International Journal of Innovation, Creativity and Change. www.ijicc.net
Volume 15, Issue 4, 2021

Asynchronous Learning Initiatives: Case Study during COVID-19

[1]Muhammad Azeem, [2] Sehar Asghar, [3] Rab Nawaz Lodhi [4]Amjad Hussain, [5] Ayyaz Ahmad, [6]Farkhanda Naz [1] Department of Industrial & Manufacturing Engineering, University of Engineering & Technology, Lahore Pakistan, [2] Institute of Business & Management, University of Engineering & Technology, Lahore Pakistan, [3] Associate Professor, UCP Business School, University of Central Punjab, Lahore Pakistan, [4] Department of Industrial & Manufacturing Engineering, University of Engineering & Technology, Lahore Pakistan, [5] Assistant Professor, Institute of Quality & Technology Management, University of the Punjab, Lahore Pakistan, [6] Institute of Business & Management, University of Engineering & Technology, Lahore Pakistan, Email: [1]ehmetazim@gmail.com, [2]sehar.asghar528@gmail.com, [3]rabnawaz.lodhi@ucp.edu.pk, [4]chamjad@gmail.com, [5]ayz90@hotmail.com, [6]farkhandanaz234@gmail.com

Disruption to education and the havoc of a health crisis have been common trends found in every region of the globe as a consequence of the COVID-19 epidemic. This pandemic has interrupted educational activities worldwide. Countries have taken significant measures to continue education via asynchronous learning. Cases were selected to explore "how have countries taken initiatives in switching from synchronous learning to asynchronous learning during the critical time of the COVID-19 pandemic?" Secondary data was collected from existing literature and published reports. Yin explanatory, embedded case study design was employed and thematic analysis was carried out using NVIVO 12. It is observed that 95 percent of countries of the world have taken steps toward asynchronous learning in the emergency period for each level of education, and some common emerging tools for asynchronous learning are also identified in the study. This study was first conducted to investigate the trend of countries in a state of emergency providing a continuation of educational activities utilising their available resources. The study is believed to be helpful for countries of different regions wanting to modify the existing asynchronous learning infrastructure. Post emergency measures may be considered for further studies.

Key words: *Educational Disruptions, Asynchronous Learning, Emergency Responses, Qualitative Study, Online Learning Tools*

DOI: 10.53333/IJICC2013/15424

1 INTRODUCTION

Disruption to education and the havoc of a health crisis have become common phenomena observed in every corner of world due to the outbreak of the pandemic COVID-19. As national closures requested schools to shut their doors temporarily, this pandemic has set off perturbations in education across the globe. The closures are projected to have affected approximately 70 percent of the total student population in the world (UNESCO, 2020). Institutes are faced with the task of maintaining quality of learning when the likelihood of prolonged education cuts is unavoidable. The obviously simple and straightforward solution is to remotely use online learning tools to continue learning (CoSN, 2020). Countries that were the first to suffer heavily from the virus, such as China , South Korea, Italy and Iran, have already moved to continuing education via online learning opportunities and platforms (Tam & D, 2020).

This trigger point of rapid transformation is related to numerous obstacles and difficulties (Crawford et al., 2020), but because no one knows when this pandemic will fully disappear, educational institutions across the globe have decided to create online learning content for students from all academic fields using the asynchronous technological resources already available.

What is Asynchronous learning?

Synchronous learning means an e-learning system that includes a number of students simultaneously learn in an online environment (Mayadas, 1997). Less physically-involute learning approaches, where tutoring services are available (Harasim et al., 1995; Hiltz & R., n.d.; Swan, 2005), are known as asynchronous learning networks. This mode of learning is also known as collaborative computer-mediated learning (Koschmann et al., 2002; Miyake, 2007; Scardamalia & Bereiter, 1996) and e-learning (Andrews & C., n.d.; Haythornthwaite & Kazmer, 2004; Land & S., n.d.; Lea & Nicoll, 2002; Sharples et al., 2007). The relational, constructivist and cognitivist end of the spectrum encourages the active participation of students by means of theoretical methods and leads this initiative to a community of individual concepts of apprenticeship (Scardamalia & Bereiter, 1996).

In comparison, real-time contact between students and teachers by synchronous means requires communication (G. Johnson et al., 2007) whereas in asynchronous learning, computer-mediated learning is included (S. D. Johnson & Aragon, 2003) where students and teachers are not simultaneously available (Gašević et al., 2015). Some asynchronous learning methods are also used to deliver online learning, though transnational distance is often related to online learning (Moore, 1993).

DOI: 10.53333/IJICC2013/15424

Need of Online Learning: Empirical Evidence:

Online learning can be defined as "a type of remote learning in which technology facilitates the learning process, teaching takes place entirely through the Internet and students and instructors do not need to be available simultaneously" (Gašević et al., 2015)

Although practiced over decades (OnlineSchools.org, n.d.), the recent form of distance learning is online learning (Stern, n.d.). It takes place on the internet, also referred to as e-learning. Also, since the start of internet learning, the manner in which teachers teach and how students learn has been primed for a pedagogical change. Teachers and teachers serve as guides in this style of education, while students become active workers and not just inactive learners (Stern, n.d.).

The COVID-19 pandemic has turned personal and professional lives upside down. Before the pandemic, the global e-learning industry had already seen huge annual global growth. Online learning is a secure and viable alternative for which to continue education. It is estimated it will have a compound annual growth rate of $336,98 billion by 2026 (CAGR) of 9.1 percent from 2018 to 2026 (Research, 2019). Well before the pandemic, between 2017 and 2022, the US e-learning market was projected to rise to US$ 6.22 billion. According to Technavio (2018), the most important investments in e-learning were known in the USA, India, China, South Korea, the UK and Ivoire (Dos Santos, 2019). Online learning is internet-based study. It is also named, among other aspects, "e-learning." Online learning, however, is just one form of "distance learning," the term used in distance learning rather than for that of a conventional classroom.

World Trend for e-learning:

Distance learning has a long history and today there are many different styles. The term "e-learning" was born during the 1990s when web browsers entered the market. E-learning has been researched and named "educational imperialism" where transnational institutions require students to comply with western curriculum models and do not recognise non-western cultural values (Ziguras, 2001)

Worldwide, the patterns of distance and online higher education reflect innovations. Africa is the least involved market of e-learning, with just over 600 million dollars than the Middle East with 683 million dollars, and Latin America with 2.1 billion dollar (Stern, n.d.), while Asia holds a market estimated at more than 10.9 billion dollars in the late e-learning system (CoSN, 2020). Current trends in Sub-Saharan Africa and South Asia indicate that even with technological constraints in these regions, online learning has gained traction, and the global email market could hit more than $325 billion by 2025 (UNESCO, 2020).

