

## **Distance learning emergence as an outcome of Pandemic: Case Study for Lebanese Universities**

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### **Abstract**

Learning is considered the foundation for the development of any state. If one wishes to destroy a nation, one can simply decrease the level of education and this nation will collapse in short times. For centuries, the style and process of learning has been debated. Distance learning is one of the issues that is considered controversial in the education sector. Many ministries of higher education oppose the concept of distance learning. As an example, Lebanese Ministry of Education and Higher Education (MEHE) rejected the official certification of online degrees. However, in the time of COVID 19 the Ministry legalized the on-learning process. This research highlighted the benefits and drawbacks of distance learning and questioned the possibility of utilizing distance learning in Lebanese universities in the future. A survey was distributed among university instructors and students and results showed that still there is some hesitation on implementing E-learning. Outcomes of this study help to shed light on the process to legalize E-learning among university which still needs a planned strategy for Lebanon.

**Keywords:** Distance-learning, online education, COVID 19, higher education institutions, Lebanon

### **Introduction**

The utilization of various types of Information and Communication Technologies (ICTs) is a must in the learning process of distance learning (Laurillard, 2006) and thus the development of technology is the base for virtual classes. E-learning describes the interaction in which students use different types of ICT in their learning process, nevertheless, they might be in the same classroom. However, distance learning or Distance education is a term used to refer to students who do not have to be physically present at a school, college or university in order to attain an education. The concept of distance learning has developed tremendously during the last 15 to 20 years (Holmström & Pitkänen, 2012) to suit the change in the lifestyle whereas the origin of distance education goes

back to 1840 when Sir Isaac Pitman started a correspondence education which was considered as a revolutionary approach at that time. E-Learning witnessed an increase in usage, in the overall number of material taught, more than 86% between 2006 and 2008 whereas, an increase of 33 % worldwide took place for Virtual Classrooms considering the same two years (Holmström & Pitkänen, 2012).

It is with no doubt that distance learning is as important for educators as it is for students in universities (Kirkwood, 2009), nonetheless, educators still feel that more steps are needed to adopt this approach in learning. Additionally, this virtual approach in teaching makes the distance of less importance and provides extremely flexible tactic in teaching (Anderson, 2008) and gives students the opportunity to access a lifelong learning (Singh, O'Donoghue & Worton, 2005) . The fact that distance education is making the geographic distance in education less and less important but still this is not the only benefit of distance education. It also will generate realistic and quick resolutions for various hardship and barriers that are faced currently by the higher education institutes problems and hardships facing universities especially that the numbers of students is growing (Basaqr, 2009) and allow them to enroll students from around the world and increase their profits.

However, many challenges can be faced during the implementation of distance learning especially in developing countries which are still in need to enhance their education field compared to developed countries that have up-to-date methodology in schooling (Sife et al., 2007). Nevertheless, the COVID 19, which is an infectious disease and is considered a new strain of coronavirus and was initially discovered in Wuhan, China, in December 2019, pushed the educational organizations around the world to start implementing the online education also known as virtual learning, or distance learning and recently called e-learning as an alternative for the on-campus traditional learning.

The objective of this research is to highlight the significant development of distance learning after the spread of Corona virus. The research will be divided into two parts: theoretical part which includes the literature review and the empirical section where the analysis of the hypothesis will take place.

## **Literature review**

On-campus classes using face-to-face lecturing or case studies and written materials were some of the approaches that educators utilized in traditional learning before COVID 19. After the world was hit by the Pandemic, higher education institutions were obliged to switch to distance learning where the learner is able to control how or what and even when he/she learns and collaboration among students in the process of learning increased (Al Sharhan, 2011) whereas contact between instructors and students decreased. Moreover, depending on who or what is to be acquired from the learning process, the style of the learning involvement is determined (Akhras, 2012).

Many researchers believe it is mandatory to implement strategic vision for introducing distance learning in the higher education institutions strategic plan (Bin Bakr, 2011). Aligning with Bin Bakr (2011), some studies emphasized that the introduction of distance learning in the vision of universities is expensive (Sanderson, 2002) to implement but still such change is a must especially with the changing global environment (Bates, 2001) both ecologically, economically and even politically.

