Exploring the Learning Implication and Technical Complications of Online-Learning Transition Post- COVID: Case study of Egypt

Dr.Nermin Mohamed khalifa
Deputy Dean for Scientific Research and Postgraduates Studies, College of Management and Technology, Arab Academy for Science & Technology, Alexandria, Egypt, E-mail: nermine_khalifa@aast.edu

Dr.Mona Mohamed Abd Elghany
Associate Professor in Marketing and International Business Department, College of Management and Technology, Arab Academy for Science & Technology, Alexandria, Egypt, Email: monam@aast.edu

Abstract

The outbreak of COVID-19 pandemic was unexpected thus enforced most of educational institution globally to shut down their service in order to limit transmission of virus in over 100 countries. More than 370 students did not attend their educational institution because of unlimited nationwide shutdown. Succeeding the eruption of the Covid-19 pandemic, the potential of E-learning becomes significant and dominant for global learning to comply with preventive measure of virus spreading - announced by UNESCO.

UNESCO urged the educational institution to shift online and utilize learning applications and platforms to reach the enrolled students and deliver the content remotely. The argument is "*whether the move toward E-learning will persist post-pandemic*". The study conducts empirical study using survey of more than 500 students enrolled

across Egyptian universities to question the challenges experienced in relation to the sudden move of online-learning post COVIDVIRUS from technological perspective to the performance aspects. Many obstacles impose to frontier the continuity and smoothness of E-learning process especially for developing countries as countries with less established infrastructure one.

The research provides as well an overview on state-of-art of the impact of COVIDVIRUS on learning process and its rapid shift to the electronic trend. The study gives reflections on findings and proposes further recommendation to optimize the outcome of the educational process post-COVID-19

Keywords

Online - Learning, COVID-19 Outbreak, Challenges

1. Introduction

The World Health Organization (WHO) declared the COVID-19 epidemic a public health emergency of international concern (Spina et al., 2020). More than 100 countries undertook closures decision for national school (Viner, et al., 2020). The outbreak of novel coronavirus pandemic had imposed new rules over teaching. Teaching online was not compulsory for most of educational institution. Following the lockdown of every educational institute to comply with physical distancing measures (Prem et al., 2020), to save more lives and manage the spread of the virus, online teaching becomes the core approach of course delivery (Baber, 2020).

As long the social distance may not be guarantee as a preventive strategy to control the spread of the virus among learners, the shift toward remote learning is getting top priority. To limit the virus transmission, universities have rapidly moved to on-line activities (Gewin, 2020). The closure of schools due to COVID-19 did affect 1,198,530,172 learners in more than countries (UNESCO, 2020). This research investigates the implications related to the sudden shift toward online-learning to assess the experience of online-learning post-COVID and propose recommendations. Next section gives state-of-art related to the rapid migration of educational service to online trend.

2. Literature Review

Majority of educational institutions decided to shift overnight to the online-learning. The Remote learning trend was there years before coronavirus spread and many Internet applications such as video calling and learning management systems were accessible as well (Ash and Davis, 2009). Enable the student to learn at any time or location over the Internet become the dominant role of schools and universities. Lecturers desperately are redesigning their modules while attempting excessively to address individual students. The reality shows that not all the higher education institutions are proactive with contingency plan to move for online teaching (Sia and Adamu, 2020)

The move from traditional face-to-face (F2F) to virtual learning had been proposed by many researcher as an innovative way of course

delivery and had only being adopted by few universities globally. The digital learning provides more advantages for instance: accessibility and flexibility in education other than visualization. "Bring your own device" to use "open-source educational management systems" and technological platforms - online meetings apps like Zoom, Google Meet, provides students with more exposure to new hands-on skills. Today, online teaching becomes compulsory for every single education institution, Daniel (2020) describes Covid-19 pandemic as the greatest challenge met globally, the move to online teaching and virtual education was instructed overnight, hence instructors had now novel roles and duties to fulfilled digitally (Bordoloi et al, 2021)

Researchers provide insight reflection of instructor's experience of online teaching during the world greatest challenge. Davis et al. (2020), elaborated on the framework experienced by five faculty members teaching English courses at Duke Kunshan University (DKU) in China to minimalize apprehension and ease rational pressure instigated by the pandemic.

Hasan (2020), discussed deeply the impact of online learning during the pandemic- lockdown, India had been forced to move to online teaching using several technological platforms and learning management systems like Moodle, Blackboard, etc. The academic institution were urged to support students' learning in every possible ways during the lockdown. However, widespread of digitization is not that easy to achieve as appropriate internet

accessibility and affordable technology are still beyond the reach of everyone. The process was not carefully planned and hassled during the pandemic, Researchers recommend to re-plan in reference to thoughtful students' recommendations and issues to maximize the benefit of the technological usage.

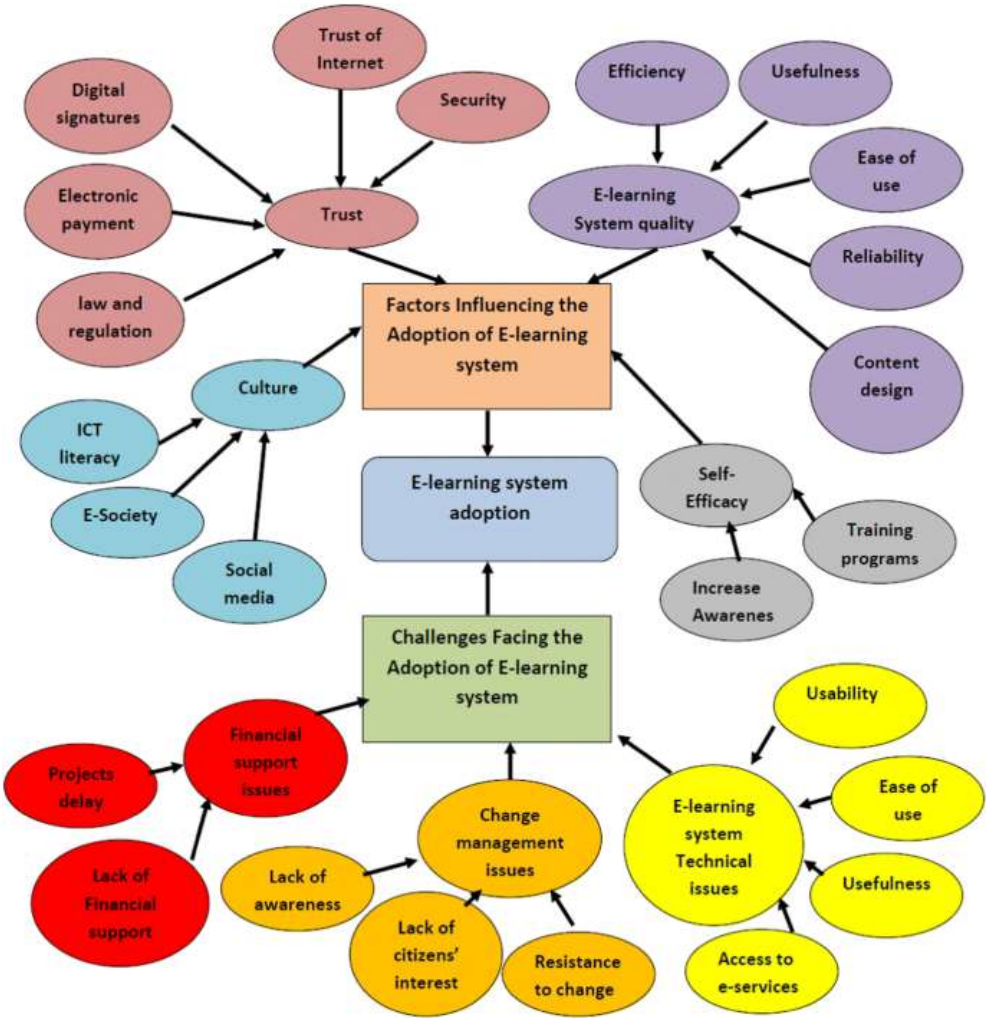
Garg (2020), the Covid-19 pandemic had affected higher education like never before. The change was rushed and imposed unexpected challenges to instructors and learners. They switched over to online education, however, the online teaching was not actually practiced by Meena (2020).