DOI: 10.53333/IJICC2013/15424

A recent report from the European University Association describes their higher education organisation's prime mission is to use digital education to improve traditional higher education, rather than explicitly undermine tertiary education (Gaebel, 2015). Especially in the developed world, the number of students from developing nations enrolled in online degrees is increasing. The number of South African students enrolled in online graduate programs in Great Britain between 2011 to 2016 has risen by 135 percent.

Despite the rate of increase for online programs being high, it is still challenging to graduate online than studying abroad. The number of Nigerian students in UK-based online graduation programs is significant: there were 5,252 in 2015/16. More than 95 percent of students in many European countries report having a computer for when they need to work at home (Global, 2020). E-learning and online learning are transforming our approach to teaching and learning. These changes in the models of education were swift and transformational (Palvia et al., 2018).

Telecommunications infrastructure must be enhanced, with an emphasis on high bandwidth. Advanced countries should support their neighbours. This technology collaboration with countries like the USA, China and India supporting their neighbouring countries has already taken place (Palvia et al., 2018). In Indonesia, for instance, only 34 percent have a computer, and only 70 percent have access to a quiet study spot. One survey claims more than 90 percent of students consider online learning a better choice than classroom learning (Global, 2020) .

Presentation of the Case Study:

The aim of this case study is to identify how countries have taken initiatives to switch from a synchronous learning mode to an asynchronous learning mode during the crucial time of COVID-19, by utilising their available resources to keep pace with educational activities through online learning during the emergency situation. Forecasts for the long-term implications of COVID-19 range from a five-year disruption to one of six months (Dennis, 2019). That makes this case study highly interesting for the research objective.

In this paper, the need for online learning is defined at initial stages, followed by the emerging trend in the world for online learning. Sub-sections of section 1 describe the study problem and research question, research objectives, proposition and conceptual model of the study. Section 2 describes the methodology, study population, research design and data analysis and testing techniques involved in the study. Sections 3 and 4 elaborate extensively the study's key findings, followed by a preliminary report of the study including the analysis of the result in terms of the testing of the proposition, with initial findings and by cross case comparison. Sections 5 and 6 explain the theory revision and the final report of the study. Sections 7, 8 and 9 deal with the discussion, recommendations, limitation and future direction, respectively. The data is supported by results based on NVivo software; in the appendix, results are available in the form of a Hierarchy Chart, Project Map, Tree Map, etcetera.

DOI: 10.53333/IJICC2013/15424

1.1. Research Gap:

In response to the global emergency, countries have taken initiatives for remote learning using existing infrastructure and capabilities, but they need to post-different strategies in the future for revolutionising education. Immediate steps are required for identification of remote learning tools for opting to an online / asynchronous mechanism for better deployment of digital learning systems in the future. We find after rigorous probing none of the sources made recommendations for asynchronous learning tools.

Research Question:

During this time of emergency/lock down of physical activities, asynchronous learning is the only option available to countries. The aim of this study is to explore: the asynchronous learning initiatives taken by countries; at what level of education these implications are initiated; identification of modes of communication used by countries; what the most common online training delivery instrument used by countries are, and ; what type of guidelines are used by educational institutes of the world's countries during the COVID-19 pandemic.

RQ: How have countries taken initiatives when switching from synchronous learning to asynchronous learning during this critical time of the COVID-19 pandemic?"

1.2. Conceptual Model:

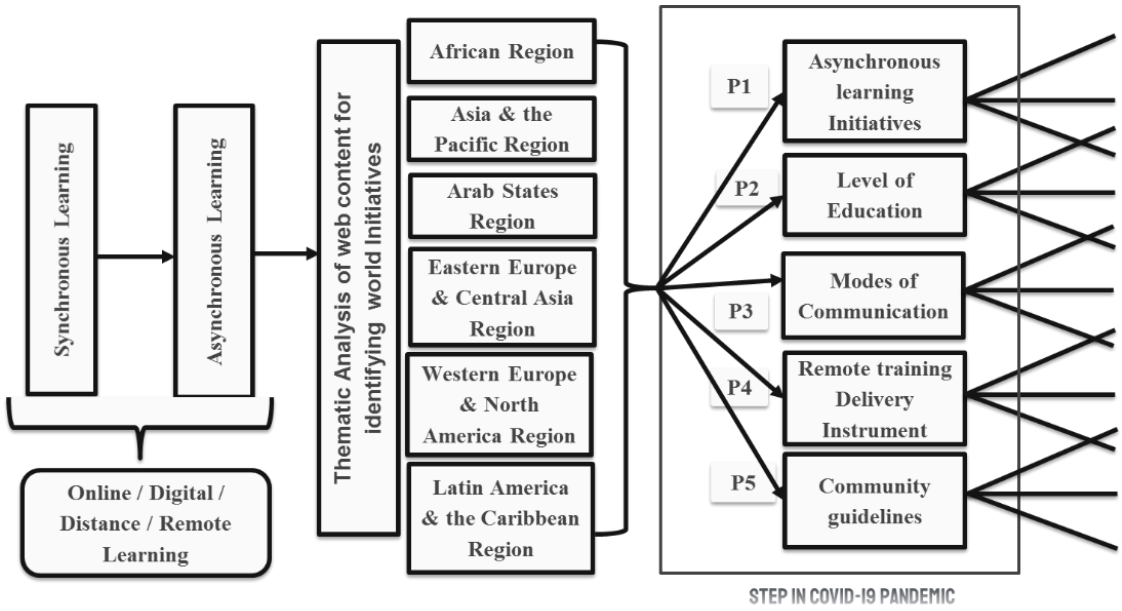


Figure 1: Conceptual framework of the study

DOI: 10.53333/IJICC2013/15424

1.3. Proposition:

P1: Initiatives were taken by the countries for asynchronous learning during the global pandemic of COVID-19.

P2: Initiatives were taken at each level of education during the COVID-19 pandemic.

P3: Countries used different modes of communication for opting to remote learning during the COVID-19 pandemic

P4: Countries used some instruments for online training delivery during the COVID-19 pandemic.

