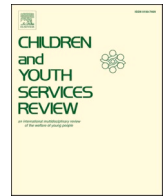




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Evaluation online learning of undergraduate students under lockdown amidst COVID-19 Pandemic: The online learning experience and students' satisfaction

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ABSTRACT

This study evaluates the impact of shifting from traditional learning to online learning during COVID-19 Pandemic on undergraduate students. It also examines the positive and negative aspects of online learning from students' perspectives. We conducted two online surveys to evaluate online learning, students' satisfaction, and identify the positive and negative aspects of online learning. Data is collected in the first survey from 483 participants directly after the emergency shifting to online learning. The second survey data is collected from 853 after students' experienced online learning for three academic semesters. Both surveys' analysis results show that students had several problems with shifting to online learning during COVID-19 Pandemic such as technological, mental health, time management, and balance between life and education. The results also show that more than a third of the surveyed students are dissatisfied with the online learning experience. Further investigation is conducted to explore and identify the factors behind the students' dissatisfaction from the online learning experience during COVID-19 Pandemic in January 2021 using focus group technique. The analysis results reveal that the most important factors behind the students' dissatisfaction during online learning are a distraction and reduced focus, psychological issues, and management issues. This study proposes various solutions and recommendations to enhance the online learning experience and increase students' satisfaction.

1. Introduction

On the 31 of December 2019, the new pneumonia virus was identified and reported in Wuhan of China called coronavirus (COVID-19) (Tang, Hu, Yang, & Xu, 2020). A few months later, the COVID-19 virus is dramatically and rapidly spread all over the world. On the 11 of March 2020, the World Health Organization (WHO) assessed COVID-19 could characterise as Pandemic due to its spread and severity (WHO, 2020b). After that, many governments worldwide banned public gathering and closed educational institutions and suspended schools and universities. About 1 billion students are affected by school and university closures worldwide due to COVID-19 Pandemic (UNESCO, 2020a). The outbreak of COVID-19 globally caused an exceptional impact on education due to educational institutions' closures (Ali, 2020). On the 15 of July 2020, 216 countries areas of COVID-19 cases with 570,288 confirmed deaths and 12,964,809 Confirmed cases (WHO, 2020a).

On the 15 of March 2020, the Jordanian government announced shutting schools and universities as the number of virus-hit cases increased (UNESCO, 2020b). The educational institutions shuttled down, and students are out of classrooms. Moreover, on the 17 of March, the Jordanian government announced lockdown of the country and state of emergency declared (HRW, 2020). Since the 15 of March 2020, in Jordan, there are 2,372,736 learners affected by the country's lockdown and shut down all educational institutions (UNESCO, 2020b). Consequently, face-to-face teaching is also banned, and the government instructed all the educational institutions to shift from traditional learning to online learning using digital platforms (Iivari, Sharma, & Ventä-olkkonen, 2020). Since the shifting to online learning on 15 of March 2020, the Jordanian government extended the online learning in summer and fall semester until January 2021. Educational institutions used different online learning platforms with different capabilities and strategies to facilitate learning (Carter, Rice, Yang, & Jackson, 2020).

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Higher education institutions adopted different teaching techniques such as direct online lectures, audio and video recorded lectures, shared online materials, and blended learning (Favale, Soro, Trevisan, Drago, & Mellia, 2020). Additionally, they used online assessments methods, such as online quizzes, exams, and assignments (George, 2020). The shifting to online learning by higher education institutions during COVID-19 Pandemic impacted learners, educators and learning performance (Ustun, 2020). Unfortunately, many educational institutions, educators, and students were not ready for this new experience.

Before COVID-19 Pandemic, many educational institutions offer online learning for some courses or programs. In contrast, some other institutions find online learning is difficult to navigate through the step to prepare the course and programs (Fidalgo, Thormann, Kulyk, & Lencastre, 2020). A research study examined the students' perceptions, willingness, and attitudes toward online learning from three countries and the English Language is the second language and main language in teaching (Fidalgo et al., 2020). The research results showed that students had major concerns about students' time management, motivation to use online systems and their English Language skills in learning.

A study was recently conducted to explore undergraduate students' attitude toward online learning during COVID-19 Pandemic (Hussein, Daoud, Alrabaiah, & Badawi, 2020). This study conducted a few weeks after the emergency shifting to online learning in the United Arab Emirates due to the Pandemic. The participants asked to answered semi-guided essays during the first semester and then a sample of essays analysed using open coding. The research analysis reveals that online learning has positive and negatives aspects. The positive aspects are the effectiveness of time and cost, safety, convenience, and increased participation. On the other hand, the negative aspects are a distraction and reduced focus, workload, technological problems and the Internet connectivity, and insufficient support from instructors and colleagues.

One of the first research studies leading to examining the impact of lockdown admits COVID-19 on universities students of West Bengal in India is conducted by (Kapasia et al., 2020). They collected data using online survey from 232 participants. They focused on their research on online learning status, platform, learning mode, and online learning problems during the COVID-19 Pandemic. The analysis results showed that students faced several problems during online learning admits the COVID-19 Pandemic. They recommended that universities and colleagues have an education continuity plan to ensure continuing online learning, and they need to ensure funding to improve the education system. As their research is considered one of the pioneering research focused on assessing the impact of COVID-19 Pandemic on university students and other issues related, we adopted their research method by modulating many of the research items to fit our research.

This study is conducted through three main phases. In the first phase, this research extended (Kapasia et al., 2020) research by extended some factors and investigating some other factors that evaluate the transition to online learning amidst COVID-19 Pandemic. In the second phase, this research extended (Kapasia et al., 2020) research by examining the negative and positive aspects of online learning that identified by (Hussein et al., 2020) research. In the third phase, we investigate the factors behind students' dissatisfaction from the online learning experience. Thus, this research is distinguished from (Kapasia et al., 2020) research by investigating the frequency and purpose of digital platforms, the online learning assessment methods, and the students' satisfaction/dissatisfaction with the new online learning experience. Additionally, we examined the positive and negative aspects of online learning from the students' perspective. Finally, we investigated the factors behind students' dissatisfaction with the online learning experience from students' perceptions, as shown in Table 1.

This study evaluates the shifting from traditional learning to online learning of undergraduate students at universities level under the exceptional circumstances of COVID-19 Pandemic. Also, it evaluates platforms performance, assessments method, and students' satisfaction. The shifting to online learning during COVID-19 Pandemic at the

Table 1
Comparison between this study and (Kapasia et al., 2020) study.