Bordoloi et al. (2021) conduct study to highlight the perceptions and challenges of online/blended learning shift in India from two perspectives: lecturers and students. The findings figure out that blended learning is more preferable in India. Limited connectivity and accessibility to learning applicants impose for moving to fully electronic trend or having synchronous teaching reachable to anyone. Furthermore, training should be delivered to any stakeholders of educational process to understand the pillars of online learning.

Basilaia and Kvavadze (2020) find out that the shift from old-fashioned to electronic trend was positive, meanwhile, there is an emerging need for paying more consideration to measure the quality of e-education and the effectiveness of learning tools. On the other hand, Thaheem et al., (2021) assess the difficulties experienced in e-learning move by Pakistani and Indonesian

instructors. The shifting process was so challenging as lecturers dreadfully re-designing their modules to fit within electronic trend and be accessible to all enrolled students. Electronic delivery of courses is not that systemic process for number of lectures (Fırat et al., 2018). Pakistan and Indonesia are integrating technology within educational process meanwhile, they suffer from low technological expertise, the resistance of change and unwillingness of lecturers to move electrically in education (Kustandi et al. (2020)

Almaiah et al, (2020) conducted empirical study and constitute with model of critical challenges and determinants that influence the e-learning system usage during COVID-19 pandemic. The findings represent as well challenges of e-learning adoption to ensure the successful usage of e-learning system. Furthermore, the combination of factors in the developed framework in this study as shown below is mostly appropriate for the universities in developing countries.



Maatuk et al. (2021) defined the major issues and challenges of students and faculty instructors on the use of e-learning systems during the Covid-19 pandemic in University of Benghazi. The

descriptive-analytical approach has been applied with statistical analysis of the results. Two types of questionnaires have been distributed for students and instructors. Four dimensions have been determined to reach the expected results, Learning in an electronic environment still provide many advantages, including, reducing expenses and affords. It was also a successful alternative for many students to return to study in educational institutions during the spread of the Covid-19 virus, despite facing many issues and challenges.

3. Research Aims

The study explores the perceptions of learners using virtual learning and blended one Post COVID-19 outbreak and stress on the prospects and challenges of moving to virtual learning in Egyptian universities. The study focuses on three aspects: (technological, economic, psychological) issues to end up with further recommendation on measures to be undertaken for providing quality e-learning post-Covid-19 outbreak. Since there is few research targeting COVID-19 impact in developing countries, there is a great potential to assess the learning experience post COVID especially in developing countries. The research will constitute as exploratory study for implications and complications across the online-learning experience.

3.1 Research Questions:

What are the technological challenges of moving to online learning after COVID-19 outbreak?

What are the impact of moving to online learning on learning process?

4. Study Methodology

Case study research consists of a detailed investigation, often with empirical material collected over a period of time from a well-defined case to provide an analysis of the context and processes involved in the phenomenon. The phenomenon is not isolated from its context (as in positivist research) rather is of interest precisely because of its relation with the context. Yin (1994) defines case study as an empirical research activity that examines a specific present-day event or action in a bounded environment.

Exploratory case study is a case study whose purpose is to identify the research questions or procedures to be used in a subsequent study. A structured questions were addressed by authors through interviews with university's students to capture their implications in quantitative way. These questions measure the impact of transition toward virtual learning from different perspectives: available facilities, learning aspects, used communication tools, security and privacy term, the survey measure as well students' reflections and recommendation in addition to the technical expertise and support provided, accessible equipment pre-COVID and required upgrades for post-COVID learning process, internet accessibility and broadband upgrade.

Combination of using both interview with exploratory questions to figure out in-depth the impact of online learning movement post COVID-19 and structured questions of measuring exactly to what extent did the students face technological challenges and their perception of E-learning movement

Surveys is the best exploratory method to collect data from a large sample for validated and accurate findings (Glasow, 2005). It is better to be used when measuring attitudes than observation method (McIntyre, 1999, p. 75). Online surveys are easier of data capturing to speed-up the data collection process. A structured questionnaire was designed by the authors in Google Forms and disseminated electronically among university's students to capture their implications. The study conducted a survey to measure the impact of transition toward virtual learning from different perspectives: available facilities, learning aspects, used communication tools, security and privacy term, the survey measure as well students' reflections and recommendation in addition to the technical expertise and support provided, accessible equipment pre-COVID and required upgrades for post-COVID learning process, internet accessibility and broadband upgrade. The questionnaire is 10-page long questionnaire (taking from 40-50 minutes to complete).

5. Findings Analysis

The survey has been disseminated electrically using google forms and more than 500 student across different universities

filled the survey. Data has been analyzed using SPSS to explore patterns of behaviors during and before pandemic.

5.1Demographics Descriptions of Participants

In accordance to participant gender, respondents are almost divided into females and male. Majority of respondents are enrolled in bachelor degree of business across different universities (Public & Private) across Egypt within different disciplines (Business, Languages, education management, politics, Accounting)