P5: Educational institute issued guidelines for the public during the COVID-19 pandemic.

2 METHODOLOGY

2.1 Study Population:

For the purpose of this study, two reports considered as cases were selected to explore the global trend. The African Region, Arab States Region, Asia and the Pacific Region, Eastern and Central Asia Region, Western Europe and North America Region, Latin America and the Caribbean Region (UNESCO, 2020) are taken as a unit of analysis, while countries are taken as subunits (Table 1). The population is quite diverse, which made it an excellent choice for studying the world trend for asynchronous learning. The key data was extracted from existing literature, web content and the published reports. The reports of UNESCO (2020) and World Bank, (2020) being the most reliable organisations, are taken as cases. This database provides adequate representation of the study population, including the steps taken by the countries during the time of pandemic covering the period from March 2020 through June 2020. Other sources of data are available that assist in interpreting the results. The electronic records of subjects were carefully reviewed, retrospectively.

DOI: 10.53333/IJICC2013/15424

Table 1: Unit of Analysis: Countries of Different Regions of the World (UNESCO,2020; WB 2020)

Region:	**AFRICA**	**WESTERN EUROPE & NORTH AMERICA**	**LATIN AMERICA & THE CARIBBEAN**	**EASTERN EUROPE & CENTRAL ASIA**	**ASIA & THE PACIFIC**	**ARAB STATES**
No. of Countries =	42 No.	24 No.	26 No.	27 No.	27 No.	18 No.
Angola	Namibia	Austria	Argentina	Albania	Bangladesh	Bahrain
Benin	Niger	Belgium	Bahamas	Afghanistan	Bhutan	Egypt
Botswana	Nigeria	Bermuda	Belize	Armenia	Cambodia	Iraq
Burkina Faso	Rwanda	Canada	Bolivia	Azerbaijan	China	Jordan
Cabo Verde	São Tomé & Príncipe	Cyprus	Brazil	Bulgaria	Fiji	Kuwait
Cameroon	Senegal	Denmark	Chile	Croatia	India	Lebanon
Central African R.	Sierra Leone	Finland	Colombia	Czech Republic	Indonesia	Libya
Chad	Somalia	France	Costa Rica	Estonia	Iran	Mauritania
Congo	South Africa	Germany	Cuba	Georgia	Japan	Morocco
Cote d'Ivoire	South Sudan	Gibraltar	Dominica	Hungary	Kiribati	Oman
Congo	Tanzania	Greece	Dominican Rep.	Kazakhstan	Malaysia	Palestine
Djibouti	Uganda	Greenland	Ecuador	Kyrgyzstan Republic	Maldives	Qatar
Equatorial Guinea	Zambia	Iceland	El Salvador	Latvia	Mauritius	Saudi Arabia
Ethiopia	Zimbabwe	Ireland	Haiti	Lithuania	Nepal	Syrian Arab
Gambia	Algeria	Italy	Grenada	Mongolia	New Zealand	Tunisia
Gabon		Luxembourg	Guatemala	North Macedonia	Pakistan	UAE
Ghana		Malta	Guyana	Republic of Moldova	Philippines	West B. & Gaza
Guinea		Norway	Honduras	Romania	Korea	Yemen
Kenya		Poland	Jamaica	Russian Federation	Samoa	
Lesotho		Portugal	Mexico	Romania	Seychelles	
Liberia		Spain	Panama	Serbia	Singapore	
Madagascar		Sweden	Paraguay	Slovakia	Solomon Islands	
Malawi		Switzerland	Peru	Slovenia	Sri Lanka	
Mali		UK	Trinidad and Tobago	Tajikistan	Thailand	
Mauritania			Uruguay	Turkey	Viet Nam	
Mauritius			Venezuela	Ukraine	Timor-Leste	
Mozambique				Uzbekistan	Vanuatu	

2.2 Research Design:

The research methodology is based on a qualitative approach. A case study research method is incorporated in this study (Yin, 2003). The choice of the case method was decided by the fact this research method allows the researchers to investigate the phenomenon more in-depth than a full-scale survey or an experimental research would (J Hamel, S Dufour, 1993). We employed an explanatory, embedded case study method (Yin, 2003) to explore the initiatives taken by countries in six different regions of the world. (According to Yin, three paramount factors of case study research design are: (i) Research question (How), (ii) Little control of investigator over event or behavioural changes and (iii) focus on contemporary phenomena within real life context. “Embedded-multiple case design” was practiced for this study, considering protocols and procedures of case study research design. The evidence from multiple cases is more pertinent and overall study is more acceptable. (Herriot & W.A., 1983). The benefits of embedded design over holistic design is the risk of

DOI: 10.53333/IJICC2013/15424

slippage of data is less, making case study design of embedded design more favourable (Yin, 2009).

Building theory from case study research is better suited when the subject is relatively new or when there is a need to wedge some fresh insights into a well-known theme (Eisenhardt, 1989). In the define and design phase of multiple case replication, the theory was developed (Yin, 2003) for our selected cases discussed in this study. Yin (2013) calls this approach "analytic generalisation", where the researcher is able to compare and contrast the results of the case study with an established set of principles or theory. If two or more cases are depicted to support the propositions, then an argument that the propositions have been confirmed becomes replicable. Cases are selected with a triangulation of data directed to the use of multiple methods or sources of data in qualitative research to generate a far-reaching understanding of phenomena (Patton, 1999). In case study research the selection of cases is important, especially where the objective is to construct theory from the cases (Eisenhardt, 1989). A case study can be literally replicated, that is, the case is selected to foresee identical outcomes, or is theoretically replicated – the case is selected to anticipate opposite results for predestined reasons (Yin, 2003). In the prepare, collect and analyse phase, case studies are conducted and individual reports are generated (Robson, 2002). Finally, the conclusions are reported and set into a context of significance. Tentative themes, concepts and even relationships between variables can be revealed from in-case comparisons and cross case analysis (Eisenhardt, 1989), with the researcher constantly comparing theory and evidence and working iteratively to find a close fit between the two. However, there is a significant amount of iteration observed over the steps, as the case study methodology is a flexible research design technique (Andersson & Runeson, 2007).

2.3 Research Design Tests:

Four research design tests (Construct Validity, Internal Validity, External Validity and Reliability) were employed to justify our study (Kidder & Judd, 1986), as seen in Table 2.

