

THE INTERACTION OF UNDERGRADUATES WITH DISTANCE EDUCATION DURING COVID-19 PANDEMIC

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Abstract:

With the spread of the COVID-19 pandemic, we wanted to study the interaction of students in Algerian universities with distance learning. The study sample included 410 students from more than 36 universities. The study used the questionnaire as a tool to collect information, based on electronic distribution. Besides, the descriptive method was used to analyze the results. The study concluded that there are a negative interaction and weak demand on the part of students. especially that the process is still in its infancy, which requires a great time and more readiness to reach the coordination of the teaching process and reach it to achieve the desired goals. Moreover, the study concluded that there are no differences between the interaction of students with distance learning regard to academic disciplines and gender. This is due to several factors, the most

important of them is social distancing between people resulting from quarantine, numerous deaths, and the problem of the internet. However, distance learning is a good alternative in these current circumstances, but the students' psychology and the problem of the internet prevented it.

Keywords: COVID-19 pandemic; home-quarantine; distance learning; academic disciplines; gender.

1. Introduction

A new outbreak of the viral disease was announced in the last of 2019. This gained global attention as it quickly evolved into a pandemic (Xiang, Yang, Weni, Ling , & Qinge, 2020). On February 11, 2020, a new virus name was formally announced by the World Health Organization, which is COVID-19. The situation was declared a pandemic by the World Health Organization on 11 March 2020 (WHO, 2020). All countries have taken the necessary measures to contain the outbreak of COVID-19, which affected millions of people in all countries of the world. This effect was on the level of social, economic, and even psychological. Moreover, countries relied on distance learning. On the other hand, home-quarantine led to the deterioration of the psychological state, especially among students.

In Algeria, the Ministry of Health announced the registration of the first case of the Coronavirus, COVID-19, on 02/25/2020, which infected an Italian parish working in Algeria (Ministry of Health and Population, 2020).

On 12/03/2020, the study was suspended after new cases have recorded that express the spread of the pandemic. Universities have adopted distance education as a solution to continuing teaching.

Gender and tutorial disciplines differences have received lookup interest as an element that influences science adoption. In (Qing, Yi-Jing, Yu-Hang, & Min-Chen , 2020), the authors aimed to check out MBBS international students' appreciation of the online TCM course and to verify the efficacy of online learning. They used ZJU and DingTalk online learning platforms. Many students had preferred face-to-face classroom learning. They didn't suppose online studying is an appropriate choice when classroom learning is suspended, whereas it can't replace the need for on-site and face-to-face learning. Among the online learning limitations are the lack of clinical practice and face-to-face high-quality communications with different classmates and teachers.

Parka et al. examined the multimedia technology adoption for sex and learning difference. They suggested an integrated model for understanding the adoption of multimedia mechanism. The obtained results showed that multimedia technology positively affected the user's perception of fit in learning. This last is positively affected the multimedia technology adoption for learning. Moreover, the authors found the moderating effect of sex difference in the multimedia technology adoption for learning (Parka, Kim, Cho, & Han, 2019).

Gefen & Straub examined the gender effects on the adoption of electronic mail service and perception. The sample drew from comparable groups of knowledge workers using E-mail systems in the airline industry in North America, Asia, and Europe. Gefen and Straub founded that there is a gender difference in the perception and adoption of communication technology (Gefen & Straub, 1997).

In (Cai, Fan, & Du, 2016), The authors acknowledged the gender difference. Males seem to have more favorable attitudes towards the use of technology than females, especially regarding the dimensions of "beliefs" and "self-efficacy". It should be noted, however, that while women may have

displayed slightly lower rates of attitudes than men, their attitudes towards the use of technology were still positive rather than negative.

Vezzani et al. explored how academic discipline, sex, and level of study affected the learning conceptions of university students. The participants were either from technical-scientific or humanities areas of study. Moreover, they were attending either a Master's or Bachelor's degree course. The results showed that no difference was found between the learning conceptions and academic discipline. On the other hand, there was a difference between males and females (Vezzani, Vettori, & Pinto, 2018).