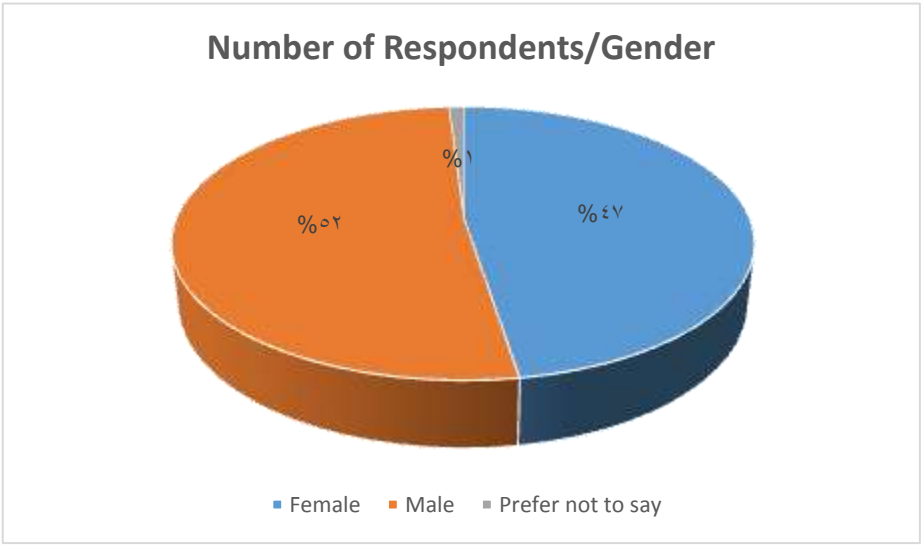


Figure 1: Respondents by Gender

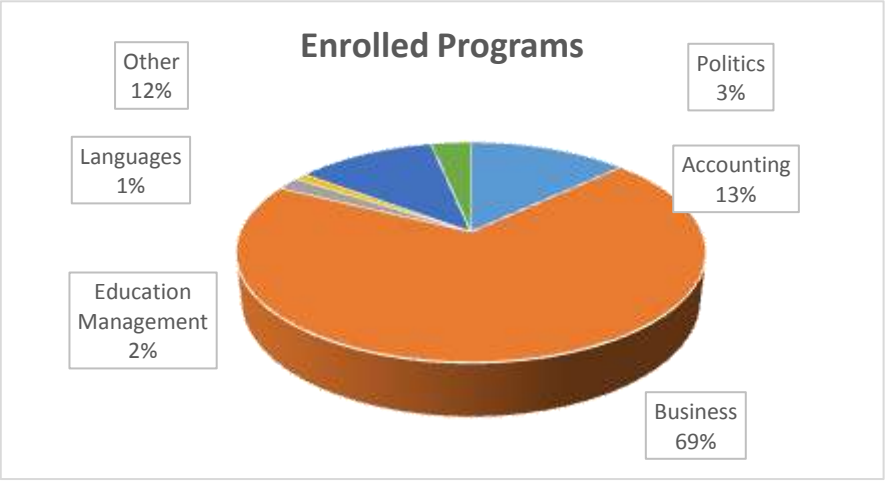


Figure 2: Enrolled Programs of Respondents

Most of respondents are enrolled in bachelor degree (75%) while 25% of them are postgraduate students. The study prefers to figure out the challenges most experienced by learners- especially undergraduate students, Since the bachelor degree students are less experienced than postgraduate one,

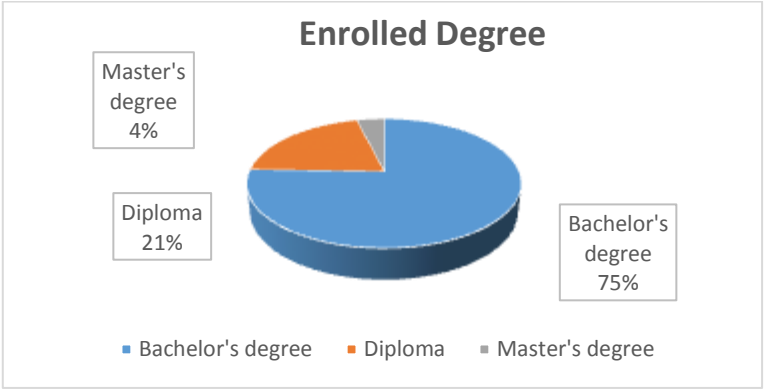


Figure 3: Enrolled Degree of Respondents

5.2 Facilities Findings

Respondent have been asked to state the degree of technical skills students should have by COVID-19 outbreak (No experience needed, Low, Medium, High), most of participants indicate medium level of technical skills were required to engage in e-learning process during the COVID-19. The familiarity with online learning environment has been rated as well with scale of (No experience needed, Low, Medium, High), Majority of participants indicate Medium level of complexity of online learning environment.

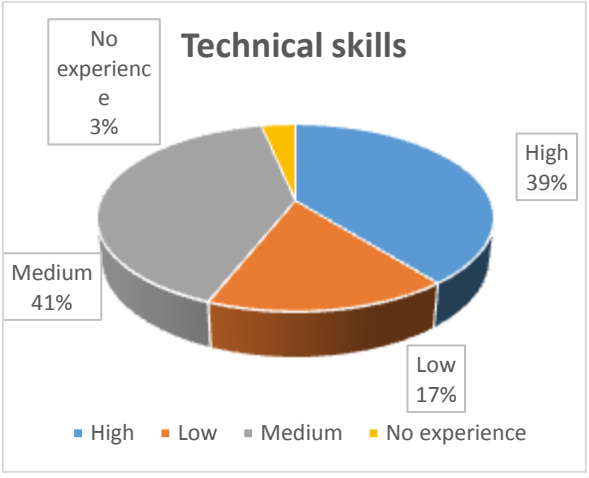


Figure 4: Technical skills needed during Pandemics

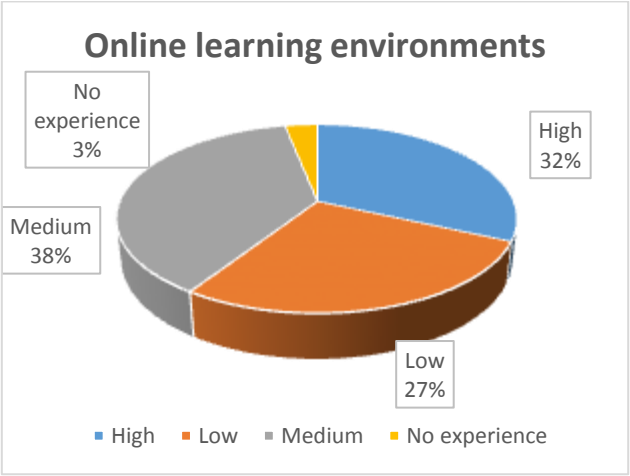


Figure 5: Familiarly with Online Environment

Most of the respondents have internet accessible to engage in online learning process once COVID-19 outbreak started. The majority indicates as well there was no need to acquire/upgrade equipment to engage within online-learning process during the outbreak. Few students (25% respondents) acquired new technological devices to join the online educational process.