Study Factors	(Kapasia et al., 2020)	This Study
Knowledge and attitudes regarding COVID-19	Yes	Yes
Learning status during the lockdown	Yes	Yes
Information about online classes	Yes	Yes
Platforms, materials sharing, and evaluation	Yes	Yes
Economic condition and educational attendance	Yes	Yes
Academic decisions and recommendations	Yes	Yes - extended
Problems related to study during the lockdown	Yes	Yes - extended
Context	Indian university students	Jordanian university students
Number of participants	232	483 and 853
Student opinion regarding the shifting	Limited	Yes
Impact of COVID-19 on education	Limited	Yes
Frequency and purpose of digital platforms	-	Yes
Online learning assessment methods	-	Yes
Student satisfaction with online learning	-	Yes
Negative aspects of shifting online	-	Yes
Positive aspects of shifting online	-	Yes
Factors behind students dissatisfaction	-	Yes

Jordanian Universities started in 15 of March 2020 during the spring semester. Then the Jordanian government extended the online learning in summer and fall semesters until January 2021. Therefore, we further investigated students' satisfaction after the students had experienced online learning for the last three academic semesters (Spring, Summer, and Fall). Besides, we examine the positive and negative aspects of online learning during COVID-19 Pandemic from students' perceptions. Finally, this study investigates the factors behind students' dissatisfaction from online learning during COVID-19 Pandemic.

2. Participants and procedure

To achieve this study's aims, we conducted this research through three main phases, as shown in Table 2. In the first phase, an online survey is developed to evaluate the emergency shifting from traditional learning to online learning and students' satisfaction during the lockdown between the 20 of March and the 30 of April 2020. In the second

Table 2
The purpose, time, participants and used method in the three phases of this study.

Study Phases	First Phase	Second Phase	Third Phase
Purpose	-Evaluate emergency of online learning shifting. -Difficulties and issues faced by learners -Students' satisfaction	-Positive and negative aspects of online learning. -Difficulties and issues faced by learners -Students' satisfaction	-Factors behind students' dissatisfaction
Time	March - April 2020	October 2020 - January 2021	January 2021
Participants	483	853	60 (4 groups)
Method	Online Survey	Online Survey	Focus group
Reference	(Kapasia et al., 2020)	(Kapasia et al., 2020; Hussein et al., 2020)	(Hussein et al., 2020)

phase, an online survey is developed to examine the positive and negative aspects of online learning and students' satisfaction after students had experienced online learning for three academic semesters. The data were collected between October 2020 and January 2021. In the third phase, a focus group is conducted to explore and identify the factors behind the students' dissatisfaction from the online learning experience during COVID-19 Pandemic in January 2021.

In phase one, we developed an online survey to collect data from the undergraduate students study at the University of Jordan in the United Kingdom of Jordan. The survey consists of 44 items designed using "Microsoft form" and a link sent to the students from different university faculties and consent obtained from each respondent. The invitation to participate in this study sent to undergraduate students through Facebook groups and Microsoft teams. A total of 483 undergraduate students volunteered to participate. There is no missing data reported as answering of all survey items were obliged. The data focused on shifting to online learning during the lockdown between the 20 of March and the 30 of April 2020.

In phase two, we developed an online survey to collect data from the undergraduate students study at the University of Jordan and Al-Zaytoonah University in the United Kingdom of Jordan. The survey consists of 25 items designed using "Microsoft form" and a link sent to the students from different university faculties and consent obtained from each respondent. A total of 853 undergraduate students volunteered to participate. The invitation to participate in this study sent to undergraduate students through Facebook groups and Microsoft teams. There is no missing data reported as answering of all survey items were obliged. The data focused on the positive and negative aspects of online learning and students' satisfaction during COVID-19 Pandemic between October 2020 and January 2021.

In phase three, we further investigated the factors behind the students' dissatisfaction during COVID-19 Pandemic. We conducted four focus groups discussion with students at the University of Jordan in January 2021. Each focus groups conducted online with unsatisfied students from the online learning experience compared with traditional learning. The pilot study participants had to be enrolled as first, second, third and fourth-year students in the department of management information systems at the University of Jordan. Each focus group consisted of 15 unsatisfied students from the online learning experience. The participants received no compensation for their time. The focus group ensured the consistency in the procedures and administration to reduce bias through all sessions.

3. Data analysis

Statistical analysis was performed using SPSS software package for Windows version 25. A descriptive statistic performed to understand the study participation distribution. The study sample was estimated to evaluate online learning status, platforms features, students' satisfaction, positive and negative aspects of online learning, and reasons behind students' dissatisfaction during COVID-19 Pandemic.

4. Data descriptions

Student online learning experience is not the same learning experience traditionally. While traditional learning experience of undergraduate students is predictable, the judgment and evaluation of shifting to online learning during the outbreak of COVID-19 Pandemic are still unpredictable. A total of 483 undergraduate students volunteered to participate in the first phase, as shown in Table 3. This dataset evaluates undergraduate students' online learning during six weeks of university closures due to the outbreak of COVID-19 Pandemic. The dataset includes a group of main variables: gender, age of students, level of study, and school of study of the surveyed students. Table 3 shows that the gender of one-third (150) of the students is male and two-thirds (333) are female. As the respondents are undergraduate student, the age of

Table 3

Characteristics of the study participants in the first and second phases.

Characteristics	First Phase		Second Phase	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Gender				
Male	150	31	318	37
Female	333	69	535	63
Age of students				
17–19	133	28	193	22
20–22 years	300	62	466	55
23 and Above	50	10	194	23
Level of Study				
First-year	118	24	107	13
Second-year	110	23	206	24
Third-year	128	27	260	30
Fourth-year	127	26	280	33
Home Districts				
Amman	343	71	650	76
Other Cities	140	29	203	24
Residential area				
Urban	398	82	754	88
Rural	85	18	99	12
Monthly income (USD)				
Below 1400	397	82	600	70
1400 and Above	86	18	253	30

almost 62% (300) of them were between 20 and 22 years old, 28% (133) of them between 17 and 19 years old, and about 10% (50) of them were above 22 years old. Almost the number of participants from all study levels are equal. The participants were from three major schools: humanities (63%), scientific (23%), and health (14%). There are 397 (82%) students have a monthly family income below 1400\$ (USD), and 18% (86) of the students have 1400\$ and above monthly family income. Most of the respondent were from urban areas (82%) and the rest (18%) from rural areas.