Alsahhi et al. examined the blended learning impact on the students' achievement in science and their attitudes towards its use. The results showed that the application of blended learning had a positive impact on the achievement of students. Besides, the results indicated that the students' attitudes towards the use of blended learning varied depending on the student academic performance in a science subject, in favor of the performance level (pass). No statistical significance was found in this respect concerning sex (Alsahhi, Eltahir, & Al-Qatawneh, 2019).

In this paper, we study if there are differences in the attitudes of Algerian students towards the use of distance learning during the home-quarantine period due to the outbreak of the epidemic COVID-19. Besides, the study hypotheses are:

- There is a positive interaction on the part of students in the distance learning process during the COVID-19 period
- There are differences in attitudes among students by gender towards the use of distance learning during the home-quarantine period due to the outbreak of the COVID-19 pandemic.

- There are differences in attitudes between students that study STPSA specialty and students that study in other specialties towards the use of distance learning during the home-quarantine period due to the outbreak of the COVID-19 pandemic.

The remainder of the paper is organized as follows: Section 2 presents methods and materials. Section 3 and section 4 provide the results and discussion. Finally, Section 5 concludes the paper.

2. Methods and materials

Participants

The sample comprised more than 36 universities across the country 199 (48.5%) females and 211 (51.5%) males). Regarding academic disciplines, 148 (36.1%) participants studied in Sciences and Techniques in Physical and Sport Activities (STPSA), while 262 (63.9%) studied in other specialties (i.e., engineering, medicine, and mathematical sciences, psychology political sciences, literature). The joint frequency distribution between gender and academic disciplines is shown in the table below (Table 1). Each participant in the sample gave consent to take part in the study.

Table 1. Participant demographics

Characteristic	Participants (n=410)	Frequencies
Gender		
Male	211	51.5

female	199	48.5
Academic disciplines		
STPSA	148	36.1
Other specialties	262	63.9

Instruments and procedure

We distributed the questionnaire electronically to a sample of 11 students and collected the results. After a while, The questionnaire was answered by the same group to measure the validity and reliability Coefficient. The Alpha Cronbach coefficient that measures the correlation between the answers in the first and second application equals 0.76. Moreover, the coefficients were extracted by the second method, which is the mid-way segmentation of the questionnaire, its result equals to 0.85, which indicates that the questionnaire has a high degree of stability. The Intrinsic validity coefficient equals 0,87. This means that the questionnaire contains Intrinsic validity.

The questionnaire covered the following factors: (i) the access to the distance learning platform. (ii) the understanding of the distance learning content (iii) The future of technology at the university. The whole questionnaire may be consulted under appendix 1, at the end of this paper.

Data analysis

The statistical analysis was performed using SPSS version 20.0. The normal distribution was checked according to the Kolmogorov Smirnov test and the Shapiro-Wilk test. The result shows that we have an abnormal distribution. For this, we use a non-parametric test which is the Mann-Whitney test. The

independent comparison tests were performed with a Significance level of $P < 0.05$.

3. Results

There is a positive interaction on the part of students in the distance learning process during the COVID 19 period

Table 2 shows A comparison between negative and positive trends towards the interaction of students, members of the sample, with distance education during the quarantine

Table 2. Comparison between negative and positive trends

<i>Items</i>	<i>Positive</i>		<i>Negative</i>		χ^2	<i>P</i>
	<i>NN</i>	<i>%</i>	<i>N</i>	<i>%</i>		
- Did you access to the online learning platform during the home-quarantine period?	219	53.4	191	46.6	1.91	0.16
- Are you communicating with your professors by e-mail or other means of social media during the home-quarantine period?	178	43,4	232	56,6	0.11	0.008
- Is it possible to study all disciplines remotely distance learning?	54	13.2	356	86.8	22	0.00

- Is the distance learning sufficient to understand the pedagogical supports?	28	6.6	382	93.2	305	0.00
- Did you use the distance learning platform before home-quarantine?	73	17.8	337	82.7	169	0.00

We selected five questions that have a direct relationship with the students' interaction with distance education.

Through the table, we noticed that most of the answers were in favor of negative interaction through high percentages.

Except for the first question, whose results (P) were not indicative.

The statistical significance for the rest of the questions was less than 0.05, which indicates the negative interaction of students with distance education during the quarantine period so that there is no communication between students and teachers.