Table 2: Case study test

Test	Case Study Tactic	Phase of Research
Construct Validity	• Multiple sources of evidence (Different Reports) • Establish criteria of evidence (Proposition)	Data Collection
Internal Validity	• Coding-thematic analysis • Data interpretation • Statistics from web sources • Rival explanation • Hierarchy chart, project map)	Data Analysis
External Validity	• Use logic of multiple case replication	Research Design
Reliability	• Case study protocol (study reports)	Data Collection

DOI: 10.53333/IJICC2013/15424

2.4 Data analysis:

A deductive approach was used to analyse the data (Perry, 1998), to identify how countries have taken initiatives to switch from a synchronous learning mode to an asynchronous learning mode during the crucial time of COVID-19. The steps taken for online / distance learning was compiled using data triangulation between multiple sources of evidence (Yin, 2014). The researcher read through the electronic records independently, following a descriptive coding procedure, which intended the recognition of data relevant to the research study. Once the descriptive codes were acceded, the next stage included interpretative coding, which recognises a smaller number of codes. The researcher followed a manual coding and thematic analysis, using NVIVO software. The researcher performed cross-case analysis to look for similarities and differences in a way to identify steps taken by countries to switch from synchronous learning to asynchronous learning (Yin, 2008). The results were assembled through thematic analysis to describe and discuss the themes, highlighting similarities and differences across all components.

3 IMPORTANT RESEARCH FINDINGS:

3.1 Initial Report of Cases / Case Database:

After in-depth exploration of web data and detailed analysis of published reports it was concluded that 95% of countries of the world have taken steps to shift from synchronous to asynchronous learning due to lockdowns caused by the pandemic. A Word Cloud and hierarchy chart is shown in Figure 2 and Figure 3, respectively.

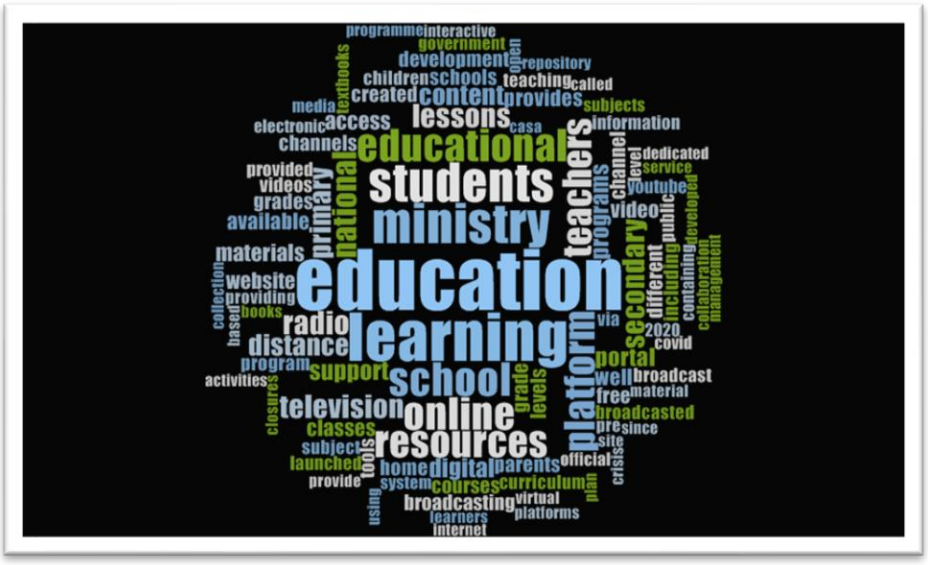


Figure 1 Word Cloud

DOI: 10.53333/IJICC2013/15424

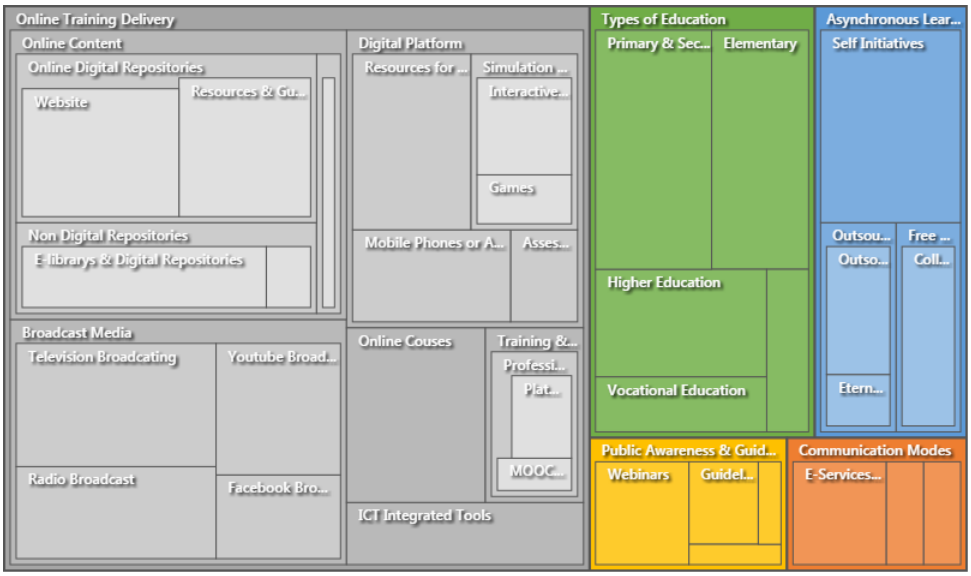


Figure 2: Hierarchy chart of codes of the study

Countries have taken an asynchronous learning initiative; these are in the form of free services, outsourcing facilities and some self-initiatives.

i. Some countries adopted free services (collaboration platforms like Zoom, Google Meet, WhatsApp and Hangout etc).
ii. Some countries out-sourced facilities in the form of an external resource partner like Khan Academy, TEDX Talk or YouTube, while some took the support of telecom agencies and internet service providers.
iii. Some countries have taken self-initiatives and developed their own specific instruments for asynchronous learning.

Countries have taken asynchronous learning initiative in each Type / level of education, that is, in elementary, primary and secondary education, vocational education and even in special education.

A. Countries adopted different modes of communication for asynchronous learning, starting special e-services for communication, circulated phone tutorials, and used SMS broadcast services during the COVID-19 pandemic.

B. Countries used some instruments for online training delivery in the COVID-19 pandemic, with "*Broadcast Media*", "*Digital Platform*", "*Online Content*", "*ICT Integrated tools*" and "*online courses*" being identified as the most common tools for asynchronous learning.

