
11) Update of educational material provided electronically	11) Not possessing the necessary skills to use the E-learning program.
12) Ease of accessing lecturers outside the official working hours.	12) No particular or specialized programs that help in introducing the E-learning program.
13) Providing administrative services for students.	13) Supervisors lack skills, while students and society do not believe in this type of education.
14) Spreading the culture of self-learning and training in society.	14) Develops social isolation, and reduces human relationships between lecturers and students, or among each other.
	15) Internet censorship hinders the educational process.
	16) Does not satisfy the full need of students in terms of educational materials.
	17) Some countries do not recognize the certificates of E-learning.
	18) Society and the business market underestimate E-learning and E-learning graduates.
Opportunity	**Threats**
1) Reinforcing the concept of E-learning for both students and lecturers.	1) Lack of internet connection at home for some students means extra cost for students.
2) Preparation of developmental curriculum for trainers and lecturers.	2) Lack of cultural programs that develop the society's understanding of study using E-learning programs.
3) Design and preparation of websites concerned with E-learning.	3) Lack of skills of supervisors and lecturers.
4) E-learning must not be the concept of corporate and private companies.	4) Lack of designs of such educational websites.
5) Concerned universities must use this program in the field of completion and acceptance of educational position.	5) Some countries do not recognize certificates of E-learning.

Table (2): SWOT Analysis of the Traditional Learning Questionnaire answered by 3rd year students at the Faculty of Computers and Information in Ain Shams University.

Strengths:	Weaknesses
1) Makes study easier. 2) Characterized by accuracy of information. 3) Recognized by all countries of the world. 4) Helps in the expansion and detailing of curriculum. 5) Teaches students commitment to deadlines. 6) Satisfies the educational needs of the student compared to other types of educational systems. 7) Improves the student's ability for teamwork. 8) Helps the student in solving educational curriculum problems and the students know where to go to. 9) Overcomes the boundary of poor English language skills 10) Helps the student in correcting errors and processing mistakes through the remarks of lecturers. 11) Allows practical application of curriculum for students. 12) Develops the moral side and the human relationships among students and between students and lecturers.	: 1) Does not allow students to show their ideas. 2) Does not allow students to choose content. 3) Does not allow student to have lectures in case of absence. 4) The authority to adjust academic content and curriculum is not available. 5) Education is based on reception, not understanding, which negatively affects the educational process. 6) Does not allow learning using modern technological means. 7) Does not allow sufficient time for discussion and asking questions. 8) Increases academic burden for teachers. 9) The increase in the number of students hinders the educational process. 10) The lack of regular courses to improve the skills of lecturers. 11) Reduces retention for students. 12) Increases the limitation of learning and reduces the opportunities for development of abilities, creative and research skills for students.
Opportunity	Threats
1) Development of poor English language skills for students 2) Providing sufficient time for discussion between students and lecturers 3) Development of the content of the academic curriculum to cope with the technological and social development 4) Adjusting the capacity of classrooms or building appropriate classrooms to spread the benefit of discussion between lecturers and students.	1) The lack of regular courses to improve the skills of lecturers. 2) The increase in the number of students hinders the educational process. 3) The lack of opportunities for learning using modern technological means. 4) The lack of authority to adjust the content and academic curriculum to cope with the ongoing developments.

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B. Comparisons

Table (3) showing a comparison between e–learning and traditional learning according to the questionnaire results.
(Source:http://www.okstate.edu/ag/agedcm4h/academic/aged5980a/5980/newpage16.htm)