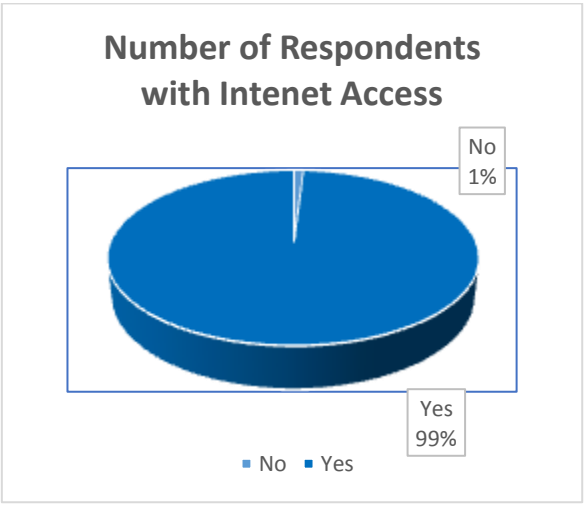


Figure 6: Respondents with internet Access

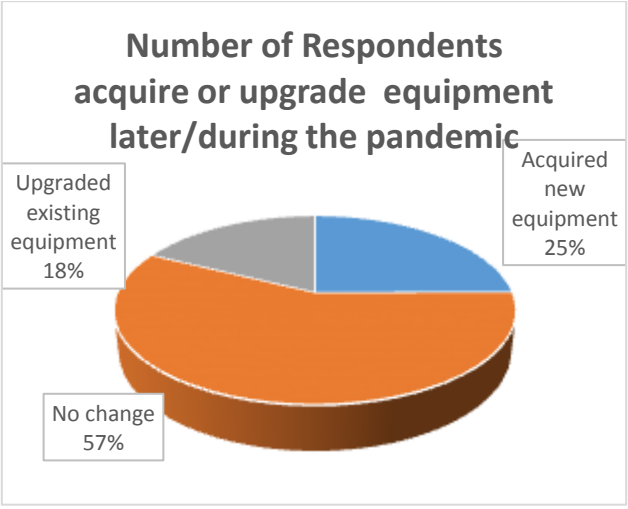


Figure 7: Respondents acquire/upgrade equipment

Around 50% of respondent are using laptops and smarts phone to connect and participate in educational process. The usage of desktops was not favorable, smart devices and laptops are portable and enable ease of use form anywhere.

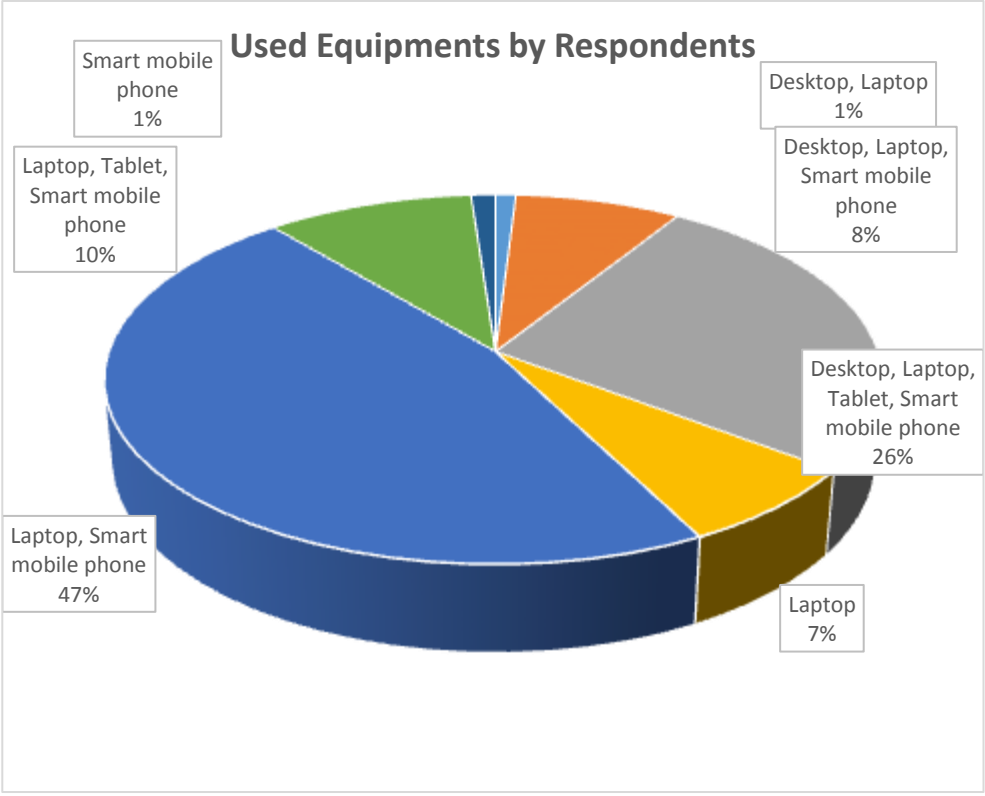


Figure 8: Used Equipment during Pandemic outbreak.

Rather than getting new laptops, new other upgrade of connectivity broadband or other significant devices are reported from respondents.

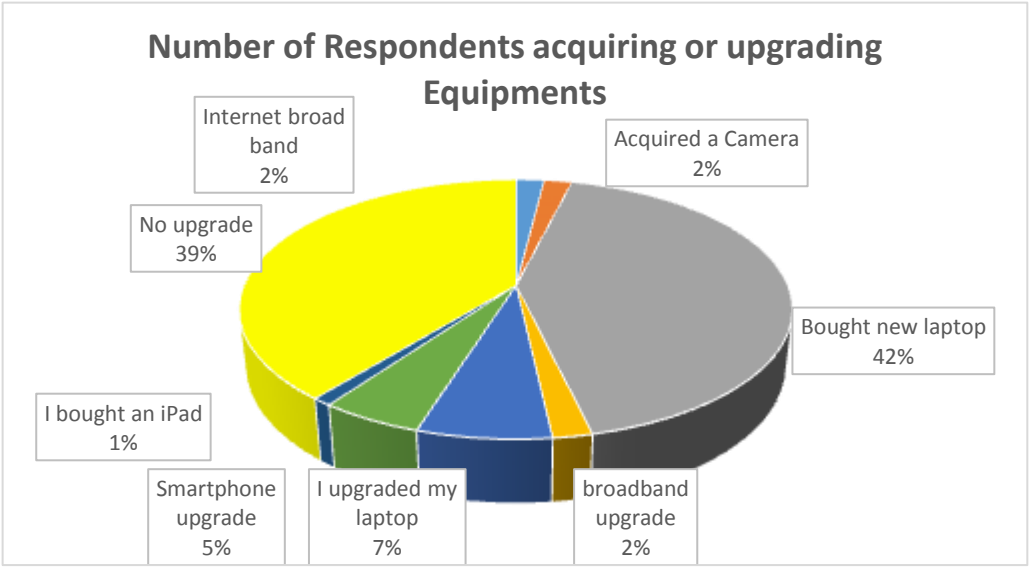


Figure 9: Responds acquiring/ upgrading equipment during the pandemic

The study findings show that majority of students enrolled as fulltime experienced Medium to high technical skills during the start of pandemic meanwhile Part-time students are mostly experience Medium difficulty in technical skills

What is the mode of study? * How would you evaluate your experience at the start of the pandemic in the following? [Technical skills] Crosstabulation

Count

		How would you evaluate your experience at the start of the pandemic in the following? [Technical skills]		
		High	Low	Medium
What is the mode of study?	Full time	177	70	166
	Part time	25	16	43
Total		202	86	209

Less than 3% of Fulltime Students and around 6% of part-time have no familiarity of technical experience which is considered as limited percentages to confirm that majority of students has technological background.