DOI: 10.53333/IJICC2013/15424

i. Training through broadcasting media has been provided by countries through different mediums such as the following; i. television broadcasting, ii. radio broadcasting, ii. Facebook broadcast, iv. Youtube broadcast, for all levels of education.

ii. Digital platforms have also been developed by countries for asynchronous learning. These are: i. mobile phones, ii. simulation technology (games, interactive content), iii. assessment management platforms, iv. resources for teachers and students).

iii. Online content has been made available for students in the form of digital repositories (websites), offline repositories (memory cards, CD etc) and non-digital repositories (E-Library, textbook and chapter).

iv. Countries started online courses for immediate engagement of students.

v. Some ICT integrated tools are also being used by countries to support asynchronous learning.

C. Some Guidelines have also been issued for parents and guardians for training and engaging their pupils in different active learning activities, and public awareness is generated regarding the online mode of education through web pages, webinars and subject forums, etcetra.

INDIVIDUAL CASE REPORT IN TERMS OF REGIONAL DIFFERENCES:

3.2 Replication logic in multiple case studies:

After cross case analyses of the data, it was observed that in African countries, theoretical replication appeared for public awareness and guidelines, and communication modes. In the Arab States, theoretical replication appeared for public awareness and guidelines. In Asia and the Pacific, theoretical replication appeared for public awareness and guidelines, and communication modes. In Eastern Europe and Central America, theoretical replication appeared for communication modes. In Latin America and the Caribbean Region, theoretical replication appeared for the mode of communication. In Western Europe and North America Region, theoretical replication appeared for communication modes.

According to data reported, proposition P1, P2 and P4 are accepted, while proposition p3 and p5 are not accepted. The proposition P3 is only accepted for the Arab States, and proposition

DOI: 10.53333/IJICC2013/15424

P5 is accepted for Eastern Europe and the Central American Region, and Western Europe and the North America Region.

P1: Initiatives were taken by the countries for asynchronous learning during the global pandemic of COVID-19 .	**Accepted**
P2: Initiatives were taken in each level of education in the COVID-19 pandemic.	**Accepted**
P3: Countries used different modes of communication for opting to remote learning during the COVID-19 pandemic.	**Not Accepted**
P4: Countries used some instruments for online training delivery in the COVID-19 pandemic.	**Accepted**
P5: Educational institutes issued guidelines for the public in the COVID-19 pandemic.	**Not Accepted**

3.3 Detailed Analysis of each Proposition:

P1: *Initiatives were taken by the case countries for asynchronous learning during the global pandemic of COVID-19.*

After detailed analysis of the data, it was observed that literal replication only appeared for self-initiatives for all regions under study, while theoretical replication for outsourcing and free services for all regions were found (Table 4).

P2*: Initiatives were taken in each level of education in the COVID-19 pandemic:*

After detailed analysis of the data, it was observed that no theoretical replication appeared in data for the African region, in the Arab States, although theoretical replication is found for 'Higher Education'. In the Asia and the Pacific region, theoretical replication is observed for 'Vocational Education'. In Eastern Europe and Central Asia, theoretical replication is observed for 'Primary and Secondary Education' and 'Higher Education'. For Western Europe and North America, theoretical replication is observed for 'Elementary Education', 'Higher Education' and 'Vocational Education', while in 'Latin America and the Caribbean region, theoretical replication is observed for 'Higher Education' and 'Special Education'.

P3*: Countries used different modes of communication for opting to remote learning during the COVID-19 pandemic*

The proposition P3 is only accepted for the Arab States and it was observed that the literal replication appeared for e-services only.

P4*: Countries used some instruments for online training delivery in the COVID-19 pandemic.*

It was observed that no theoretical replication appeared for the African region. In the Arab States, theoretical replication was observed for 'Online Courses' and 'Training and

DOI: 10.53333/IJICC2013/15424

Development'. In Asia and the Pacific, no theoretical replication was observed in the data. For Eastern Europe and North America, theoretical replication was observed for 'Online Content'. For Western Europe and North America, theoretical replication was found for 'Online Courses', while for Latin America and the Caribbean, no theoretical replication was found in data.

***P5**: Educational institutes issued guidelines for the public in the COVID-19 pandemic.*

The proposition P5 is only accepted for Eastern Europe and the Central American Region and Western Europe and North America Regions. However, after detailed analysis of the results, theoretical replication was observed for Eastern Europe and Central American Region in respect of 'Guidelines for Parents', while in Western Europe and the North America Region, theoretical replication was thoroughly observed in data for 'Guidelines for parents', 'Webinars' and 'Web Pages'. Therefore, on the basis of detailed analysis of the results, proposition P5 is also rejected for Western Europe and the North America Region.

MODIFICATION AND FINALISATION OF THEORY:

After detailed analysis of the data, a theory was established that the following initiatives for asynchronous learning have been taken by countries.

P1: Initiatives were taken by the countries for asynchronous learning during the global pandemic of COVID-19.	**Accepted** (for all regions)
P2: Initiatives were taken at each level of education in the COVID-19 pandemic.	**Accepted** (for all regions)
P3: Countries used different modes of communication for opting to remote learning during the COVID-19 pandemic.	**Not Accepted** (Accepted only for Arab States)
P4: Countries used some instruments for online training delivery in COVID-19 pandemic.	**Accepted** (for all regions)
P5: Educational institute issued guidelines for the public in the COVID-19 pandemic.	**Not Accepted** (Accepted only for Eastern Europe & Central American Region)

4 FINAL REPORT OF THE STUDY:

After detailed cross case analysis of the data, the following was concluded:

A. *Initiatives were taken by the countries for asynchronous learning during the global pandemic of COVID-19.*

Countries have taken the asynchronous learning initiative in the pandemic. These are in the form of 'Self-initiatives'. Countries developed their own specific instruments for asynchronous learning.

DOI: 10.53333/IJICC2013/15424

B. *Initiatives were taken in each level of education in the COVID-19 pandemic.*

Countries have taken initiatives for asynchronous learning in 'Elementary Education' and 'Primary and Secondary Education'. However, the trend was found to be different for different regions of the world, the details of which are listed in Table 9.