Headings	Traditional learning	No of Questionnaires	Degree of saturation	E-Learning	No of Questionnaires	Degree of saturation
Classroom Discussions	The teacher usually talks more than the student and It is a face to face, classroom based teaching. Guide: Teacher Directly interacts.	23 27 32 34	0.497 0.568 0.686 0.504	The student talks at least as much as or more than the teacher and it is more available and easy to access. Guide : Teacher with advance tech.	3 9 46	0.892 0.750 0.857
Group or Individual Study	There is a whole class participating, there is almost no group or individual study.	3 4 30	0.680 0.737 0.647	Most of the learning process takes place in groups or by the individual student.	21 22 23	0.463 0.675 0.812
Base of Subject Matter	The teacher conducts the unit and all the lesson according to the study program and then make a strategy and then provide the notes as suitable	13	0.857	The studying is based on electronic medium as on various sources of Information as net-experts located by the student.	17 6	0.894 0.811
Emphases in the Learning Process	The students learn "what" and not "how". The students are not involved in inquiry-based education and In solving problems, but Rather in tasks set by the Teacher.	26 29 34	0.493 0.826 0.504	The learning is better connected to the real world; the subject matter is richer and includes material in different formats and use web.	2 4	0.553 0.621
Motivation And Encourage	The students' motivation is Low, and the subject matter is "Distant" from them. The motivation can take place when teacher interacts with students directly.	10 27	0.784 0.507	The students' motivation is high due to the involvement. In matters that are closer to them and to the use of technology.	16 18	0.698 0.513
Teacher's important Role	The teacher is the authority and the teacher handles all the students.	18 36	0.681 0.787	The teacher directs the Student to the information electronically.	26 46	0.819 0.857
Learning Location	The learning takes place within the classroom and the School within a place.	19	0.806	The learning takes place over the internet or with no fixed location.	1	0.596

Table (3-5) (Comparison Between T-Learning, E-learning, M-Learning, D-Learning And B-Learning) (Upadhyay and Jaiswal, (2014)"

	T- Learning	E- Learning	M- Learning	D- Learning	B- learning
Advantages	1. Makes study easier. 2. Characterized by accuracy of information. 3. Recognized by all countries of the world. 4. Helps in the expansion and detailing of curriculum. 5. Teaches students commitment to deadlines. 6. Satisfies the educational needs of the student compared to other types of educational systems. 7. Improves the student's ability for teamwork. 8. Helps the student in solving educational curriculum problems and the students know where to go to. 9. Overcomes the boundary of poor English language skills 10. Helps the student in correcting errors and processing mistakes through the remarks of lecturers. 11. Allows practical application of curriculum for students. 12. Develops the moral side and the human relationships among students and between students and lecturers. 13. Providing sufficient time for discussion between students and lecturers	1. Overcoming the restrictions of time and place. 2. Accessing information accurately, and also outside the official working hours. 3. Acquiring problem solving skills by self-reliance. 4. Considering the individual differences between learners. 5. The educational material is retained and memorized in the learner's mind. 6. Confidence using the program. 7. The spread of education on a larger scale. 8. Increase in academic interaction among students, and between students and lecturers. 9. More use of information by students and lecturers. 10. Allows research in electronic libraries. 11. Update of educational material provided electronically 12. Providing administrative services for students. 13. Spreading the culture of self-learning and training in society.	1. Management: We can try out code given to us and see the results during the lecture. 2. Educational: We are able to go through lecture' slide on mobile. 3. Support: Using mobile would be easier to type rather than write note. 4. More persona. 5. Interaction: Students can search for the new materials. 6. Timely present in handout:It may assist students to understand what the lecturer is talking about. 7. wider access: All of your files are in one easy spot/ better organization of materials. 8. Easy to access: Carrying recourses such as book and lecture notes in electronic way is better for the environment 9. Across Anywhere..	1. Continues improvement of DE technologies. 2. Ability to reach new audiences and existing demand. 3. Presence of early adopters and proximity to technology. 4. Reputation for quality content. 5. Extensive infrastructure and network. 6. Use of technology to enhance teaching and learning. 7. Administrative encouragement and support. 8. Expansion of audience base to reach non-traditional students. Create an individualized and enhanced interactive learning experience. 9. Provide unique and specialized courses / programs	1. Students learned some of the material independently and this helped them to apply the learning in a more facilitated learning environment. 2. BL engages the students more and facilitates a more interactive and productive classroom environment. 3. BL reduces the actual classroom time, thus reducing exhaustion. 4. BL encouraged students to use the out-of-classroom time in meaningful activities. 5. Online quizzes helped students better identify those areas that they need to review. 6. Submitting homework, viewing course material, course objectives and reading material online are convenient. 7. Use of multimedia and external links was useful to understand the subject. 8. Posting class materials, assignments, instructions for presentations and external links for reference, all save classroom time. 9. Online objective tests for self-assessment were graded automatically and instantly. Students' grades in the online grade-book give them convenient access. 10. BL created a dialogue outside of the classroom among students and teachers, by discussions and forums provided in the software. 11. Online exercises provide flexibility in terms of timing. 12. There is a uniform reach of content to the student. 13. BL can kick-off faculty shortage because a single teacher can enrol any number of students into the course. 14. Once software and hardware are acquired and skills are developed, administering becomes very easy.