- Not all subjects can be studied via distance learning.
- Distance teaching alone is not sufficient for students to absorb the content

Most of the students have never used distance education platforms before.

There are differences in attitudes among students by gender towards the use of distance learning during the home-quarantine period due to the outbreak of the COVID 19 pandemic.

Table 3 shows the relationship between gender and the three factors of the survey. The gender had a significant effect on the access to the distance learning platform factor (F1), where $P < 0.05$. Whereas gender had no significant effect on factor 2

and factor 3, and as well as in the overall degree of responses, where $P > 0.05$. This indicates that there are no differences between males and females (see Table 3: Mann-Whitney test result of the first hypothesis). Moreover, the results of χ^2 of factor 1 are presented in Table 4 below. The χ^2 of items 1, 2, 3, and 5 were statistically significant ($P < 0.05$).

Table 3. Mann-Whitney test result of the first hypothesis

Factor	Statistics	P
F1	-2,967	,003
F2	-1,365	,172
F3	-1,761	,078
ALL	-,313	,754

Table 4. Result of the chi-square test

Items of factor 1	Statistics	χ^2
Are you aware of the online learning platform	7.204	0.027
Did you access to the online learning platform during the home-quarantine period?	7.370	0.004
Did you find it difficult to access the online learning platform?	8.219	0.016
Did you download pedagogical supports to study during the home-quarantine period?	5.168	0.075
Did you find all the materials you are studying posted on the platform during the home-quarantine period?	12.884	0.005
Are you communicating with your professors by e-mail or other means of social media during the home-quarantine period?	0.015	0.492

There are differences in attitudes between students that study STPSA specialty and students that study in other specialties towards the use of distance learning during the home-quarantine period due to the outbreak of the COVID 19 pandemic

Through the results of the Mann-Whitney test, we found the result of the total value showed no significant ($P=0,831$). So, the significant results obtained for each factor dimensions will not take into account. We find that there had a significant effect on all factors (table 5 below). This indicates that there are no differences between students that study STPSA specialty and students that study in other specialties.

Table 5. Mann-Whitney test result of the second hypothesis

Factor	Statistics	<i>P</i>
M1	-6,377	,000
M2	-3,512	,000
M3	-2,253	,024
ALL	-,213	,831

Table 6. Result of the chi-square test

	Items	χ^2	P
FACTOR 1	Are you aware of the online learning platform	23.165	0.000
	Did you access to the online learning platform during the home-quarantine period?	10.951	0.001
	Did you find it difficult to access the online learning platform?	11.233	0.004
	Did you download pedagogical supports to study during the home-quarantine period?	19.060	0.000
	Did you find all the materials you are studying posted on the platform during the home-quarantine period?	23.422	0.000
	Are you communicating with your professors by e-mail or other means of social media during the home-quarantine period?	4.088	0.028
FACTOR 2	How do you see online content in terms of understanding and clarity?	15.081	0.001
	You are satisfied with the content of the course	12.717	0.005
	Did you contact the professors of matter to increase understanding in this period?	0.096	0.425
	What is your evaluation as a student of this technology?	9.229	0.010
	In your opinion, is it possible to study all disciplines remotely?	4.804	0.065
	Do you find everything you look for in particular pedagogical supports?	3.386	0.184
	Is the distance learning sufficient to understand the pedagogical supports?	0.595	0.282

FACTOR 3	Did you use the distance learning platform before home-quarantine?	0.399	0.312
	How do you see the trend towards online learning in Algerian University in the future?	5.338	0.013
	Do you think that we can successfully adopt distance learning?.	9.454	0.009
	How do you see the students' desire to study remotely?	5.141	0.162
	As a student, What do you think about the Algerian university's orientation towards distance learning at this period?	1.053	0.591
	Do you think that distance learning in the future returns the student's presence to the university unnecessary?	2.732	0.063

4. Discussion

In this paper we wanted to know the interaction of students in the distance learning process during the COVID 19 period Table 2 shows that there is negative interaction on the part of Algerian students.

The reason can be attributed to the lack of good preparation for the operation, the psychological state of health that the students are going through during the quarantine period because according to (Cao, et al., 2020), The COVID-19 pandemic affected The psychological state of students. As well as their fear of catching the epidemic in addition to the lack of technical capabilities such as the weak Internet flow.