In the second phase of this study, the dataset focus on examining the positive and negative aspects of online learning and students' satisfaction between October 2020 and January 2021. Table 3 shows 853 undergraduate students volunteered to participate. The dataset includes a group of main variables: gender, age of students, level of study, and school of study. Table 3 shows that the gender of one-third (37%) of the students is male and two-thirds (63%) are female. As the respondents are undergraduate student, the age of almost 55% (466) of them were between 20 and 22 years old, 22% (193) of them between 17 and 19 years old, and about 23% (194) of them were above 22 years old. Regarding participants level of study, they were from four levels: first-year (13%), second-year (24%), third-year (30%), and fourth-year (33%). The participants were from three major schools: humanities (56%), scientific (37%), and health (8%). The majority of the respondents (71% and 76) live in the capital of Jordan (Amman), and 29% and 24% of the students live in other Jordanian cities. This result implies that almost a quarter of students had educational movement from other cities to the university as it was located in Jordan's capital. There are 82%, and 70% of students have a monthly family income below 1400\$ (USD). Most of the respondent were from urban areas (82% and 88%) and the rest (18%) from rural areas.

5. Results and discussion

5.1. Results of the first phase

As we mentioned before, the first phase of this study evaluates the emergency shifting from traditional learning to online learning of undergraduate students at universities level under the exceptional circumstances of COVID-19 Pandemic. It also evaluates online platforms performance, assessments method, and students' satisfaction. Moreover,

it examines the difficulties and issues the students faced during COVID-19 Pandemic at the Jordanian Universities between 20 of March and 30 of April 2020.

5.1.1. Learning status and spent time on study during the lockdown

We asked the surveyed students several questions related to learning status and spent time studying during the lockdown. Most of the course materials are physical resources at the undergraduate level, and some are digital (University of Jordan, 2020). As the learning shifted online, educators and students used digital and physical course materials during the lockdown. Table 4 shows details regarding learning status and spent time during the participants' lockdown in this study's first phase. It shows that 40% of the students study through online resources only, while 4.1% of them studied through physical resources, and 55.9% of them continue their study through online and physical resources. This result indicates that 95.9% of the students used online resource during online learning, which is unusual in traditional learning.

Regarding the course syllabus covering, 52.6% of the students reported that less than 50% of the course syllabus is covered and 47.4% of them reported more than half of the course syllabus is covered. This result indicates that many lecturers changed courses plans and taught the course's main topics based on the sudden shifting to online learning during the lockdown and to relieve students' stress. The University of Jordan has an eLearning system called Moodle (University of Jordan, 2020). This analysis results show that 95% of the students used the Moodle system to get course materials and information. About half of the students (50.7%) reported that they spent 1–3 h, and 22.8% of students spent 4–6 h studying daily. The students also reported that 34.8% of them spent more time studying with online learning than traditional learning, and 37.7% of the students study every day even on weekend days. This result indicates that about one-third of the students during the lockdown studied most of the weekdays and spent more time learning online than traditional.

5.1.2. Online classes and digital devices in learning

All students must take online classes as the educational institutions shifted the traditional learning to online learning amidst COVID-19 Pandemic. Consequently, teachers and students forced to use online platforms for learning. Table 5 shows details of online classes and digital devices are used by the participants in the first phase of this study. Among 483 students, only 23.4% attended online classes before, and

Table 4
Learning status and spent time during the lockdown.

Characteristics	Frequency	Percentage (%)
Study resources		
Digital resources	193	40.0
Physical resources	20	4.1
Physical and digital resources	270	55.9
Syllabus covered (%)		
Less than 50	254	52.6
50 and more	229	47.4
Following Moodle for study materials		
Yes	459	95.0
No, Never at all	24	5.0
Spent time on study per day (hour)		
<1	78	16.1
1–3	245	50.7
4–6	110	22.8
7–9	36	7.5
>10	14	2.9
Spent time for study		
Less than normal situation	209	43.3
More than a normal situation	168	34.8
Same like a normal situation	106	21.9
Days of study (weekly)		
Daily	167	34.6
business day	134	27.7
Weekend	182	37.7

Table 5
Online classes and digital devices in learning.

Characteristics	Frequency	Percentage (%)
Online classes before COVID-19		
Yes	113	23.4
No	370	76.6
Direct online classes (Weekly)		
1–2	70	14.5
3–4	200	41.4
5 and more	213	44.1
Type device used		
Mobile Phone	400	82.8
Tablet	20	4.1
Laptop	129	26.7
Computer	76	15.7
The device has a microphone and webcam		
Yes	408	84.5
No	75	15.5
Type of Operation System		
Microsoft Windows	145	30.0
Android OS	211	43.7
Apple Operating System	117	24.2
Other	10	2.1

76.6% of students never attended any online classes before. Therefore, students' experience and familiarity with online platforms and online education systems varied from one student to another. Table 5 also shows that all of the students amidst the COVID-19 attained at least one direct online class weekly, and 44.1% of them attended more than five direct online classes weekly. Unsurprisingly, 82.8% of the students used the mobile phone device to attend online classes and interact with colleagues and teachers. The mobile phone device own set of challenges compared with Laptop and personal computer (PC). The mobile device has small hard disk space, small screen size, incompatible with some programs, and a slower environment compares with computer or Laptop. Most of the students' devices (84.5%) had a microphone and a webcam to increase student interaction. The three operating systems installed on students' devices used to access the online classes are Android OS (43.7%), Microsoft Windows (30%), and Apple (24.2%).

5.1.3. Digital platforms for online learning

Due to the increasing number of online learning platforms, some educational institutions struggle to choose the best platform for both students and teachers. Online learning platforms are mainly used to create an online course, attend direct online classes, share course materials, and assess students. Table 6 shows details of the digital platforms are used by the participants in the first phase of this study during online learning. It shows that 81.6% of students were attending direct online classes using Microsoft Teams, 48.2% of students were using the Moodle system, and 47.6% of students were using zoom. Besides, 89% of the students were using the Moodle platform, and 47.2% of the students were using Microsoft Teams for sharing materials. The most used platforms for evaluating student performance are Moodle (88%) and Microsoft teams (37.7%). Thus, the analysis results confirm that on average students must learn and use 2–3 different online learning platforms, and there is no single platform for all course.

Table 7 shows details of the purpose, frequency, and ease of use of the participants' digital platforms in the first phase of this study during online learning. Among this study's students (483), 53% use online learning platforms to access online learning resources, submit assignments, interact with colleagues and students, and take exams. Also, 35.2% of the students use the platforms to access learning resources, submit assignments, and take exams without interactions. Regarding the frequency of using the platform every day, 67.1% of students use the online platform more than three times daily. Almost half of the students (50.7%) reported that the difficulty of using the platform is moderate and only 8.5% of students reported using it as difficult (Table 7).

Table 6
Platforms for direct classes, sharing materials, and assessment.