	T- Learning	E- Learning	M-Learning	D-Learning	B- learning
Disadvantages	Does not allow students to show their ideas. Does not allow students to choose content. Does not allow student to have lectures in case of absence. The authority to adjust academic content and curriculum is not available. Education is based on reception, not understanding, which negatively affects the educational process. Does not allow learning using modern technological means. Does not allow sufficient time for discussion and asking questions. Increases academic burden for teachers. The increase in the number of students hinders the educational process. The lack of regular courses to improve the skills of lecturers. Reduces retention for students. Increases the limitation of learning and reduces the opportunities for development of abilities, creative and research skills for students. The lack of opportunities for learning using modern technological means. The lack of authority to adjust the content and academic curriculum to cope with the ongoing developments.	Slow connection or poor quality of connection. Poor design and production of educational material and websites. Lack of regular courses for developing the skills of lecturers which means lack of skills of supervisors and lecturers. Students are engaged with other websites. Reduces the role of teachers in the educational process. Lack of maintenance services in campus. Fear of using electronic means for lack of previous experience. Neutrality, unfeasibility and lack of clarity. Both students, teachers as well as supervisors may lack for the necessary skills to use the E-learning program. Develops social isolation, and reduces human relationships between lecturers and students, or among each other. Internet censorship hinders the educational process. Does not satisfy the full need of students in terms of educational materials. Some countries do not recognize the certificates of E-learning. Society and the business market underestimate E-learning and E-learning graduates. Lack of internet connection at home for some students means extra cost for students. Lack of cultural programs that develop the society's understanding of study using E-learning programs.	1. Deprives students from listening to the lecturer. 2. The small mobile screen size. 3. Cost. 4. Mobile can distract. Students may watch movies and play games during lecture. 5. Some students may lose their mobile in class. 6. Sometimes the signal of the wireless connection is weak. 7. Battery life is an issue. 8. Can't assure that all students will have device. 9. Compatibility between different operating systems. 10. Small button and Size of Device	Limited incentives development support and funding. Limited knowledge regarding copyright and intellectual property. Weak communication channels. Slow action on critical issues. Current technological limitations. Lack of skill expertise and desire to develop interactive DE courses. Loss of interaction. Dependency on outside developer / programmers and security concerns.	BL depends upon concretization, coordination, collaboration and communication across the organization, the reason why it is not so easy to do. Poor Internet connectivity and speed, which is a must when time-limited online assignments are given. Both software and hardware are somewhat expensive for some students. Certain configurations on the laptops/desktops had to be enabled to access BLS. Time limit on certain assignments makes it stressful. The process of conducting online tests is entirely dependent on expensive technology that may or may not be available to all students staying outside the campus. Dependency on computers for spellings would probably deteriorate students' knowledge of the English language. Chat sessions while multitasking online proved to be a distraction. Exchanging IDs and passwords, students could complete assignments for others

C.Questionnaire.

Statistical Methods used for analyzing data included, "Arithmetic averages and standard deviations", "T-test for differences between averages", "Factor analysis using principal components method", and "Rotation of factors using Varimax method."