What is the mode of study? * How would you evaluate your experience at the start of the pandemic in the following? [Technical skills] Crosstabulation

Count

		How would you evaluate your experience at the start of the pandemic in the following? [Technical skills]	Total
		No experience	
What is the mode of study?	Full time	12	425
	Part time	5	89
Total		17	514

Majority of fulltime students have high/Medium familiarity with online learning environment since part-time students have

What is the mode of study? * How would you evaluate your experience at the start of the pandemic in the following? [Online learning environments] Crosstabulation

Count

		How would you evaluate your experience at the start of the pandemic in the following? [Online learning environments]		
		High	Low	Medium
What is the mode of study?	Full time	142	136	136
	Part time	21	5	58
Total		163	141	194

Medium familiarity with online learning environment. Less than 6% of both part-time and full-time students showed no experience with Online learning environments

What is the mode of study? * How would you evaluate your experience at the start of the pandemic in the following? [Online learning environments] Crosstabulation

Count

		How would you evaluate your experience at the start of the pandemic in the following? [Online learning environments]	Total
		No experience	
What is the mode of study?	Full time	11	425
	Part time	5	89
Total		16	514

The internet accessibility is commonly available to everyone before the pandemic so less than .05% of part–time students did not have internet accessibility.

What is the mode of study? * F1. Did you have internet access at home when the pandemic broke out? Crosstabulation

Count

		F1. Did you have internet access at home when the pandemic broke out?		Total
		No	Yes	
What is the mode of study?	Full time	0	425	425
	Part time	5	84	89
Total		5	509	514

Majority of fulltime (68%) part-time (41%) students have good equipment (Desktop, Laptop, Tablet, Smart mobile phone) to support switching to online learning

What is the mode of study? * F2. Did you have access to any of the following equipment BEFORE the pandemic? Crosstabulation

Count

		F2. Did you have access to any of the following equipment BEFORE the pandemic?			
		Desktop, Laptop	Desktop, Laptop, Smart mobile phone	Desktop, Laptop, Tablet, Smart mobile phone	Laptop
What is the mode of study?	Full time	0	26	114	27
	Part time	5	15	21	10
Total		5	41	135	37

The good equipment were available even before the pandemic so all part-time and fulltime have accessibility to at least of those equipment (Desktop, Laptop, Tablet, Smart mobile phone)

what is the mode of study? * F2. Did you have access to any of the following equipment BEFORE the pandemic? Crosstabulation

Count

		F2. Did you have access to any of the following equipment BEFORE the pandemic?			Total
		Laptop, Smart mobile phone	Laptop, Tablet, Smart mobile phone	Smart mobile phone	
What is the mode of study?	Full time	206	46	6	425
	Part time	33	5	0	89
Total		239	51	6	514

Around 27% of fulltime students got new equipment while 54% required new change, Full-timers students who required upgrade of existing equipment reach 17%. For part-time students, around 11% got new device while 70% did not made any change in their systems. only19% required system upgrading

What is the mode of study? * F3. Did you acquire or upgrade any equipment later on DURING the pandemic? Crosstabulation

Count

		F3. Did you acquire or upgrade any equipment later on DURING the pandemic?			Total
		Acquired new equipment	No change	Upgraded existing equipment	
What is the mode of study?	Full time	118	233	74	425
	Part time	10	62	17	89
Total		128	295	91	514

The broadband upgrade was only required by 1% of fulltime students while 5.6% of part-time students upgraded the broadband

What is the mode of study? * F3.a In case you acquired or upgraded any equipment can you give us brief details (e.g. broadband upgrade)? Crosstabulation

Count

		F3.a In case you acquired or upgraded any equipment can you give us brief details (e.g. broadband upgrade)?		
		Bought the newest and most updated laptop	broadband upgrade	Broadband upgrade and new desktop
What is the mode of study?	Full time	12	0	5
	Part time	0	5	0
Total		12	5	5

Same of 1% of fulltime students' management to change their laptops to upgraded one in order to cope with online switching

What is the mode of study? * F3.a In case you acquired or upgraded any equipment can you give us brief details (e.g. broadband upgrade)? Crosstabulation

Count

		F3.a In case you acquired or upgraded any equipment can you give us brief details (e.g. broadband upgrade)?		
		I bought an iPad because it's easier to use	I purchased a new laptop	I upgraded my internet quota and I also bought a new laptop to avoid any technical problems
What is the mode of study?	Full time	5	5	5
	Part time	0	0	0
Total		5	5	5

2.5% of fulltime students upgraded their laptops and 2.5% get new their new one to support the online transition

What is the mode of study? * F3.a In case you acquired or upgraded any equipment can you give us brief details (e.g. broadband upgrade)? Crosstabulation

Count

		F3.a In case you acquired or upgraded any equipment can you give us brief details (e.g. broadband upgrade)?		
		I upgraded my laptop type	I will get a new laptop	Internet broad band
What is the mode of study?	Full time	11	10	5
	Part time	0	0	0
Total		11	10	5

Additional camera installed by 1% of sample size while laptop upgrade was managed by another 1%

What is the mode of study? * F3.a In case you acquired or upgraded any equipment can you give us brief details (e.g. broadband upgrade)? Crosstabulation

Count

		F3.a In case you acquired or upgraded any equipment can you give us brief details (e.g. broadband upgrade)?			
		It was an output camera to be able to enter zoom meetings	Laptop	Laptop upgrade	New laptop
What is the mode of study?	Full time	5	0	6	16
	Part time	0	10	6	0
Total		5	10	12	16

Since 45.6% of fulltime students did not get adequate technical support while around 15% managed to get daily technical support, 20% of full-timers got weekly technical support.

What is the mode of study? * F5. How frequently (Daily, Weekly, Monthly, Never) did you have technical support and by whom DURING the pandemic? [College/University] Crosstabulation

Count

		F5. How frequently (Daily, Weekly, Monthly, Never) did you have technical support and by whom DURING the pandemic? [College/University]		
		Daily	Monthly	Never
What is the mode of study?	Full time	64	77	195
	Part time	15	26	26
Total		79	103	221

What is the mode of study? * F5. How frequently (Daily, Weekly, Monthly, Never) did you have technical support and by whom DURING the pandemic? [College/University] Crosstabulation

Count

		F5. How frequently (Daily, Weekly, Monthly, Never) did you have technical support and by whom DURING the pandemic? [College/University]	Total
		Weekly	
What is the mode of study?	Full time	89	425
	Part time	22	89
Total		111	514

Those who managed to receive technical support 27.5% indicated high level, 15% indicated Medium level of technical support

What is the mode of study? * F6. What level (High, Medium, Low, Very Low, Not at all) of technical support did you receive and by whom DURING the pandemic? [College/University] Crosstabulation

Count

		F6. What level (High, Medium, Low, Very Low, Not at all) of technical support did you receive and by whom DURING the pandemic? [College/University]		
		High	Low	Medium
What is the mode of study?	Full time	117	52	66
	Part time	36	5	12
Total		153	57	78

5.2Learning process

The survey assess the learning process as well to ensure the quality of the process.

Synchronous classes are the dominant method of course delivery across university to be attended daily. Self-study is used as well by instructors on daily basis to fulfill the intended learning outcome of e-learning and give more space of exportation and creativity from students.