Contrary, it is worth mentioning that distance learning in which students are away from the university environment will not provide same characteristics as on-campus learning (Forsyth, Pizzica, Laxton, & Mahony, 2010). However, due to the international lock down as a result of COVID 19, most universities had no choice but to adopt e-learning. This study will examine the benefits and disadvantages of distance learning and questioned the possibility of utilizing distance learning in Lebanese universities in the future.

### **Models of distance learning**

Distance learning is categorized into two modes of teaching, the asynchronous and synchronous type of communication (Kirkwood & Price, 2012). The asynchronous method or non-real-time model, utilizes mainly emails, bulletin boards as tools for communication among students and instructors but in different timing (Oye, Salleh & Iahad, 2012). This style of communication is more attractive as it provides students with freedom to perform their undertakings with no time or supervision pressure (Anderson, 2008; Hrastinski, 2008).

However, the other mode of communication, the synchronous mode or real-time model, is closer in nature to traditional education as the teacher will be interacting directly with the students via presentations of verbal lecturing and sometimes via camera (Keegan, 2005) and this will outcome in a more dynamic education if it is compared to using solely asynchronous communication (Niehues, 2007)

Researchers showed that mixing synchronous and asynchronous communication in distance learning will produce a more constructive outcome than only using one approach in communication (Zhao et al., 2005).

### **What are the factors that influence the efficiency and quality of distance learning:**

Many factors can influence the efficiency of e-learning whether positively or negatively.

The factors are:

a. Visual elements:

A very important factor that researchers are evaluating its effect is the introduction of images, colors or other visual effects in the online (Schnitman, 2007) but surprisingly the results were not promising ((Niehues, 2007) and this contradicts with face-to-face teaching where it is recommended to use visual media as it can serve in the learning process.

b. Learning experience type:

Many studies showed that better results can be obtained when students have more control on their learning experience. The results of students who were exposed to “generative activity” in addition to viewing a static Web page were much better than their peers who only were exposed to the static Webpage (Gao & Lehman, 2003). Aligning with this finding, Zhang (2005) discovered a statistically noteworthy encouraging outcome in favor of student control over Web functionality.

Nonetheless, no variances were noticed among two categories of students who utilized end-of-module review questions that apply dynamic responses approach and the other category who were exposed to a condition with expository end-of-module activities (Chen 2007 ; Cook et al. 2007). Similar observation were conducted on the influence of guiding questions that were found to have noteworthy positive influence on students working individually while this effect

vanished when students were divided into groups (Suh, 2006) and probably this was due to the fact that students in groups will support each other's work, leading to the reduction in the positive influence of outside provided questions.

c. Technology based instructions:

The comparison of results between students performing only homework in-class and their peers who were doing weekly online tests were statistically very close (Stanley, 2006) and these findings if backboned with more empirical studies in the future might lead to decreasing the number of quizzes in favor of projects and assignments (Maag, 2004) . It is worth mentioning that Tselios et al. (2001) believe that the platform which the quiz will take place will no doubt influence the performance of the students in the test.

Additionally, an important finding for distance learning is the better performance of students who took the exam directly after the module finished but with self-assessment questions over students who took the same exam but without such questions (Cook et al., 2007). This was justified as a consequence of reflection of the course. Means (2010) suggests that encouraging students to reflect on their education will play a role in enhancing tremendously the results of the e-learning experience.

**Changes in Teaching Methods when Introducing e-learning Watch for pedagogy issues here....and need newer references**

Moving from the traditional learning perspective to the online learning requires many preliminary steps such as ensuring that all the needed infrastructure is available and that educators and learners have the knowledge and abilities to use the equipment and programs (Akhras & Akhras, 2012).

This transition will cause some changes in the role of teachers and students (Cohen & Nycz, 2006) in which students are urged to be dynamic participants in the process of receiving education instead of acting passively while receive classes in traditional teaching (Cohen & Nycz, 2006). On another note, Anderson (2008) stated that ICT has changed the teacher's role from being "sages on stage" to "guides on the side" (p. 3) as teachers are becoming more experts in online teaching tactics rather than experts in communication and transmitting information in class face to face. Teachers now should base their attention on e-motivation of students. So in e-learning, teachers do not have a domination of the information transmitted (Hård af Segerstad, Klasson, & Tebelius,2007), but they are the managers of collaborative learning and skill developer. This new role develops the students-teachers relationships (Cohen, Manion and Morrison, 2004).