Characteristics	Frequency	Percentage (%)
Direct online classes		
Moodle (eLearning System)	233	48.2
Google classroom	48	9.9
Team	394	81.6
Zoom	230	47.6
Facebook	133	27.5
Email	27	5.6
WhatsApp (for Audio Materials)	72	14.9
Other	17	3.5
Sharing materials		
Moodle (eLearning System)	430	89.0
Google classroom	37	7.7
Team	228	47.2
Zoom	52	10.8
Facebook	119	24.6
YouTube	67	13.9
Email	16	3.3
WhatsApp (for Audio Materials)	67	13.9
other	11	2.3
Assessment through platforms		
Moodle (eLearning System)	425	88.0
Google classroom	27	5.6
Team	182	37.7
Zoom	29	6.0
Facebook	14	2.9
Email	6	1.2
WhatsApp (for Audio Materials)	16	3.3
Other	33	6.8

Table 7
Digital platforms purpose, frequency, and ease of use.

Characteristics	Frequency	Percentage (%)
Purpose of platforms usage		
Learning resources only	30	6.2
Learning resources, assignments, and exams	170	35.2
Learning resources and interactions	27	5.6
learning resources, assignments, exams, and interactions	256	53.0
Frequency of platforms usage		
Less than 3 times a day	159	32.9
3 times and more a day	324	67.1
Ease of use of platforms		
Very difficult	41	8.5
Difficult	73	15.1
Moderate	245	50.7
Easy	83	17.2
Very easy	41	8.5

5.1.4. Online learning assessment methods

At the University of Jordan, there are five main types of exams and quizzes at the undergraduate level: multiple choice, essay problem or case-based, online oral, open-book and take-home exams (University of Jordan, 2020). Table 8 shows the online assessment methods' details from the participants' perspective in the first phase of this study during online learning. Almost all of the surveyed students (94.8%) reported that they were taking multiple-choice exams and quizzes, and 31.7% of them were taking essay exams. Regarding the assignments, 71.2% of students wrote report assignments, while 42% wrote an essay (see Table 8).

In online courses, students required to do and submit some quizzes, exams, and assignments. The analysis results show that 75.6% of the students believed that the number of quizzes and exams with online learning amidst COVID-19 Pandemic is more than traditional learning. Moreover, 89.4% of the students believed that the total number of assignments is more than traditional learning. Additional, 64.4% of the students believed that level of exams quizzes and exams is much more

Table 8
Online learning assessment methods.

Characteristics	Frequency	Percentage (%)
Type of quizzes and exams		
Multiple choice	458	94.8
Essay	153	31.7
Problem or case-based	50	10.4
Online oral	26	5.4
Open-book and take-home	50	10.4
Type of assignment		
Essay Writing	203	42.0
Report Writing	344	71.2
Case studies	139	28.8
Abstracts	137	28.4
Reviews	97	20.1
Other	112	23.2
Number of quizzes and exams		
Less than a traditional learning	36	7.5
Same like a traditional learning	82	17.0
More than traditional learning	365	75.6
Number of assignments		
Less than a traditional learning	8	1.7
Same like a traditional learning	42	8.7
More than traditional learning	432	89.4
Level of quizzes and exams		
Less than a traditional learning	21	4.3
Same like a traditional learning	151	31.3
More than traditional learning	311	64.4
Level of assignments		
Less than a traditional learning	11	2.3
Same like a traditional learning	132	27.3
More than traditional learning	340	70.4

complicated than in traditional learning, and 70.4% of the students believed that level of assignments is also difficult more than traditional learning.

5.1.5. Shifting from traditional to online learning

On the 15 of Marc 2020, the Jordanian government announced shutting educational institutions due to the increasing number of coronavirus cases (UNESCO, 2020b). Thus, educational institutions shut down abruptly amidst COVID-19 Pandemic, which forces students and teachers to shift from traditional learning to online learning. Table 9 shows Shifting details from traditional to online learning from the participants' perspective in the first phase of this study during online learning. The surveyed students reported that 19.3% agreed on the government's decision to shift from traditional to online learning, and

Table 9
Shifting from traditional to online learning.

Characteristics	Frequency	Percentage (%)
With shifting for online learning		
Yes	93	19.3
No	254	52.6
Neutral	136	28.2
Universities were ready for online learning		
Yes	44	9.1
No	388	80.3
Neutral	51	10.6
Students were ready for online learning		
Yes	30	6.2
No	409	84.7
Neutral	44	9.1
Teachers were ready for online learning		
Yes	48	9.9
No	358	74.1
Neutral	77	15.9
The government must cancel the second semester		
Yes	121	25.1
No	269	55.7
Neutral	93	19.3

28.2% of students were neutral. In comparison, 52.6% of them disagreed with this shifting (Table 9). The results also show that 80.3% of the students believe that the university was not ready for online learning. Only 9.1% of the respondents believe that the university was ready for this type of learning.

Furthermore, 84.7 of respondents believe the university student was not ready for this shift, and also 74.1% of students believe the teachers were ready for online learning. On the other hand, only 25.1% of the students the government must have cancelled the second semester rather than shifting online. These results indicate that shifting to online learning leading to drastic changes in the education systems as the educational institution, students, and teachers were not ready enough for this new experience.

5.2. Results of second phase

There are positive and negative aspects from students' perspective with the shifting from traditional learning to online learning during the COVID-19 Pandemic. As we mentioned before, the second phase of this study focuses on examining the negative and positive aspects from Jordanian students' perspective at university level context. It also investigates the students' satisfaction and dissatisfaction from online learning. Moreover, it examines the difficulties and issues the students faced during COVID-19 Pandemic at the Jordanian Universities between October 2020 and January 2021.

5.2.1. The positive aspects of shifting to online learning

The main categories of the positive aspects are effectiveness, safety, convenience, and increased participation, as shown in Table 10. Each category is measured by some items related to the online learning shifting during COVID-19 Pandemic. The analysis results show the two most important aspects of online shifting are safety and effectiveness (79.2%) and (76.5%) of 853 respondents, respectively. Among them, 81.6% of the respondent claimed that online reduced the risk of catching COVID-19 virus. This finding is consistent with the finding by (Aras Bozkurt & Ramesh Sharma, 2020; Bozkurt et al., 2020). Regarding effectiveness, 80.1% and 78.8% of respondents referred that online learning saved transportation time and cost. This finding is consistent with previous research finding as the student can use their time efficiently (Hussein et al., 2020; Fidalgo et al., 2020). Interestingly, 73.9% of the respondents found online learning is more convenient than traditional learning as they attend classes from home and control course materials

Table 10
Positive aspects for online learning during COVID-19 Pandemic.

Positive Aspects	Categories from the data	Percentage (%)	Average (%)
Effectiveness of time and cost	A. Saving the time getting ready	70.7	76.5
	B. Saving the time commuting	80.1	
	C. Saving transportation cost	78.8	
Safety	A. Reducing the risk of catching COVID-19	81.6	79.2
	B. Reducing the risk of accidents	76.7	
Convenience	A. Being able to help family members	68.7	73.9
	B. Being able to attend from work or home	78.4	
	C. Being able to control the visibility of electronic materials	74.6	
Increased participation	A. Having easier access to class recordings and materials	71.2	60.4
	B. Feeling less nervous about mistakes while speaking	56.5	
	C. Feeling confident to express ideas	53.5	

online. As for increased participation, 71.2% of the respondents agreed that online learning is easier for them to access recorded classes and course materials.