Table 9: Initiatives in levels of education

AFRICA	ARAB STATES	ASIA & THE PACIFIC	EASTERN EUROPE & CENTRAL ASIA	WESTERN EUROPE & NORTH AMERICA	LATIN AMERICA & THE CARIBBEAN
• Elementary Education • Primary & Secondary • Higher Education • Vocational Education • Special Education	• Elementary • Primary & Secondary	• Elementary Education • Primary & Secondary Education • Higher Education	• Elementary Education	• Primary & Secondary Education	• Elementary Education • Primary & Secondary Education

C. *Countries used some instruments for online training delivery in the COVID-19 pandemic.*

Countries used different instruments for the implementation of asynchronous learning. The trend is different for different regions of the world, as mentioned in Table 10.

Table 10: Instruments for online training delivery:

AFRICA	ARAB STATES	ASIA & THE PACIFIC	WESTERN EUROPE & NORTH AMERICA	LATIN AMERICA & THE CARIBBEAN	EASTERN EUROPE & CENTRAL ASIA
Broadcast Media Digital Platform Online Courses Online Content	Broadcast Media Digital Platform Online Content	Broadcast Media Digital Platform Online Courses Online Content	Broadcast Media Digital Platform Online Content ICT Integrated Tools	Broadcast Media Digital Platform Online Courses Online Content ICT Integrated Tools	Broadcast Media Digital Platform Online Courses Online Content ICT Integrated Tools
Where; **Broadcast Media** = i. Television Broadcasting, ii. Radio Broadcasting, ii. Facebook Broadcast, iv. Youtube Broadcast **Digital Platform** = i. Mobile Phones, ii. Simulation Technology (games, interactive content), iii. Assessment Management Platform, iv. Resources for Teachers & Students **Online Content** = Digital Repositories (websites), Offline Repositories (Memory Cards, CD etc) and Non-Digital Repositories (E-Library, textbook and chapter)					

5 DISCUSSION:

It was assumed that the pandemic's outcome will cause anything from six months to five years disturbance. It is also expected that there will be a 15 – 25 percent decrease in enrolments (Dennis, 2019). As per recent reports from Arizona State University and Boston Consulting Group (BCG & ASU, 2018), the most number of post-secondary students has been seeing an annual drop of 1 – 2 percent, while student interest in taking online courses rises 5 percent annually (Guide2Research, 2020).

DOI: 10.53333/IJICC2013/15424

There is evidence that online learning can be more effective for people who have internet and the technology needed. In order to improve lesson effectiveness, this knowledge and the experience gained in the crisis could build new digital learning opportunities for Educational Institutions. The educational technologies, networks and tools involve future innovation (Tam & D, 2020). All of these asynchronous learning initiatives seek to support student education, social care and experiences during the closure of schools by their parents, teachers, schools and school administrators (Tam & D, 2020).

Private companies have shown an increasing interest in education in the past decade. The pandemic could pave the way for large cross-industry cooperation with a common educational goal. With the digital divide, new developments in approaches to education will increase inequality. The quality of education depends on internet access, the right technology and the requisite skills to use it (Global, 2020).

The digital divide may become worse if education's effectiveness is related directly to access to the latest technology. Innovative online and offline innovations bring change, and can not be impassible to education (Tam & D, 2020). The systems of teaching and learning are shifting paradigms and it is up to us in this generation to realise it, so that a better future can be availablefor the next generation (Bozkurt & Hilbelink, 2019). Online education may be the way to motivate students to continue education. Although t post-secondary enrolment rates have declined in recent years, online courses have become increasingly supported (Lederman, 2018). Furthermore, as people are discouraged from travelling due to the current global health crisis (COVID-19), online education could become the most viable form of learning for both students and professionals (K.P.M.G., 2015). In addition, the mobile learning market with an annual growth of approximately 23 percent is one of the most rapidly emerging markets (Technavio, 2018). More development in this sector and related technologies is not difficult to predict. In the USA, 67 percent of students used their mobile devices to complete all or some of their courses. Meanwhile, twelve percent could not use their mobile devices in classes, but would have had the opportunity to do so. Just 21 percent did not use and do not intend to use their mobile devices (Clement, 2018)

In another report, students thought that mobile devices provide better access to instruction, and that they also help enhance contact and the quality of their work and experience with other students and teachers in their fields (Seilhamer et al., 2018). The number of students who turn to online learning in future years can be expected to rise steadily. One study shows that the proportion of students taking one or more online undergraduate courses rose from 15.6 percent in 2004 to 43.1 percent in 2016 (Snyder et al., 2018). The same study also found that the proportion of students pursuing complete online degrees has risen, from 3.8 percent in 2008 to 10.8 percent in 2016. Online education often applies to students with a Masters or PhD degree. In a Learning Home, Inc. and Aslanian Market Research survey (2018), it was

DOI: 10.53333/IJICC2013/15424

discovered that 86 percent of 1,500 online students assumed that their online degree value was equal to or above what they paid for.

Learning experience platforms and Learning Management System (LMS) frameworks are also a vital part of delivering personalised, more interactive online learning experiences (Vilamis, n.d.). Videos today are one of the most popular components of the internet. Video is the favoured medium compared with text documents when it comes to online learning and creation (Kaltura, 2019).

As an integrative medium for content, video is considered to be an important part of online education and workplace learning. On the other hand, Massive Open Online Courses (MOOCs) are also fast, individual courses. Readings are always available and are pre-recorded. There is no deadline for a MOOC and the course provider is not usually a university or college (Sarmah, 2019). For one thing, gamification should be integrated more into e-learning to facilitate the dedication of learners. It is still too early to judge whether short-term plans for online literacy are going to result in bad results and to therefore recommend reverting to conventional approaches, in the form of a modern hybrid educational framework. If the situation develops further and more data are collected on the subject, experts in the field will need to undertake comprehensive study of the broader educational effects of the pandemic (Global, 2020).

5.1 Adverse impact of asynchronous learning:

The use of Computer Mediated Communication (CMC) will produce a sort of technical impact in the learner. Several scientists (Culnan, M. J., & Markus, 1987; Haythornthwaite, C., & Nielsen, 2006; Herring, 2002; Sproull, L., 1991; Wellman et al., 2009) have said that CMC modifies individuals' contribution to the group and the immediate nature of their group characteristics. It is recommended by Meyer (Meyer & Land, 2005) in his study that time spent in online courses is a serious problem for some students, with affects minimised by combining different modes of learning. Murat Oztuk has suggested that the introduction of an additional function of messaging in asynchronous learning has positive effects (Oztok et al., 2013). Stöhr et al. (2020) commented that the use of multiple activities to improve leaners performance is good, but strong oscillation from synchronous to asynchronous activities may cause a polarisation effect in learners performance.