Many studies were conducted to compare E-learning with the traditional learning technique and the blended learning method, which is a combination of distance and traditional learning, in term of effectiveness. The summation that many researchers concluded when analyzing statistical outcome on the performance of students is that distance learning has the same quality of education as face-to-face education (Bernard et al., 2004) and this aligns with the findings of Cavanaugh (2001) who specified no major dissimilarities in efficiency between online-education and face-to-face education.

A more optimistic study for e-learning was conducted by Sitzmann et al. (2006) which found out that distance learning has better outcome than face to face technique in terms of declarative knowledge results but deducted that both ways are similar in reference to procedural learning.

After analyzing the literature on e-learning we reached two hypothesis. These are stated as follows:

H1: Online learning has the same quality of education as traditional face-to-face learning.

H2: Lebanese students are satisfied with the quality of the provided online learning

## **Methodology**

In this section, the purpose of the research is discussed, the participants' selection, the research design, the analysis of data used and the procedures used in the study are identified.

### **Purpose of Research**

The main purpose of this research is to uncover the hidden complications and drawbacks of e-learning. The research aim is to present a recommendation for all concerned parties: Students, Universities and MEHE about the e-learning process and whether online learning has the same "quality and benefits" as traditional face-to-face learning.

A questionnaire is developed based on the literature review done covering the e-learning, and based on informal interviews with students, instructors and experts in the field of e-learning. An introductory letter was attached at the beginning of the questionnaire to highlight the objectives of the survey, and to assure the confidentiality and privacy of the participants and their responses. Two identical forms of the questionnaire were distributed randomly to 60 undergraduate and graduate students in private Lebanese universities. One form was sent by email as an MS-Word document and the second was sent as a link to a Google Form Survey.

Introduce design and sections of questionnaire The survey contained several statements, where each participant will specify his/her attitude towards each statement, based on: 2 questions Yes/No, one question: Five-point Likert-scale (Very Uncomfortable, Uncomfortable, Neutral, Comfortable, Very Comfortable). 35 questions: Five-point Likert-scale (Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree).

The validity of this questionnaire was ensured in many ways: First, most of the questions were derived and inspired from a validated model "Aman's Satisfaction Instrument", created for assessing online learning quality. This model was developed and published by Aman (2009), who started by reviewing the literature to develop construct validity of the questionnaire. Aman (2009) then tested the content validity of the questionnaire by asking a selected group of online learning experts to review and comment on the questionnaire. After at least "8 revisions", the questionnaire was subject to a pilot-test on two treatments and two control groups.

The used questionnaire was also discussed with 12 Lebanese specialized professors and experts in education and online learning. The initial questionnaire was distributed on a trial basis for evaluation and comments, then it was improved to become more efficient. Then, a final revised copy was prepared.

Aman (2009) identified seven factors that are essential to assess the quality of education: 1. Course Overview and Introductions, 2. Learning Outcomes or Objectives, 3. Student Assessment and Measurement, 4. Learning Resources and Materials, 5. Learner Interactions (Instructor, Student, Content), 6. Course Technology, and 7. Learner Support.

In the questionnaire used in this study, the questions were distributed over five categories that fall in the spectrum of Aman's (2009) model, which are: Technology, Course Objectives, Course Assessment, Course Resources, and Instructor/Students Interaction.

The internal reliability of the questions of the survey was verified by running Cronbach Alpha test.

Number your Table

**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.957	.960	36

Since the value is  $\alpha = 0.957 > 0.7$  which shows a high level of internal consistency for the used scale with this specific sample. Therefore, the survey's questions are reliable and could be used to validate the research hypothesis.

**Research Design, Rubrics, and Analysis of Data**

Mixed method was selected as the design method of this research. The main area probed is comparative assessment of contextual factors. Rubrics were created to assess and measure each context. Descriptive statistics and ANOVA test were used to analyze the data.