5.2.2. The negative aspects of shifting to online learning

The main categories of the negative aspects are a distraction and reduced focus, workload, technology and Internet connectivity, and inadequate support, as shown in Table 11. The analysis results of survey data collected from 853 respondents regarding the negative aspects of online learning are included in Table 11. The majority of the respondents (82.5%) reported that the workload with online learning is increased compared with traditional learning as they have more assignments, and the classwork became a homework. This finding is inconsistent with the finding by (Hussein et al., 2020) as they found the workload with online learning remains the same as traditional learning. This finding can be explained as student and educators may need to manage online learning differently to reduce workload and increase the acquired knowledge and information. Regarding distraction and reduced focus, 77.7% of the respondents were distracted and unable to remind them of their focus during the online classes. This finding aligns with the findings by previous research by (Hussein et al., 2020). Almost two-thirds (61.3%) of the respondents reported technological and Internet connectivity issues such as poor connectivity, lack of adequate devices, and lack of technology literacy. This finding is in line with the finding by (Fidalgo et al., 2020) and contrasts with the research conducted by (Hussein et al., 2020). This finding can be explained as the Internet connection in Jordan is not stable, and many students' families would not be able to buy a computer for each family member. Finally, 62.1% of the students reported a lack of support from peers, instructors, and admin. They must use online platforms to reach out of online support.

5.3. Results of the first and second phases

As we mentioned before, this research conducted over three phases. First and second phases measured the impact of COVID-19 Pandemic on the education and students' satisfaction from online learning. In this section, a comparative analysis is presented between both phases.

5.3.1. Impact of COVID-19 on education

Table 12 shows the impact of COVID-19 Pandemic on education from the participants' perspective in this study's first and second phases. In both phases, students asked whether or not does their online learning experience meet their expectation. Only 16.4% and 14.4% of

Table 11
Negative aspects of online learning during COVID-19 Pandemic.

Negative Aspects	Categories from the data	Percentage (%)	Average (%)
Distraction and reduced focus	A. Getting easily distracted	84.8	77.7
	B. Having to attend while doing other tasks	76.1	
	C. Feeling less committed due to the absence of the instructor's physical presence	72.1	
Workload	A. More assignments were given	83.5	82.5
	B. Classwork became homework	81.5	
Technology and Internet connectivity	A. Poor connectivity due to several simultaneous users	77.8	61.3
	B. Lack of adequate devices	62.7	
	C. Lack of technology literacy	43.4	
Inadequate support	A. Lack of support from peers, instructors and admin	59.9	62.1
	B. Having to use online platforms to reach out for support	64.2	

Table 12
Impact of COVID-19 on education.

Characteristics	First Phase		Second Phase	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Experience meet your expectation				
Very Well	79	16.4	123	14.4
Somewhat well	222	46.0	360	42.2
Not so well	182	37.7	370	43.4
Describe your online learning experience				
Very good	90	18.6	130	15.2
Average	218	45.1	395	46.3
Below Average	172	35.6	328	38.5
Interaction with colleagues				
Yes	385	79.7	675	79.1
No	98	20.3	178	20.9
Interaction with Teachers				
Yes	369	76.4	663	77.7
No	114	23.6	190	22.3
Difficulties that faced amidst lockdown				
Financial	211	43.7	409	47.9
Food	49	10.1	64	7.5
Health	59	12.2	133	15.6
Psychological	389	80.5	682	80
Issues faced learning amidst lockdown				
Mental health	281	58.2	512	60
Managing Time	245	50.7	428	50.2
Loneliness	106	21.9	273	32
learn-life balance	289	59.8	497	58.3

participants in the first and second phases of this study reported it did meet their expectation, respectively. 37.7% of participants in the first phase reported it did not meet their expectations compared with 43.4% of the second phase participants. Additionally, 18.6% and 15.2% of the surveyed students described the online learning experience as very good, 45.1% and 46.3% of student described it as average experience, and 35.6% and 38.5% of the students described it as below average experience in first and second phases, respectively. The analysis results also show that online interactions of students with teachers and colleagues over the online platforms are high as 79.7% and 79.1% of the students used the platform to interact with colleagues, and 76.4% and 77.7% of them used it to interact with instructors in first and second

phases, respectively.

Whereas shifting learning online during COVID-19 Pandemic, many undergraduate students had several challenges and issues. There are 80.5% and 80% of students faced psychological issues amidst the lockdown, 43.7% and 47.9% of students faced financial issues, 22.3% and 23.1% of the students faced health and food issues in both (first and second) phases of this study, respectively. The students also faced many issues related to learning, such as mental health (58.2% and 60%), managing time (50.7% and 50.2%), loneliness (21.9% and 32%), and learn-life balance (59.8% and 58.3%) in first and second phases, respectively. These findings are in line with the findings with previous research (Kapasias et al., 2020).

Fig. 1 shows the difficulties and issues faced online learners during COVID-19 Pandemic in the first and second phases. It is very clear that many students had a tough time admits the lockdown and confirm that they faced several issues such as psychological issues, financial issues, time management, and balance between life and education. Remarkably, the average number of students in the second phase of this study faced difficulties and issues more than the students in the second stage. This finding is a significant indicator that the number of students who faced some difficulties and issues during online learning is increased over the time as the second stage conducted after students get the experience of e-learning during the three academic semesters.

5.3.2. Students' satisfaction

Table 13 shows that out of 483 students in the first phase and 853 students in the second phase, only 29.4% and 20.6% of the surveyed students are satisfied with the online learning experience, and 41% and 50% are dissatisfied first and second phases, respectively. Furthermore, 43.5% and 35.9% of students are dissatisfied with online learning materials, and only 25.7% and 27.2% of the students are satisfied in the first and second phases, respectively. Regarding students' satisfaction from their interactions with colleagues and teachers, only 38.1% and 32.2% of students are satisfied with their interaction with teachers, and 44.9% and 30.1% of the students are satisfied with their interaction with colleagues in first and second phases, respectively. The results show that 24.6% and 17.7% of the students reported their satisfaction from online exams and quizzes, and 29.6% and 26.6% of the students are satisfied with the online platforms' features in first and second phases, respectively.