According to (Drennan, Kennedy, & Pisarski, 2005), two main factors that positively influence students' attitudes towards learning via the Internet. Technology provides access to educational materials on the Internet.

This paper also examined the relationships and impact between distance learning and academic disciplines and gender variables during home-quarantine in the COVID-19 pandemic period.

Regarding the first hypothesis, we found that females and males have no difference in the use of technology. This last is the opposite of what was stated in (Parka, Kim, Cho, & Han, 2019), (Gefen & Straub, 1997), (Cai, Fan, & Du, 2016), and (Vezzani, Vettori, & Pinto, 2018). In other hand, Alsalhi et al. found that no statistical significance concerning the variable of gender (Alsalhi, Eltahir, & Al-Qatawneh, 2019).

The findings do not confirm our hypothesis in the first factor. Where we found that gender had a significant effect on access to the distance learning platform factor (F1). whereas gender had no significant effect on factor 2 and factor 3, and as well as in the overall degree of responses. This indicates that there are no differences between males and females.

In the second hypothesis, we found that academic discipline has no difference in the use of technology. This finding is the opposite of what was stated in previous studies (Alsalhi, Eltahir, & Al-Qatawneh, 2019), (Orji , 2010), and (Vezzani, Vettori, & Pinto, 2018). We found that there are no differences in attitudes between students that study STPSA specialties and students that study in other specialties towards the use of distance learning.

Through the obtained results, we refer to the students' reluctance to study in this period to the psychological state of students. Because according to (Cao, et al., 2020), The COVID-19 pandemic affected The psychological state of students. This may have been caused by social distancing between people resulting from the quarantine and a large number of deaths. Moreover, it may be due to the problem of internet connection, Lack of understanding, and the ability

to focus on distance learning. Vettori et al. found that the majority of students preferred face-to-face classroom learning (Parka, Kim, Cho, & Han, 2019).

5. Conclusion

With the spread of the pandemic, we wanted to study The interaction of students in Algerian universities with distance learning as a new option they were not used to before, which was a must option in the current circumstances. We found that there is weak interaction on the part of the students, especially that the process is still in its infancy, which requires a great time and more readiness to reach the coordination of the teaching process and reach it to achieve the desired goals.

Concerning the relationships and impact between distance learning and academic disciplines and gender variables during the home-quarantine period. The study concluded that there are no differences between the interaction of students with distance learning regard to academic disciplines and gender. This is due to several factors, the most important of them is social distancing between people resulting from quarantine, numerous deaths, and the problem of the internet.

Appendix

Table 7. The factors and items of the questionnaire

Factors	Items
Access to the distance learning platform	<p>Are you aware of the online learning platform</p> <p>Did you access to the online learning platform during the home-quarantine period?</p> <p>Did you find it difficult to access the online learning platform?</p> <p>Did you download pedagogical supports to study during the home-quarantine period?</p>

	<p>Did you find all the materials you are studying posted on the platform during the home-quarantine period?</p> <p>Are you communicating with your professors by e-mail or other means of social media during the home-quarantine period?</p>
<p>The understanding of the distance learning content</p>	<p>How do you see online content in terms of understanding and clarity?</p> <p>You are satisfied with the content of the course</p> <p>Did you contact the professors of matter to increase understanding in this period?</p> <p>What is your evaluation as a student of this technology?</p> <p>In your opinion, is it possible to study all disciplines remotely?</p> <p>Do you find everything you look for in particular pedagogical supports?</p> <p>Is the distance learning sufficient to understand the pedagogical supports?</p>
<p>The future of technology at the university</p>	<p>Did you use the distance learning platform before home-quarantine?</p> <p>How do you see the trend towards online learning in Algerian University in the future?</p> <p>Do you think that we can successfully adopt distance learning?</p> <p>How do you see the students' desire to study remotely?</p> <p>As a student, What do you think about the Algerian university's orientation towards distance learning at this period?</p> <p>Do you think that distance learning in the future returns the student's presence to the university unnecessary?</p>

Conflict of interest: The authors declare that they have no conflict of interest.

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