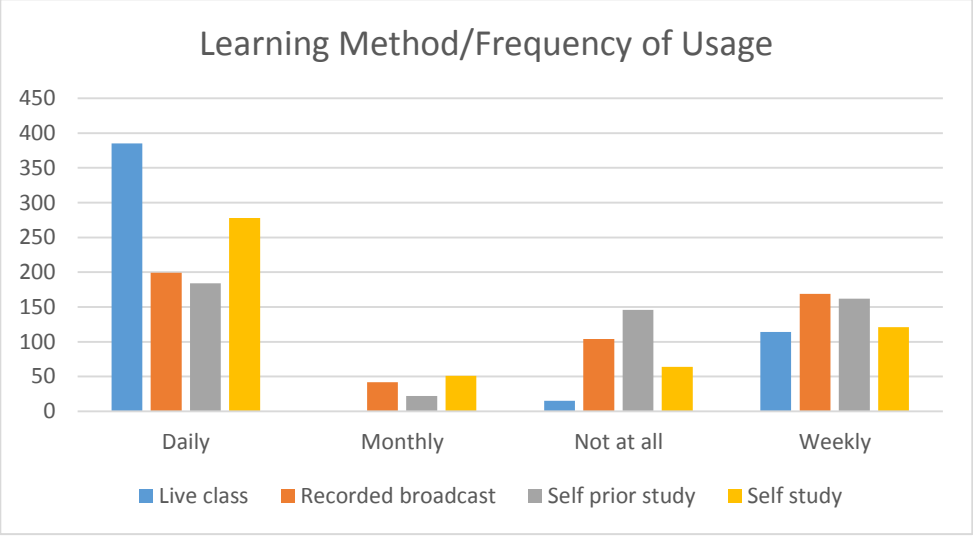


Figure 10: Adopted learning method & frequency of its usage

Respondents indicates that both online learning and offline learning are of the same serious degree even after shifting to online trend.

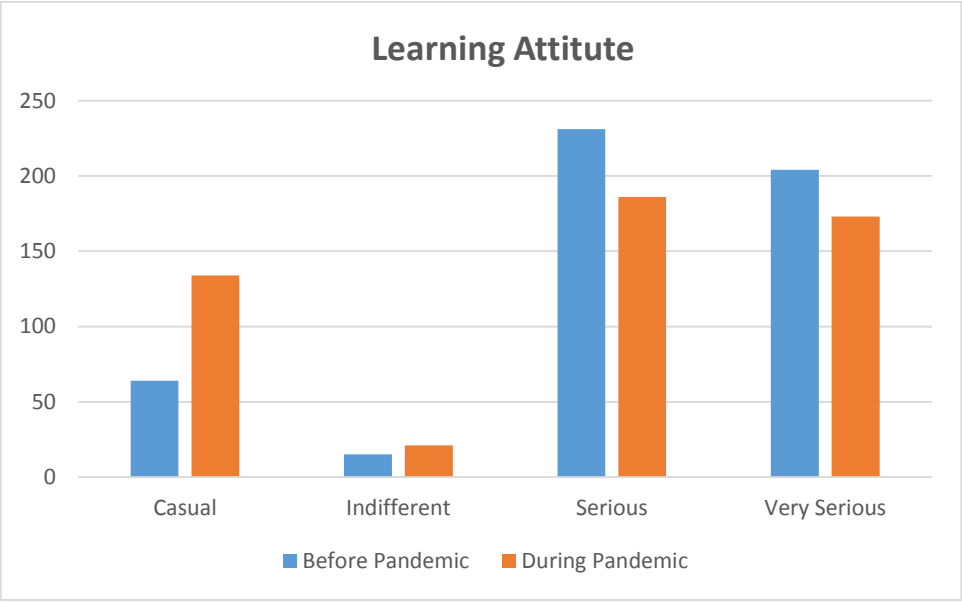


Figure 11: Learning Attitude Before/ During Pandemic

Students report they manage to have the same concentration level after shifting online-learning and indicate positivity of the experience in terms of student engagement with online-lectures.

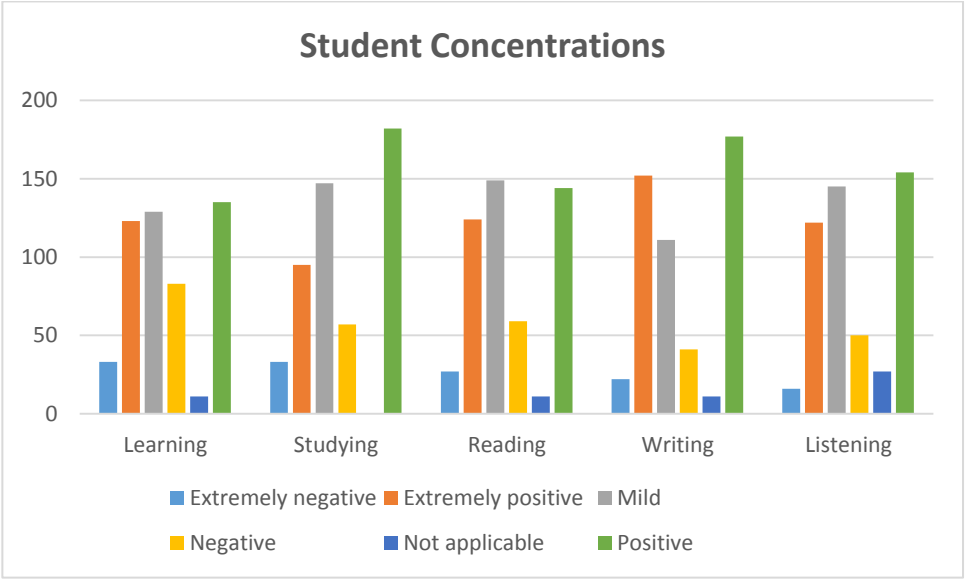


Figure 12: Student concentration during online learning experience

Respondents indicate their great level of satisfaction on having group coursework and presentation meanwhile written exam/open exam have less level of student's satisfaction

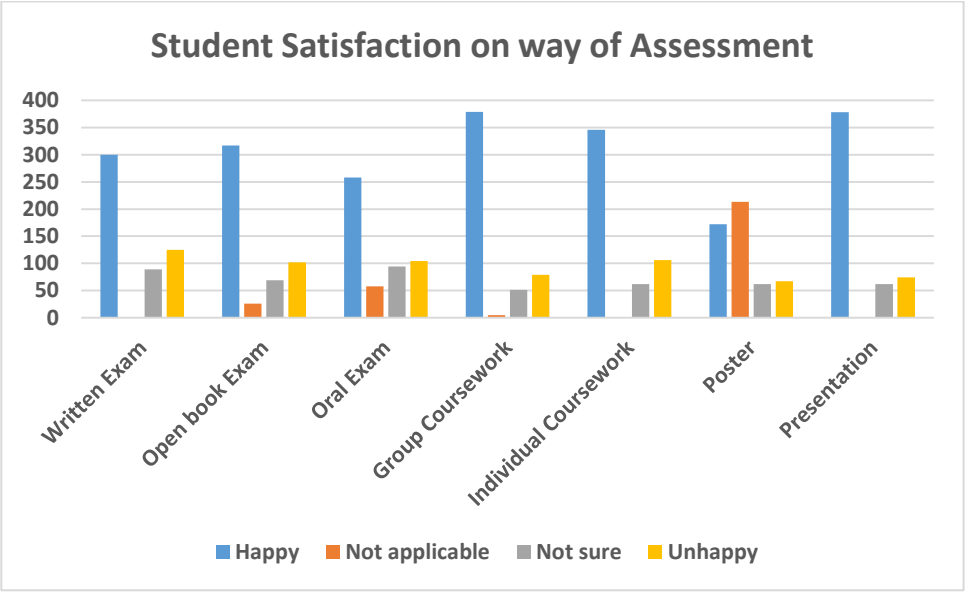


Figure 13: Student satisfaction on conducted way of assessment during Online-learning experience