The answers of the dichotomous questions (Yes/No), were used for descriptive analysis while the rubric to assess the Likert Scale questions to validate the hypotheses was as follows: (1.0 point for Very Uncomfortable, 2.0 points for Uncomfortable, 3 points for Neutral, 4.0 points for Comfortable, and 5 points Very Comfortable). The same was applied for the type of the Likert Scale questions (1.0 point for Strongly Disagree, 2.0 points for Disagree, 3 points for Neutral, 4.0 points for Agree, and 5 points Strongly Agree).

**Participants**

The 60 participants randomly selected for this study are junior, senior and MBA business students, belonged to different Lebanese university following the American system and using English as the main teaching language. Only 44 participants responded and answered the questionnaire on time, either by submitting the answers by email or directly using the Google Forms. The rate of response is 73.33% that is an acceptable response rate.

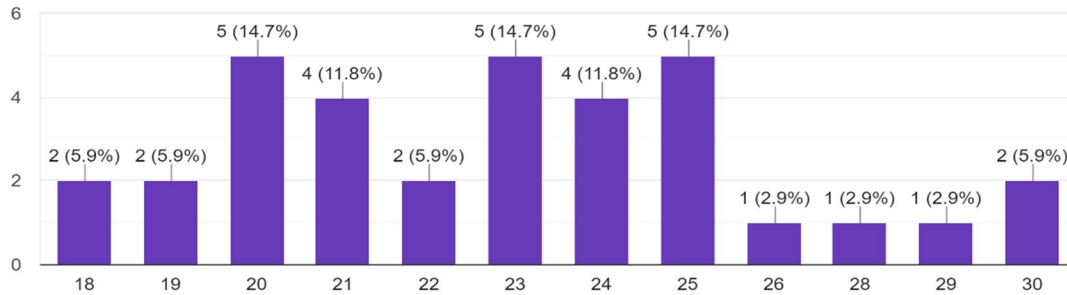
**Discussion and Analysis**

The gender of the respondents was equally divided between the 44 participants. Thus, we can eliminate any impact of gender on the study (Figure 1)

**Figure 1 No need!**

Participants' age was distributed normally between 18 and 30 years old.

Age (optional)  
34 responses



**Figure 2.**

Answering the question “Do you own / have access to technology (Computer, Cellphone, Laptop, Internet, etc.)?” 97.7% of the 44 participants said “Yes”, which indicates that needed technology is available and accessible to the majority of the sample and thus, availability of technology does not contribute negatively to the online education quality. Too small of a sample for such conclusion... Did you ask about the availability of ICT with particular students???

Answering the question “Do you know how to use technology (Computer, Cellphone, Laptop, Internet, etc.)?” 95.5% of the 44 participants said “Yes”, which indicates that the knowledge of using the needed technology is available to the majority of the sample and thus, the knowledge of using the technology does not contribute negatively to the online education quality.

Answering the question “Are you comfortable with using the technology needed for online learning?” Only 9.1% of the participants said that they are very uncomfortable, 6.8% Just uncomfortable, while, 27.3% and 38.6% were consecutively comfortable and very comfortable. The remaining 18.2% were undecided. This indicate that the majority of our sample is comfortable with using the technology needed for online learning which is a positive indicator towards the quality of online learning.

Need to build a unified Table for the Likert scales showing summaries of results....Cannot use a thesis style results in a paper... Minimize number of Tables and Figures....

Table 1 demonstrates the cumulative percentage distribution of answers in terms of the first factor of learning quality assessment, Technology, that covers the questions from 4 to 12:

Technology				
	Frequency	Percent	Valid Percent	Cumulative Percent
	4	9.1	9.1	9.1
	24	54.5	54.5	63.6
Valid	12	27.3	27.3	90.9
	4	9.1	9.1	100.0
Total	44	100.0	100.0	

**Table 1**

From the table we can notice that the highest percentage of the answers (54.5%) was 3 = Neutral. The (27.3%) answered they Agree While (9.1%) Strongly Agree and (9.1%) Strongly Disagree.