The study sample consists of (60) students of Egyptian universities. Their ages range from 18 to 21. The sample is divided into (30) students from the Egyptian E-learning University, and (30) traditional learning students from the Faculty of Computers and Information – Ain Shams University.

The factor analysis of the correlation coefficients between the items of the questionnaire on the trend towards E-learning in the study sample of students from the Egyptian E-Learning University (N = 30), reveals one general factor and a number of group factors for the advantages and disadvantages of E-learning.

The factor analysis of the correlation coefficients between the items of the questionnaire on the trend towards Traditional Learning in the study sample of Ain Shams University Students (N = 30), reveals one general factor and a number of group factors for the advantages and disadvantages of Traditional Learning.
There are significant differences between the advantages and disadvantages of both Traditional Learning and E-learning in favor of E-learning.

III. STUDY PROCEDURE

As a first step, the researcher conducted a Literature survey on traditional education and education based on e-learning. Then the researcher used the descriptive approach to explain the current situation concerning the trend towards E-learning and Traditional Learning in a sample of Egyptian University Students; to compare between the two systems of learning in terms of disadvantages and advantages; and to reveal the ability of generalizing E-learning in the educational environment.

In realizing the problem, the researcher set off to collect data that assist in determining the problem, and confirming its existence, determining the characteristics of the phenomenon, determining the questions and hypotheses concerning the subject of the study and determining the variables of the problem and the nature of the relations between these variables.

Then the researcher set off to determine the research community, selecting the study sample, identifying its size and its method of selection. Thus sample of (60) students of Egyptian universities is selected. After that, the researcher moved to select the methods of data collection or preparation and standardizing these data collecting methods.

Thus, a questionnaire on the trend towards E-learning, consisting of 50 items, prepared by the researcher is distributed among (30) students from the Egyptian E-learning University, while another questionnaire on the trend towards Traditional Learning, consisting of 39 items, also prepared by the researcher is distributed among (30) students from the Faculty of Computers and Information – Ain Shams University. Correction in both is carried out on a scale of 5 points ranging from (strongly disagree to strongly agree).
Finally, the researcher moved to describe, analyze and interpret the results.

IV.DISCUSSION OF THE RESULTS

In both questionnaires – the one on the trend toward E-learning and the one on the trend toward Traditional learning – the correlation coefficients between the items of the questionnaire are calculated, factor analysis is conducted for the correlation matrix using the principal components method, then the factors extracted using the Varimax method are rotated, and the identity of factors are determined after rotation.

In case of the questionnaire on the trend toward E-learning, the factor analysis using principal components method (after rotation) revealed the extraction of 15 factors which loaded 85.96% of total variance. In case of the questionnaire on the trend toward Traditional learning, the factor analysis using principal components method (after rotation) revealed the extraction of 12 factors which loaded 80.287% of total variance.

Because these factors, in both cases, are primary, the researcher used the following standards as criteria for determining the identity of the extracted factors after rotation: (1) Latent root must not be less than "1"; (2) Number of items loaded with factor must not be less than three; (3) The minimum for an item to be loaded with factor must not be less than 0.45.

Thus, the results of the analysis identified the following as advantages of E-Learning: "Satisfaction of needs versus misuse", "Acknowledging E-learning versus not acknowledging it", "Increasing the opportunities of self-research", and "Ease of use versus difficulty of use". Moreover, the results of the analysis also identified the following as disadvantages of E-Learning: "Lack of sources and tools", "Inexperience in dealing with electronics", "Personal impediments", "Inefficiency of supervisors of the educational process", and "Social isolation and lack of human relationships".

On the other hand, the results of the analysis identified the following as advantages of Traditional Learning: "Ease of study versus difficulty of study", "Study is entertaining", "Ease of study versus difficulty of study", "Developing the humanitarian side as well as interaction in students", and "Raising the capabilities and skills of students". However, the results of the analysis also identified the following as disadvantages of Traditional Learning: "Reducing the opportunities of students for training and skills development" and "Lack of improvement and increase of burdens."