Fig. 2 shows the average number of students' dissatisfaction with the learning experience, materials, interactions, assessments, and platform features. It is very clear from Fig. 2 that the average number of dissatisfied students is increased in the second phase compared with the first phase for all the satisfaction categories except the learning materials. Regarding online materials, 43.5% of students are dissatisfied in the first

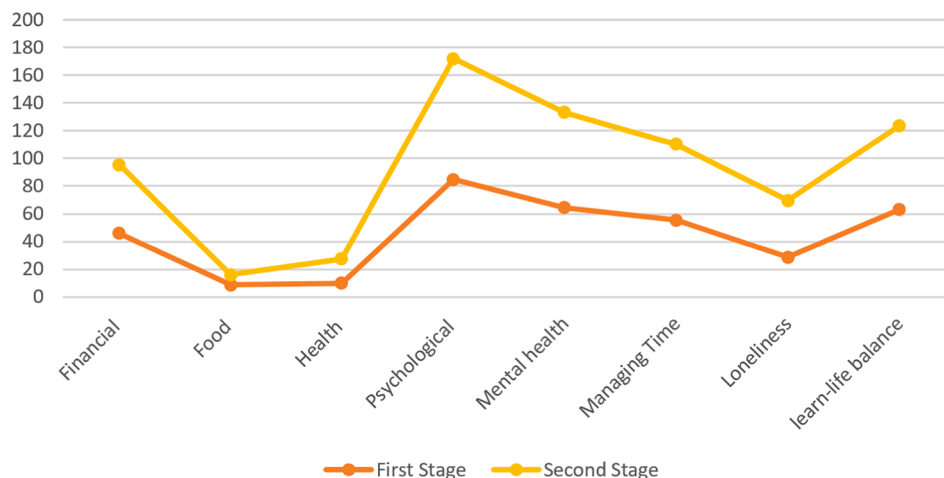


Fig. 1. Difficulties and Issues faced online learners in the first and second stages.

Table 13
Students' Satisfaction with Online learning experience.

Characteristics	First Phase		Second Phase	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Online experience				
Satisfied	142	29.4	176	20.6
Neutral	143	29.6	248	29.1
Dissatisfied	198	41.0	429	50.3
Online materials				
Satisfied	124	25.7	232	27.2
Neutral	149	30.8	315	36.9
Dissatisfied	210	43.5	306	35.9
Your interaction with teachers				
Satisfied	184	38.1	275	32.2
Neutral	154	31.9	278	32.6
Dissatisfied	145	30.0	300	35.2
Your interaction with colleagues				
Satisfied	217	44.9	257	30.1
Neutral	144	29.8	283	33.2
Dissatisfied	122	25.3	313	36.7
Online Exams and Quizzes				
Satisfied	119	24.6	151	17.7
Neutral	140	29.0	230	27
Dissatisfied	224	46.4	472	55.3
Online platform features				
Satisfied	143	29.6	227	26.6
Neutral	141	29.2	250	29.3
Dissatisfied	199	41.2	376	44.1

phase, and 35.9% of the students are dissatisfied in the second phase. This finding shows a decreased number of unsatisfied students from online learning materials in the second phase and improves the quality of materials over time. It is very clear that the average number of satisfied students is decreased and unsatisfied students are increased over time as the second stage conducted after students get the experience of e-learning during the three academic semesters. These findings motivate us to perform the third phase study of this study to investigate the factors behind students' dissatisfaction.

5.4. Third phase regarding the factors behind students' dissatisfaction

According to Table 13 and Fig. 2, many undergraduate students are dissatisfied with the online learning experience compared with

traditional learning. The average number of dissatisfied students are increased over time even students get the experience of e-learning during the three academic semesters. This finding is motivated us to conduct a further investigation of the factors behind the students' dissatisfaction. Therefore, we conducted four focus groups discussion with students at the University of Jordan in January 2021. The focus groups conducted online using Microsoft teams with unsatisfied students from the online learning experience compared with traditional learning. They were a part of the first or second stage of this study. We sent an invitation letter to participate in the third stage of this study through Microsoft teams. These focus groups discuss and identify the factors behind the students' dissatisfaction from the online learning experience during COVID-19 Pandemic. These pilot study participants had to be enrolled as first, second, third and fourth-year students in the department of management information systems at the University of Jordan. All eligible unsatisfied students were encouraged to participants. Sixty students volunteered to participate in this study, divided into four focus groups. Each focus group consisted of 15 students, and the participants received no compensation for their time. The focus group ensured the consistency in the procedures and administration to reduce bias through all sessions.

The focus groups addressed only one topic regarding the students' dissatisfaction from online learning during COVID-19 Pandemic. Each group started with an introduction followed by the consent process and the discussion topic. Based on the four focus groups' discussion, we summarised the main factors behind the students' dissatisfaction. Then, we categorised these factors into eight main categories, and each category consists of two or three items, as shown in Table 14. The main categories are a distraction and reduced focus, technology and Internet connectivity, inadequate support, workload, difficulty level, Interaction, psychological issues, and management. Later, we designed a Microsoft form that lists all the summarised items related to the students' dissatisfaction. Then, we invited each of 60 participants individually to select the factors behind their dissatisfaction. Finally, the result of this study is summarised in Table 14.

The analysis result shows that the most important factor behind the students' dissatisfaction is a distraction and reduced focus and students' poor interaction with instructors and colleagues. There are 72% of the participants easily getting distracted during direct online classes. Concerning interaction, more than half of the participants (62%) reported poor interactions with instructors and colleagues. The other two imported factors are psychological issues and management. 60% of the students faced psychological issues such as feeling more bored, anxious and frustrated during the online learning than traditional learning,

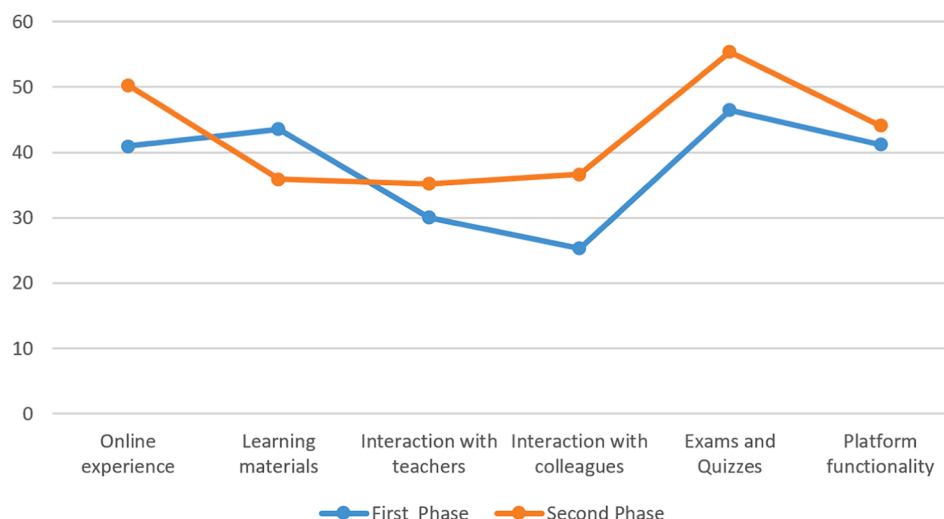


Fig. 2. Students' dissatisfaction in the first and second stages.