Thus 27.3% of the respondents were not sure about the technology needed for online learning, such as the infrastructure of the technology (Internet, computers, communication, etc.) and even the availability of electricity which is deemed required for online learning. In this respect we can consider technology as a negative factor in the quality of online learning provided. Thus, technology might decrease the overall satisfaction of students from the provided online learning and decrease the quality of this learning.

Table 2 demonstrates the cumulative percentage distribution of answers in terms of the second factor of learning quality assessment, Course Objectives, that covers the questions from 13 to 18:

Objectives				
	Frequency	Percent	Valid Percent	Cumulative Percent
1	1	2.3	2.3	2.3
2	3	6.8	6.8	9.1
3	6	13.6	13.6	22.7
Valid 4	23	52.3	52.3	75.0
5	11	25.0	25.0	100.0
Total	44	100.0	100.0	

**Table 2**

From the table we can notice that the highest percentage of the answers (52.3%) was 4 = Agree. (25.0%) answered they Strongly Agree While (13.6%) were Neutral, (6.8%) Disagree, and 23.3% Strongly Disagree. Thus almost 75% of the respondents agreed that the stated course objectives were met during online learning. In this respect we can conclude that the factors assigned to course objectives are considered as positive factors that lead to enhance the quality of online learning and thus increase the students' satisfaction of this learning.

Table 3 demonstrates the cumulative percentage distribution of answers in terms of the third factor of learning quality assessment, Course Assessment, that covers the questions from 19 to 23:

Assessment				
	Frequency	Percent	Valid Percent	Cumulative Percent
1	1	2.3	2.3	2.3
2	2	4.5	4.5	6.8
3	6	13.6	13.6	20.5
Valid 4	17	38.6	38.6	59.1
5	18	40.9	40.9	100.0
Total	44	100.0	100.0	

**Table 3**

From the table we can notice that the highest percentage of the answers (40.9%) was 5 = Strongly Agree. (38.6%) answered they Agree While (13.6%) were Neutral, (4.5%) Disagree, and 2.3% Strongly Disagree. Thus almost 78% of the respondents agreed that the provided course assessment methods were adequate and served their purpose during the online learning experience. In this respect we can conclude that the factors assigned to course assessment are considered as positive factors that lead to enhance the quality of online learning and thus increase the students' satisfaction of this learning.



Table 4 demonstrates the cumulative percentage distribution of answers in terms of the fourth factor of learning quality assessment, Course Resources, that covers the questions from 24 to 28:

Resources				
	Frequency	Percent	Valid Percent	Cumulative Percent
	2	4.5	4.5	4.5
	3	20.5	20.5	25.0
Valid	4	43.2	43.2	68.2
	5	31.8	31.8	100.0
Total	44	100.0	100.0	

**Table 4**

From the table we can notice that the highest percentage of the answers (43.2%) was 4 = Agree. (31.8%) answered they Strongly Agree. While (20.5%) were Neutral, (4.5%) Disagree. Thus almost 75% of the respondents agreed that the course resources were timely provided, resources were useful, adequate and increased the quality of online learning. In this respect we can conclude that the factors assigned to course resources are considered as positive factors that lead to enhance the quality of online learning and thus increase the students' satisfaction of this learning.

Table 5 demonstrates the cumulative percentage distribution of answers in terms of the fifth factor of learning quality assessment, Instructor/Students Interaction that covers the questions from 29 to 37:

Interaction				
	Frequency	Percent	Valid Percent	Cumulative Percent
	1	2.3	2.3	2.3
	2	2.3	2.3	4.5
Valid	3	27.3	27.3	31.8
	4	56.8	56.8	88.6
	5	11.4	11.4	100.0
Total	44	100.0	100.0	

**Table 5**

From the table we can notice that the highest percentage of the answers (56.8%) was 4 = Agree. (11.4%) answered them Strongly Agree. While (27.3%) were Neutral, (2.3%) Disagree and (2.3%) Strongly Disagree. Thus almost 67% of the respondents agreed that a certain level of Instructor/Students interaction, and sometimes, Students/Students interaction existed during the online learning experience which could lead to enhance the quality of online learning and students' satisfaction with the online learning experience. In this respect we can conclude that the factors assigned to course Instructor/Students are considered as positive factors that lead to enhance the quality of online learning and thus increase the students' satisfaction of this learning.