6 RECOMMENDATIONS:

- Institutions are recommended to move to online methods to deliver education. While this may be feasible in a developed country with wide structural, resource and funding availability, it remains a serious challenge for those in underdeveloped and developing world countries that have relatively insufficient information and communications

DOI: 10.53333/IJICC2013/15424

technology (ICT) infrastructure, capacity and a lack of framework and approach (University world news). Therefore, it is essential to provide more educational aid to cope with the challenges of educational disruption in low-income countries (Global Citizen).

- The move to online learning calls for global cooperation and collaborations between educational institutes and regulatory bodies of the world, especially for underdeveloped countries (Global Citizen), for the continuity of education for the 'new normal'. Countries have to take proper measure for asynchronous learning as it is said that the world has still not reached the peak of the outbreak of COVID-19 (WHO, 2020).

- In order to leverage online learning, worldwide organisations need to share their resources to provide education thereby ensuring sufficient education for all. In this crucial era, business tycoons and influential personalities also need to invest and play their constructive role in developing countries' education sectors (CoSN, 2020), as students have shown a willingness to adopt digital learning technologies and activities. Approximately 92 per cent of students worldwide are taking part in personalised support and degree progress details (Statista).

- As work fields are changing and evolving continuously (Podia) e-learning has become more attractive. A report from Edge Point Learning shows that 39 percent of millennials want to see more virtual education in the workforce by 2025; therefore, equitable opportunities can be generated by opting for the online delivery of education across the globe.

DOI: 10.53333/IJICC2013/15424

REFERENCES:

Andersson, C., & Runeson, P. (2007). A replicated quantitative analysis of fault distributions in complex software systems. *IEEE Transactions on Software Engineering*, *33*(5), 273–286.

Andrews, R., & C. (n.d.). Haythornthwaite (editors), 2007. "Introduction to e–learning research,." In R. Andrews & C. Haythornthwaite (Eds.), *Handbook of e–learning research* (pp. 1–52). Sage.

BCG & ASU. (2018). *Making Digital Learning Work*. https://edplus.asu.edu/sites/default/files/BCG-Making-Digital-Learning-Work-Apr-2018 .pdf

Bozkurt, A., & Hilbelink, A. (2019). Paradigm Shifts in Global Higher Education and e-learning: An ecological perspective. *ELearn*, *2019*(5).

Clement, J. (2018). (2018). *Extent of mobile device usage for online course-related activities U.S.* https://www.statista.com/statistics/944977/usa-extent-of-mobile-device-usage-for-online-course-related-activities

CoSN. (2020). *Consortium for School Networking (CoSN). (2020). COVID-19 Response: Preparing to Take School Online*. https://www.cosn.org/sites/default/files/COVID-19 Member Exclusive_0.pdf

Crawford, J., Butler-Henderson, K., Rudolph, J., Malkawi, B., Glowatz, M., Burton, R., & Lam, S. (2020). COVID- 19: 20 countries' higher education intra-period digital pedagogy responses. *Journal of Applied Learning & Teaching*, *3*(1), 1–20.

Culnan, M. J., & Markus, M. L. (1987). *Information Technologies, Electronic Media and Intra-Organisational Communication. Handbook of Organisational Communication*. 420–444.

Dennis, M. (2019). *Higher education opportunities after COVID-19* . https://www.universityworldnews.com/post.php

Dos Santos, C. (2019). *What are the leading countries in the eLearning industry?* https://www.elearningnews.it/en/e-learning-news-C-18/studies-C-26/what-are-the-leading-countries-in-the-elearning-industry-AR-510/

Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of Management Review*, *14*(4), 532–550.

Gaebel, M. (2015). *E-learning in the European Higher Education Area*. https://enqa.eu/wp-content/uploads/2015/12/E-learning-in-the-European-Higher-Education-Area_Gaebel.pdf

Gašević, D., Dawson, S., & Siemens, G. (2015). Let's not forget: Learning analytics are about learning. *TechTrends*, *59*(1), 64–71.

Global. (2020). *Education during COVID-19 ; moving towards e-learning*. https://www.europeandataportal.eu/ga/impact-studies/COVID-19 /education-during-COVID-19 -moving-towards-e-learning

DOI: 10.53333/IJICC2013/15424

Guide2Research. (2020). *Online Education Statistics: 2020 Data on Higher Learning & Corporate Training*. http://www.guide2research.com/research/online-education-statistics

Harasim, L., Hiltz, S. R., Teles, L., & Turoff, M. (1995). *Learning networks: A field guide to teaching and learning online*. MIT Press.

Haythornthwaite, C., & Kazmer, M. M. (Eds.). (2004). *No Title*.

Haythornthwaite, C., & Nielsen, A. C. (2006). *Revisiting conflicting results. Psychology and the Internet,,*. 161–180.

Herring, S. C. (2002). *Computer-mediated communication on the Internet. Annual review of information science and technology*. 109-168.

Herriot, R. E. fireston., & W.A. (1983). *Multisite qualitative policy research: Optimizing*.

Hiltz, S. R., & R. (n.d.). *Goldman (editors), 2005. Learning together online: Research on asynchronous learning networks*.

J Hamel, S Dufour, D. F. (1993). *Case study methods*.

Johnson, G., Langley, A., Melin, L., & Whittington, R. (2007). *Strategy as practice. Research directions and resources*. Cambridge University Press.

Johnson, S. D., & Aragon, S. R. (2003). *An Instructional Strategy Framework for Online Learning Environments*. 1022–1029.

K.P.M.G. (2015). *Corporate Digital Learning How to Get It "Right."* https://assets.kpmg/content/dam/kpmg/pdf/2015/09/corporate-digital-learning-2015-KPMG.pdf

Kaltura. (2019). *Video and Learning at Work: The State of Video in the Enterprise 2019*. https://corp.kaltura.com/resources/state-video-enterprise-2019/

Kidder, L. H., & Judd, C. M. (1986). *Research methods in social relations* (5th ed). Holt, Rinehart & Winston.

Koschmann, T., Hall, R., & N. (2002). *CSCL 2: Carrying forward the conversation*.

Land, R., & S. (n.d.). *Bayne (editors), 2005. Education in cyberspace*. RoutledgeFalmer.

Lea, M. R., & Nicoll, K. (Eds.). (2002). *Distributed learning: Social and cultural approaches to practice*. Routledge.