Table 14
Factors behind students' dissatisfaction from online learning during COVID-19 Pandemic.

Categories	Items	Frequency	Percentage (%)	Average (%)
Distraction and reduced focus	D. Easily getting distracted during online classes	43	72	60
	E. Having to attend while doing other tasks	31	52	
	F. Feeling less committed due to instructor absence	34	57	
Technology and Internet	A. Poor connectivity due to simultaneous users	21	35	26
	B. Lack of adequate devices or technology literacy	10	17	
Inadequate support	A. Lack of support (peers, instructors and admin)	10	17	11
	B. Having to use online platforms for support	3	5	
Workload	A. More assignments were given	30	50	45
	C. Classwork became homework	25	42	
	B. More quizzes and exams	25	42	
Difficulty Level	C. Quizzes and exams	30	50	39
	D. Assignments	17	28	
Interaction	E. Poor interaction with teachers	37	62	62
	D. Poor interaction with colleagues	37	62	
Psychological issues	E. Bored, anxious, and frustrated	36	60	44
	F. Loneliness	16	27	
Management	G. Time management	29	48	55
	H. Learn-life balance	37	62	

which aligns with previous research findings (Hussein et al., 2020). Moreover, 62% of the participants had a problem regarding how to balance learning and life activities. Besides, almost half (48%) of the participants had a time management issue consistent with finding (Fidalgo et al., 2020). This finding supports the recently published research results examining the online learning and students' satisfaction during COVID-19 Pandemic (Aristovnik, Keržič, Ravšelj, Tomažević, & Umek, 2020; Hasan & Bao, 2020). In Aristovnik et al. (2020), analysis results shows that students raised many concerns about the study issues and were mainly bored, anxious, and frustrated. In Hasan and Bao (2020), they found that online learning crack-up and fear of academic year loss increases students' psychological distress.

Regarding the difficulty leave of exams and quizzes, students reported that the difficulty level is increased compared with traditional learning as half of them (50%) believe so. On the other hand, on average, 45% of participants reported that the workload is one factor behind their dissatisfaction. They reported that the workload with online learning is increased compared with traditional learning as they have more exams, quizzes, assignments, and the classwork became homework. This finding is inconsistent with the finding by (Hussein et al., 2020). Finally, technology and Internet connectivity and inadequate support factors were not major. 35% of participants in this study reported poor connectivity due to several simultaneous users, 17% reported lack of adequate devices and technology literacy. On the other hand, 17% reported the lack

of support from peers, instructors and admin, and only 5% of participants reported they had to use online platforms to reach out for support. This study confirms that factors behind the students' dissatisfaction from online learning during COVID-19 Pandemic compare with traditional learning. These factors are a distraction and reduced focus, technology and Internet connectivity, inadequate support, workload, difficulty level, Interaction, psychological issues, and management.

6. Discussion and conclusion

Due to COVID-19 Pandemic, the global education systems affected and near-total closures of educational institutions. These closures increased at home online learning and made a significant distribution for both learners and educators. Most of the educational institutions obligatory shifted education from traditional to online. This study aims to examine the online learning of undergraduate students under lockdown amidst COVID-19 Pandemic. It evaluates platforms performance, assessments method, and students' satisfaction. This study also examines the positive and negative aspects of online learning during COVID-19 Pandemic from students' perspectives and investigates the factors behind students' dissatisfaction from online learning during COVID-19 Pandemic. To achieve the aims of this study, we conducted this study through three main phases. In the first phase, an online survey is developed to evaluate the emergency shifting from traditional learning to online learning and students' satisfaction during the lockdown. Data were collected from 483 participants between the 20 of March and the 30 of April 2020. In the second phase, an online survey is developed to examine the positive and negative aspects of online learning and students' satisfaction. Data is collected from 853 participants between October 2020 and January 2021, after students experienced online learning for three academic semesters. In the third phase, focus groups discussions are conducted to explore and identify the factors behind the students' dissatisfaction from the online learning experience during COVID-19 Pandemic in January 2021.

In the first phase of this study, most participants used their mobile phone device to attend online classes and to do their exams and assignments. This study confirmed that educational institutions, students, and teachers were not ready enough for this new experience. The study results show that more than half (52.6%) of the students claimed that less than 50% of the course syllabus is covered. Furthermore, on average, more than a third of the surveyed students are dissatisfied with the online learning experience, learning materials, interaction with colleagues and teachers, online exams and quizzes, and digital platforms' functionality. Finally, the analysis results confirm that no single platform was used for all online courses and on average, students must learn and use 2–3 different online learning platforms.

In the second phase of this study, the analysis results confirmed the online learning approach has positive and negative aspects during the Pandemic. The positive aspects of online learning during COVID-19 Pandemic are effectiveness, safety, convenience, and increased participation. The two most important positive aspect related to online shifting are safety and effectiveness. Among them, 81.6% of the respondent claimed that online reduced the risk of catching COVID-19 virus. This finding is consistent with the finding by (Aras Bozkurt & Ramesh Sharma, 2020; Bozkurt et al., 2020). Regarding safety, there are almost 80% of respondents referred to the fact it saved time commuting to and from university and save transportation cost as the university in Jordan did not alter the tuition fees, which is in line with the finding of (Hussein et al., 2020; Fidalgo et al., 2020). The negative aspects of online learning are a distraction and reduced focus, workload, technology and Internet connectivity, and inadequate support. The majority of the respondents (82.5%) reported that the workload with online learning is increased compared with traditional learning as they have more assignments, and the classwork became a homework. This finding is inconsistent with the finding by (Hussein et al., 2020) as they found the workload with online learning remains the same as traditional learning. This finding can be

explained as the online learning experience is considered a new experience. Students and educators may need to manage online learning in different ways to reduce workload and increase the acquired knowledge and information. As for the distraction and reduced focus, 77.7% of the respondents being distracted and unable to remind focus during the online classes, which is in align with the findings by previous research by (Hussein et al., 2020). Almost two-thirds (61.3%) of the respondents reported that they had a technological and Internet connectivity issues such as poor connectivity, lack of adequate devices, and lack of technology literacy. This finding is in line with the finding by (Fidalgo et al., 2020) and is contrast with the finding of (Hussein et al., 2020). This can be explained as the Internet connection in Jordan is not stable and many students' families and some of them would not be able to buy a computer for each family member.