Abode connect was not preferably chosen by Egyptian universities during pandemic outbreak, only 10% of full-timer were using that while 24% of part-timers were introduced to Adobe Connect

What is the mode of study? * F7. What learning and communication platform(s) have you been using since the outbreak of the pandemic? [Adobe Connect] Crosstabulation

Count

		F7. What learning and communication platform(s) have you been using since the outbreak of the pandemic? [Adobe Connect]		Total
		No	Yes	
What is the mode of study?	Full time	382	43	425
	Part time	67	22	89
Total		449	65	514

Blackboard was not preferably chosen by Egyptian universities during pandemic outbreak, only 2.5% of full-timer were using that while 24% of part-timers were introduced to Blackboard

What is the mode of study? * F7. What learning and communication platform(s) have you been using since the outbreak of the pandemic? [Blackboard] Crosstabulation

Count

		F7. What learning and communication platform(s) have you been using since the outbreak of the pandemic? [Blackboard]		Total
		No	Yes	
What is the mode of study?	Full time	414	11	425
	Part time	67	22	89
Total		481	33	514

Google classroom was commonly used by Egyptian universities so around 97% of them adopted Google classroom

What is the mode of study? * F7. What learning and communication platform(s) have you been using since the outbreak of the pandemic? [Google Classroom] Crosstabulation

Count

		F7. What learning and communication platform(s) have you been using since the outbreak of the pandemic? [Google Classroom]		Total
		No	Yes	
What is the mode of study?	Full time	12	413	425
	Part time	5	84	89
Total		17	497	514

Microsoft Teams is not popular by Egyptian universities, only 27% of full-timer while 60% of part-timers experienced so

What is the mode of study? * F7. What learning and communication platform(s) have you been using since the outbreak of the pandemic? [Microsoft Teams] Crosstabulation

Count

		F7. What learning and communication platform(s) have you been using since the outbreak of the pandemic? [Microsoft Teams]		Total
		No	Yes	
What is the mode of study?	Full time	309	116	425
	Part time	36	53	89
Total		345	169	514

Moodle was used as main learning management system so more than 80% of full-timers and part-timers used Moodle since the pandemic outbreak

What is the mode of study? * F7. What learning and communication platform(s) have you been using since the outbreak of the pandemic? [Moodle] Crosstabulation

Count

		F7. What learning and communication platform(s) have you been using since the outbreak of the pandemic? [Moodle]		Total
		No	Yes	
What is the mode of study?	Full time	78	347	425
	Part time	15	74	89
Total		93	421	514

Although Skype was popular before the pandemic as meeting tools, it's popularity after the pandemic did not exceed 13% for both mode of study.

What is the mode of study? * F7. What learning and communication platform(s) have you been using since the outbreak of the pandemic? [Skype] Crosstabulation

Count

		F7. What learning and communication platform(s) have you been using since the outbreak of the pandemic? [Skype]		Total
		No	Yes	
What is the mode of study?	Full time	394	31	425
	Part time	51	38	89
Total		445	69	514

The same applies to viber application where its popularity of usage is around 14% of both mode of study used Viber in online learning process.

What is the mode of study? * F7. What learning and communication platform(s) have you been using since the outbreak of the pandemic? [Viber] Crosstabulation

Count

		F7. What learning and communication platform(s) have you been using since the outbreak of the pandemic? [Viber]		Total
		No	Yes	
What is the mode of study?	Full time	379	46	425
	Part time	62	27	89
Total		441	73	514

WhatsApp was deployed intensively by 96% of full-timer and 94% of part-timers students to communicate with faculty members. Unexpected switch with pandemic outbreak led that universities deploying most usable application as trusted one.

What is the mode of study? * F7. What learning and communication platform(s) have you been using since the outbreak of the pandemic? [WhatsApp] Crosstabulation

Count

		F7. What learning and communication platform(s) have you been using since the outbreak of the pandemic? [WhatsApp]		Total
		No	Yes	
What is the mode of study?	Full time	17	408	425
	Part time	5	84	89
Total		22	492	514

Around 97% of full-timers used Zoom applications to attend online classes and 100% of part-timers were relying mainly on that application.

What is the mode of study? * F7. What learning and communication platform(s) have you been using since the outbreak of the pandemic? [Zoom] Crosstabulation

Count

		F7. What learning and communication platform(s) have you been using since the outbreak of the pandemic? [Zoom]		Total
		No	Yes	
What is the mode of study?	Full time	12	413	425
	Part time	0	89	89
Total		12	502	514

What is the mode of study? * F8. Did you have prior knowledge and experience of using the following platforms? [Zoom] Crosstabulation

Count

		F8. Did you have prior knowledge and experience of using the following platforms? [Zoom]		
		High	Low	Medium
What is the mode of study?	Full time	200	49	73
	Part time	40	0	44
Total		240	49	117

Around 90% of students are familiar of WhatApp applications even before the pandemic.

What is the mode of study? * F8. Did you have prior knowledge and experience of using the following platforms? [WhatsApp] Crosstabulation

Count

		F8. Did you have prior knowledge and experience of using the following platforms? [WhatsApp]		
		High	Low	Medium
What is the mode of study?	Full time	403	5	5
	Part time	67	0	22
Total		470	5	27

Less percentage of 40% of familiarity indicated for Viber applications by students before the pandemic.

What is the mode of study? * F8. Did you have prior knowledge and experience of using the following platforms? [Viber] Crosstabulation

Count

		F8. Did you have prior knowledge and experience of using the following platforms? [Viber]		
		High	Low	Medium
What is the mode of study?	Full time	180	40	43
	Part time	30	5	22
Total		210	45	65

Low familiarly with Moodle's usage was indicated with finding for both mode of studies as 28.7%

What is the mode of study? * F8. Did you have prior knowledge and experience of using the following platforms? [Moodle] Crosstabulation

Count

		F8. Did you have prior knowledge and experience of using the following platforms? [Moodle]		
		High	Low	Medium
What is the mode of study?	Full time	107	118	93
	Part time	30	30	23
Total		137	148	116

Only 12% of students of both mode are unfamiliar of Microsoft Teams and its usage.