**Factor analysis:** Table 6 shows that Kaiser-Meyer-Olkin (KMO) test measure of sampling adequacy is 0.812. This value is considered as a good value since ( $KMO > 0.07$ ). Thus, it is assumed that the data collected from the selected sample of students is appropriate. It is also assumed that the selected variables attribute to the purpose of the study.

**KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.812
Approx. Chi-Square		167.657
Bartlett's Test of Sphericity	df	15
	Sig.	.000

**Table 6**

The used Bartlett's measure test, tends to check that the original correlation matrix is an identity matrix. Which is understood that the coefficient of correlation among the variables are equal to zero. Since the significance level is  $0.000 < 0.001$  (very small number, close to 0) then Bartlett's measure is very significant. Thus, we reject the null hypothesis, and conclude that there is a statistical relationship between the variables of our study. Therefore, the validity of the study is established, and the used questionnaire studies what it is supposed to be studying.

From Table 7, Using ANOVA to test the variables, computed  $F = 3.662$  and the level of significance is  $0.02 < 0.05$  (5% certainty level). Therefore, we tend to accept Hypothesis 1, and online learning has high quality standards based on the factors selected for assessing learning quality, and thus adaptation has an equal quality as traditional learning according to the respondents.

**ANOVA**

Overall Students Satisfaction

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	13.928	3	4.643	3.662	.020
Within Groups	50.708	40	1.268		
Total	64.636	43			

**Table 7**

As for the second hypothesis: Create a Table summary

For Technology \* Overall Students Satisfaction, Pearson's  $R = 0.427$  Pearson Correlation Coefficient

computed  $F = 3.056$  and the level of significance is  $0.004 < 0.05$  (5% level of certainty).

For Objectives \* Overall Students Satisfaction, Pearson's  $R = 0.535$  Pearson Correlation Coefficient ; computed  $F = 4.099$  and the level of significance is  $0.000 < 0.05$  (5% level of certainty).

For Assessment \* Overall Students Satisfaction, Pearson's  $R = 0.353$  Pearson Correlation Coefficient;

Computed  $F = 2.445$  and the level of significance is  $0.019 < 0.05$  (5% level of certainty).

For Resources \* Overall Students Satisfaction, Pearson's  $R = 0.724$  Pearson Correlation Coefficient;

Computed  $F = 6.808$  and the level of significance is  $0.000 < 0.05$  (5% level of certainty).

For Instructor/Students Interaction \* Overall Students Satisfaction, Pearson's  $R = 0.411$  coefficient of determination;  $F$  computed =  $2.923$  and the level of significance is  $0.006 < 0.05$  (5% level of certainty).

Therefore Hypothesis 2 is accepted, and all the factors of quality learning lead to students' satisfaction!!!! Watch for the above????

## **Conclusion**

Analyzing the questions, the study concludes that it is highly required for instructors and policymakers to change their mentality from considering the platform of e-learning as mandatory route to provide learning to students (Roschelle, et al., 2008) to setting strategies to integrate e-learning in the concept of future education through some major adjustments:

- Understanding more the education objectives
- Utilizing more activities in e-learning rather than restricting them to technology based events.
- Teacher professional development and collaboration around implementation of the instructional activity system
- Evaluating more objectively the process of e-learning.
- Use of data to refine the instructional activity on an ongoing basis.

Although the first hypothesis showed that e-learning has the same quality as traditional learning but still this finding is questionable since the period of adoption of distance learning is still short.

### **Recommendation for future studies Rewrite based on corrections and updates???**

It is recommended to wait more time to really be able to appraise the real effectiveness of e-learning and unfortunately there is no empirical indication to present accurate recommendation to whether online education has actually developed students' academic outcomes and this might need field experiment lasting at least 10 years. The researchers would recommend future studies to make two questionnaires for both students and professors. Currently, however, there is a small gap and it is critical for future research to emphasize more on in-depth investigation of distance learning practices, step-by-step implementation, and what will minimize the gap of quality between traditional teaching and online education.

### **Limitation:**

Given the relatively small number of respondents and short period of adopting e-learning in Lebanese universities, outcomes from this research is recommended to be interpreted with caution.

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