Finally, calculations made for T-test between the responses of the study sample concerning the questionnaire on the trend towards E-learning, and the questionnaire on the trend towards Traditional Learning showed that there are statistically significant differences between the advantages of Traditional Learning and E-learning in favor of E-learning, where the average of advantages of E-learning is higher than the average of advantages of Traditional Learning. In addition, the calculations also showed that there are no statistically significant differences between the disadvantages of the two types of learning where T is not statistically significant.

Table no.(5) illustrates the T value and its indexes for the differences between the advantages of E-learning and Traditional Learning:

E-learning		Traditional Learning		T	Index
A	S	A	S		
72,2308	11,3566	59,5128	9,38733	5,391	0

Table no.(6) illustrates the T value and its indexes for the differences between the disadvantages of E-learning and Traditional Learning:

E-learning		Traditional Learning		T	Index
A	S	A	S		
69,9744	16,0255	63,6923	12,5827	1,925	0.058

A: Arithmetic Average   S: Standard Deviation.

The previous tables indicate that there are statistically significant differences between the advantages of Traditional Learning and E-learning in favor of E-learning, where the average of advantages of E-learning is higher than the average of advantages of Traditional Learning.
In addition, there are no statistically significant differences between the disadvantages of the two types of learning where T is not statistically significant.
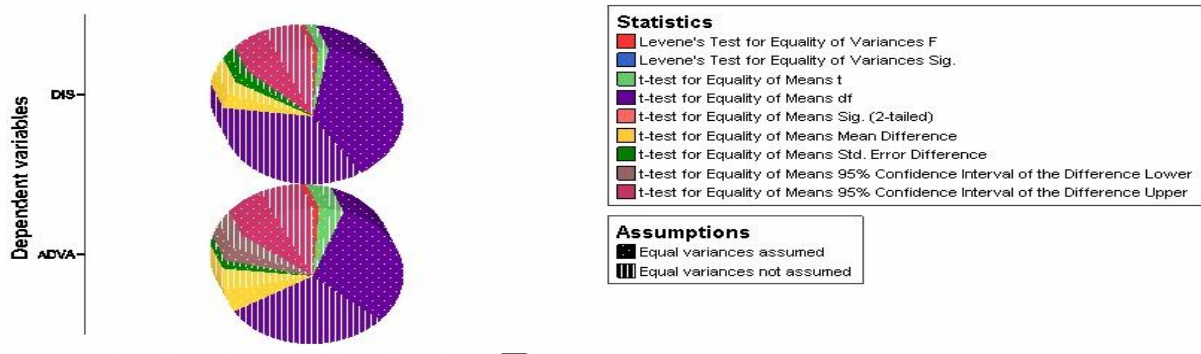
eliciting the feelings, beliefs, experiences, perceptions, or attitudes of some sample of individuals. Then the researcher used a number of Statistical Methods for analyzing data, including; "arithmetic averages and standard deviations", "T-test for differences between averages", "factor analysis using principal components method", "rotation of factors using Varimax method", and "Cronbach's Alpha reliability coefficient." Comparison shows both aspects of similarity and aspects of difference between e-learning and traditional learning which help highlight the advantages and disadvantages of both. SWOT analysis simply analyzes the strengths, weaknesses, opportunities and threats of both e-learning and traditional learning which sustains evaluation even further. The researcher used the descriptive approach to explain the current situation concerning the trend towards E-learning and Traditional Learning in a sample of Egyptian University Students; to compare between the two systems of learning in terms of disadvantages and advantages; and to reveal the ability of generalizing E-learning in the educational environment. The results of the study showed that there are significant differences between the advantages and disadvantages of both Traditional Learning and E-learning in favour of E-learning, where the average of advantages of E-learning is higher than the average of advantages of Traditional Learning. However, the study **recommended** the use of Blended Learning (B-Learning) for it addresses the deficiencies of both e-learning and traditional learning.

VI.FUTURE WORK

- Expert systems can be used for evaluationof e-learning program out games.
- Taking into consideration opinions of different categories of students such as the pupils in schools and postgraduate students in universities.

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