What is the mode of study? * F8. Did you have prior knowledge and experience of using the following platforms? [Microsoft Teams] Crosstabulation

Count

		F8. Did you have prior knowledge and experience of using the following platforms? [Microsoft Teams]		
		High	Low	Medium
What is the mode of study?	Full time	100	63	27
	Part time	35	0	28
Total		135	63	55

During the pandemic, daily live classes were conducted for majority of full-timers and part-timers students.

What is the mode of study? * L1. What learning methods, and to what degree, did you use DURING the pandemic? [Live class] Crosstabulation

Count

		L1. What learning methods, and to what degree, did you use DURING the pandemic? [Live class]			Total
		Daily	Not at all	Weekly	
What is the mode of study?	Full time	334	10	81	425
	Part time	51	5	33	89
Total		385	15	114	514

The shift to online learning required the students to spend more time during the pandemic than before so 74% confirmed so.

What is the mode of study? * L2. Did you spend more time studying during the lockdown than BEFORE the lockdown? Crosstabulation

Count

		L2. Did you spend more time studying during the lockdown than BEFORE the lockdown?		Total
		No	Yes	
What is the mode of study?	Full time	111	314	425
	Part time	42	47	89
Total		153	361	514

The learning attitude before Pandemic is considered as serious and very serious by both mode of studies. During the pandemic the learning attitude is 74% for full-time and part-timers indicated serious and very serious levels of learning attitude

What is the mode of study? * L4.a What do you think of your learning attitude to your studies BEFORE the pandemic? Crosstabulation

Count

		L4.a What do you think of your learning attitude to your studies BEFORE the pandemic?		
		Casual	Indifferent	Serious
What is the mode of study?	Full time	38	15	178
	Part time	26	0	53
Total		64	15	231

What is the mode of study? * L4.a What do you think of your learning attitude to your studies BEFORE the pandemic? Crosstabulation

Count

		L4.a What do you think of your learning attitude to your studies BEFORE the pandemic?	Total
		Very Serious	
What is the mode of study?	Full time	194	425
	Part time	10	89
Total		204	514

The concentration level during the pandemic was indicated as will to be serious for learners as well

What is the mode of study? * L4.b What do you think of your learning attitude to your studies DURING the pandemic? Crosstabulation

Count

		L4.b What do you think of your learning attitude to your studies DURING the pandemic?		
		Casual	Indifferent	Serious
What is the mode of study?	Full time	91	21	156
	Part time	43	0	30
Total		134	21	186

What is the mode of study? * L4.b What do you think of your learning attitude to your studies DURING the pandemic? Crosstabulation

Count

		L4.b What do you think of your learning attitude to your studies DURING the pandemic?	Total
		Very Serious	
What is the mode of study?	Full time	157	425
	Part time	16	89
Total		173	514

6. Summary of Research findings

The following are the key finding of survey analysis:

Key Study Findings – Technical Skills

Technical skills needed during Pandemics	**High – 40%** **Medium – 39%**
Familiarly with Online Environment During Pandemic	**High – 38%** **Medium – 32%**
Internet Access During Pandemic	**99% Accessible**
Respondents acquire/upgrade equipment During Pandemic	**57% Require no change of existing HW** **42% Bought new laptop**
Most Common used Equipment During Pandemic During Pandemic	**45% use Laptop, Smart mobile phone**

Summary of Key Study Findings – Learning

Learning Method/Frequency of Usage During Pandemic	**75% Daily live classes**
Learning Attitude During Pandemic	**Serious – Very Serious**
Student Concertation During Pandemic	**Extremely Positive**

E-

7. Reflection & Conclusion

Learning has significant role and potential for both learners and instructors in educational system (Neumann, 1998). Electronic learning environment bounces more flexibility and accessibility to both instructor and students (Li and Irby, 2008). Electronic contents that are accessible anytime anywhere provide learner's with critical advantage to re-visit the contents whenever needed. Live lectures have more advantage to enable further arguments and communication. Online submission of coursework and assignment in addition to interactive graphical user interface are advantage for online learning platforms (Mupinga, 2005)

As discussed above in the findings section, overall, the students have positive feedback on e-learning during pandemic outbreak. In term of required facilities, the use of portable devices are dominant to be accessed anywhere. The need for further upgrade of internet connectivity or used devices is not essential as long most of individuals with developing countries context are obsessed of technology adoption and commonly to acquire new released models of technological devices even before the shift to fully electronic learning process. Attending synchronous live classes on daily bases is commonly used by online-learning mode of study. Encouraging the level of innovation and creativity through self-study is more applicable to be applied in online mode of study as well

The learning experience was successful so far from student's perspectives. Student engagement within online class is remarkable and group participation in coursework is more desirable for the online mode of study.

In comparison to Bordoloi's survey analysis, majority of learners chose the blended learning to overcome the technological infrastructure issue in India. There are variety of sophisticated tools are accessible by teachers and learners. The limited internet connectivity impose to have fully virtual or synchronous/live teaching. Bordoloi' figure out that the asynchronous session of learning can provide more convenient way. So, the blended form of learning, will be more favorable in Indian educational system.

Moreover, Bao (2020) stress along his study's recommendation that lecturers did not get enough time for online delivery of contents, however physiological issue related to students' stress of using innovative platform without proper training might affect the effectiveness of E-learning. Other studies emphases that to have more effective learning, the online module delivery should be customized on students' requirement (Munro, 2005), other studies such as Johnson et al. (2000) prove to have equivalent quality with physical learning. Swan (2003)

Researchers agree upon that learning management system provided technological platforms for live-streaming classes that enable more engagement between instructor and students in module' delivery (McInnerney and Roberts, 2004). Engagement

with learners is the essence of online-learning experience as one of the key aspects mandate for online-learning: instruction, social interaction and technology. (Alqurashi, 2019)

Seems that move toward e-learning have different impact on different context. What is agreed so far from similar conducted studies that rapid shift toward E-learning post pandemic COVID-19 has upraised issues related to the quality of learning process from instructor's perspectives, how to measure its efficiency, how to fulfilling learning outcomes while maintaining the same level of satisfaction

Coronavirus outbreak considered as upheaval constitute a serious magnitudes on several aspects. In the meantime, developed countries could not persist the virus spread, developing countries are still straggling from lack of vaccination. Sticking to the preventive measures of keeping social distance is the only approach they use to limit the virus spread after shutdown of schools and universities over 100 countries (Kundu and Bej, 2020).

Since the situation is more devastating in developing countries, moving to online learning is not favorable by these countries and was so challenging. UNESCO urged to move online in teaching to overcome the disruption of education globally (UNESCO, 2020e). Kundu and Bej's study (2020) highlighted the issue of *applying UNESCO guidelines of virtual learning in developing country where digitalization is still under the way*. Since developing countries suffer from poor technological

infrastructure, the roadmap for educational institution to survive this pandemic is not clear so far for.

There is need for further studies investigating the proposed framework of online learning assurance, difficulties experienced during pandemic and what are the quality assurance measure to ensure efficiency of the learning process in term of delivered ILOs. Focusing on developing countries contexts need more elaboration in light of limited resources and technological infrastructure.

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