The first and the second phases of this study examined the impact of COVID-19 Pandemic on education from the participants' perspective. Only a few participants reported that online learning experience meets their expectation in the first and second phases. Additionally, few participants described the online learning experience as very good, and more than one-third of the participants described it as below average. The analysis results also show that students' online interactions with teachers and colleagues over online platforms are high. The analysis results also show that the majority (80%) of students faced psychological issues amidst the lockdown, and almost half of them faced financial issues. The students also faced many issues related to learning, such as mental health, managing time, loneliness, and learn-life balance. On average, the number of students in the second phase of this study faced difficulties and issues more than the second stage students. This finding is a significant indicator that the number of students who faced some difficulties and issues during online learning is increased over the time as the second stage conducted after students get the experience of e-learning during the three academic semesters. Thus, the analysis results confirmed that students faced several challenges and issues after shifting education to online during the outbreak of COVID-19 Pandemic. It shows that students had several issues while learning online during the Pandemic, such as technological, psychological, financial, time management, and balance between life and education. These findings are in line with the findings with previous research (Kapasia et al., 2020).

This study also analysed the students' satisfaction and dissatisfaction from the online learning experience in two stages. The first stage directly after the emergency shifting to online learning and the second stage after students get the experience of e-learning during the three academic semesters. The analysis results show that only a few surveyed students are satisfied. In contrast, many of them are dissatisfied with the online learning experience, online learning materials, interactions with colleagues and teachers, and online exams and quizzes. Thus, it also shows that the students' satisfaction is decreased and the students' dissatisfaction is increased over the time as the second stage conducted after students get the experience of e-learning during the three academic semesters. These findings motivated us to perform the third phase study of this study to investigate the factors behind students' dissatisfaction.

Based on the focus group discussions the factors behind students' dissatisfaction are a distraction and reduced focus, technology and Internet connectivity, inadequate support, workload, difficulty level, Interaction, psychological issues, and management. The most important factors behind the students' dissatisfaction are a distraction and reduced focus and students' poor interaction with instructors and colleagues. The second most two imported factors are psychological issues and management, which align with previous research findings by (Hussein et al., 2020; Fidalgo et al., 2020), and These findings are in line with the findings with previous research (Kapasia et al., 2020). Moreover, these findings support recently published research that examined online learning and students' satisfaction during COVID-19 Pandemic (Aristovnik et al., 2020; Hasan & Bao, 2020). In Aristovnik et al. (2020), analysis results shows that students raised many concerns about the study issues and were mainly bored, anxious, and frustrated. In Hasan

and Bao (2020), they found that online learning crack-up and fear of academic year loss increases students' psychological distress. In this study, students also reported that the difficulty level of exams and quizzes increases in online learning compared with traditional learning. On average, 45% of participants reported that the workload is one factor behind their dissatisfaction. This finding is inconsistent with the finding by (Hussein et al., 2020).

To conclude, this study shows that COVID-19 Pandemic affects undergraduate students' learning experience and satisfaction as they encountered various types of problems. Students had several issues while learning online during the Pandemic, such as technological, psychological, financial, time management, and balance between life and education. Therefore, universities, teachers and students must work together to figure out how can they overcome these challenges and issues. This study's analysis results show that many students are unsatisfied from online learning during COVID-19, and the average of students' dissatisfaction is increasing over the past three academic semesters. This study identified factors behind the students' dissatisfaction from online learning during COVID-19 Pandemic. Thus, decision-makers at universities must listen to the students to thoroughly understand the students' circumstances before making critical decisions. Furthermore, decision-makers at universities need to adopt new technologies and strategies that support interactive online learning requirements and overcome the factors behind students' dissatisfaction. Educators, administrators, and policymakers will need to consider the issues and challenges that faced online learner and figure out how they could overcome these issues and difficulties to increase students' satisfaction and improve education quality. Finally, we recommend that universities evaluate their online learning process and review the results and recommendation in this study.

7. Recommendations and remarks

This study's analysis results show the impact of universities closures during COVID-19 Pandemic on students' online learning experience. Furthermore, many of the students are dissatisfied with the learning experience, and they encountered various problems. Therefore, we propose the following recommendations to enhance students' online learning experience and to increase their satisfaction:

1. As we mentioned before, on average, more than a third of the surveyed students are dissatisfied with the digital platforms' online learning experience functionality, and no single platform was used. Therefore, each educational institution essentially needs to use well-known international online learning platforms or create a unified learning management systems for conducting direct online classes, interaction with colleagues and teachers, sharing materials, and online students' assessment. Besides, the used platform must be customised to solve teachers and students' problems and maintain a high level of satisfaction.
2. The analysis results confirmed that only a few surveyed students are satisfied form online learning. On the other hand, there are many unsatisfied students with the online learning experience, learning materials, interactions with colleagues and teachers, and exams and quizzes. Thus, we recommend that each educational institution create an academic continuity planning committee (ACPC) to review and evaluate online learning, adopt new technologies, monitor the learning process, and adopt flexible and appropriate methodologies to facilitate learning.
3. The analysis results show that most students used mobile phone devices to attend online classes and do their exams and assignments. It also shows that most students have a monthly family income below 1400\$, and almost half of them faced financial issues. Aso on average, 18% and 12% of students live in rural areas with poor Internet connectivity compared with urban areas. The students must equally access technology, educational resources, and Internet

infrastructure. Therefore, government and educational institutions should provide a Laptop or personal computer and Internet connection to each student to grantee equal opportunity to access educational resources.

4. The analysis result confirmed that almost two-thirds (61.3%) of the respondents reported technological and Internet connectivity issues such as poor connectivity. Therefore, governments must strengthen online security and upgrade the Internet bandwidth of major online education platforms and services.
5. These results indicate that shifting to online learning leading to drastic changes in the education systems as the educational institution, students, and teachers were not ready enough for this new experience. Thus, educational institutions must provide comprehensive training on their online platforms to be useful for students and teachers.
6. The analysis results also show that the majority (80%) of students faced psychological issues amidst the lockdown, and almost half of them faced financial issues. Thus, the university's academic decisions must consider students' issues during the Pandemic, such as financial, mental health, and balance between life and education. Some universities choose to go for a pass/fail option to relieve students' stress.
7. Reopening the university is a national or state government decision that varies from one country to another. The analysis results show that about 80% of the respondent claimed that online reduced the risk of catching COVID-19 virus. Thus, each university must provide for all staff and students a campus health and safety measures in the context of COVID-19. The universities should only reopen when it is safe for both students and teachers.

Author Contributions

Mahmoud Maqableh: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing - original draft, Writing - review & editing. **Mohammad Alia:** Led resources for the data collection for the second phase of the revised manuscript, Reviewed revised submission methods and results.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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