Lederman, D. (2018). *Online Education Ascends*. https://www.insidehighered.com/digital-learning/article/2018/11/07/new-data-online-enrollments-grow-and-share-overall-enrollment

Mayadas, F. (1997). Asynchronous learning networks: a Sloan Foundation perspective. *Journal of Asynchronous Learning Networks*.

Meyer, J. H. F., & Land, R. (2005). Threshold concepts and troublesome knowledge (2): Epistemological considerations and a conceptual framework for teaching and learning. *Higher Education*, *49*(3), 373–388. https://doi.org/10.1007/s10734-004-6779-5

Miyake, N. (2007). Computer supported collaborative learning,. In R. Andrews & C. Haythornthwaite (Eds.), *Handbook of e–Learning research* (pp. 248–265). Sage.

Moore, M. G. (1993). Theory of transactional distance. Theoretical principles of distance. *Education*, *1*, 22–38.

DOI: 10.53333/IJICC2013/15424

Oztok, M., Zingaro, D., Brett, C., & Hewitt, J. (2013). Exploring asynchronous and synchronous tool use in online courses. *Computers & Education*, *60*(1), 87–94.

Palvia, S., Aeron, P., Gupta, P., Mahapatra, D., Parida, R., Rosner, R., & Sindhi, S. (2018). *Online education: Worldwide status, challenges, trends, and implications*.

Patton, M. Q. (1999). Enhancing the quality and credibility of qualitative analysis. *Health Services Research*, *34*(5), 1189.

Perry, C. (1998). *Processes of a case study methodology for postgraduate research in marketing. European journal of marketing*.

Research, S. (2019). *Global E-Learning Market Analysis 2019*. https://www.researchandmarkets.com/reports/4769385/global-e-learning-market-analysis-2019

Robson, C. (2002). Real world research: A resource for social scientists and practitioner-researchers. *(Vol*, *2*.

Sarmah, H. (2019). *CLASSROOM VS MOOC VS ONLINE: WHICH DATA SCIENCE COURSE SHOULD YOU GO FOR?* (p. 20). https://analyticsindiamag.com/classroom-vs-mooc-vs-online-which-data-science-course-should-you-go-for/

Scardamalia, M., & Bereiter, C. (1996). Computer support for knowledge–building communities,. In T. Koschmann (Ed.), *CSCL: Theory and practice of an emerging paradigm*.

Seilhamer, R., Chen, B., Bauer, S., Salter, A., & Bennett, L. (2018). *Changing Mobile Learning Practices: A Multiyear Study 2012–2016*. https://er.educause.edu/articles/2018/4/changing-mobile-learning-practices-a-multiyear-study-2012-2016

Sharples, M., Taylor, J., & Vavoula, G. (2007). A theory of learning for the mobile age. *The SAGE Handbook of E-Learning Research*, *15*(2), "(pp. 221-247)." # "298.

Snyder, T., Brey, C., & Dillow, S. (2018). *Digest of Education Statistics 2018*. https://nces.ed.gov/pubs2020/2020009.pdf

Sproull, L., & K. (1991). Computers, networks and work. *Scientific American*, 116–127.

Stern, J. (n.d.). *Introduction to Online Teaching and Learning*. http://www.wlac.edu/online/documents/otl.pdf

Stöhr, C., Demazière, C., & Adawi, T. (2020). The polarizing effect of the online flipped classroom. *Computers & Education*, *147*, 103789.

Swan, K. (2005). A constructivist model for thinking about learning online,. In J. Bourne & J. C. Moore (Eds.), *Elements of quality online education: Engaging communities*. Sloan Consortium, and. http://www.kent.edu/rcet/Publications/upload/constructivist theory.pdf.

Tam, G., & D, E.-A. (2020). *3 ways the coronavirus pandemic could reshape education*. https://www.weforum.org/agenda/2020/03/3-ways-coronavirus-is-reshaping-education-and-what-changes-might-be-here-to-stay

Technavio. (2018). *E-learning Market in the US 2018-2022*.

DOI: 10.53333/IJICC2013/15424

https://www.technavio.com/report/e-learning-market-in-the-us-analysis-share-2018

UNESCO. (2020). *COVIDucational Disruption and Response* (19th ed.). https://en.unesco.org/COVID-19 /educationresponse

Vilamis, nd. (n.d.). *Learning Experience Platform*. https://www.valamis.com/hub/learning-experience-platform

WB. (2020). *How countries are using edtech (including online learning, radio, television, texting) to support access to remote learning during the COVID-19 pandemichttps://www.worldbank.org/en/topic/edutech/brief/how-countries-are-using-edtech-to-support-remote-learn*.

Wellman, B., Salaff, J., Dimitrova, D., Garton, L., Gulia, M., & Haythornthwaite, C. (2009). Computer networks as social networks: Collaborative work, telework, and virtual community. *Knowledge and Communities*, 179–208. https://doi.org/10.1016/b978-0-7506-7293-1.50014-7

WHO. (2020). *Coronavirus disease (COVID-19) pandemic*. https://www.who.int/emergencies/diseases/novel-coronavirus-2019?gclid=Cj0KCQjwlvT8BRDeARIsAACRFiWLkNywqSPxnArFYDekKC3ZYi1HCKGRrNQs7HBVoVPGzJrEVJcad9AaAhOqEALw_wcB

Yin, R. K. (2003). Designing case studies. *Qualitative Research Methods*, 359–386.

Yin, R. K. (2008). Fourth editionCase Study Research: Design and. *Methods*, *5*.

Yin, R. K. (2009). *Case study research: Design and methods 4th* (edition. In (Ed.)). Library of Congress Cataloguing-in-Publication Data.

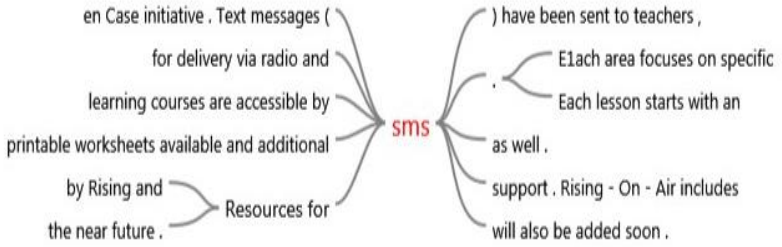
Yin, R. K. (2012). *Case study methods.*

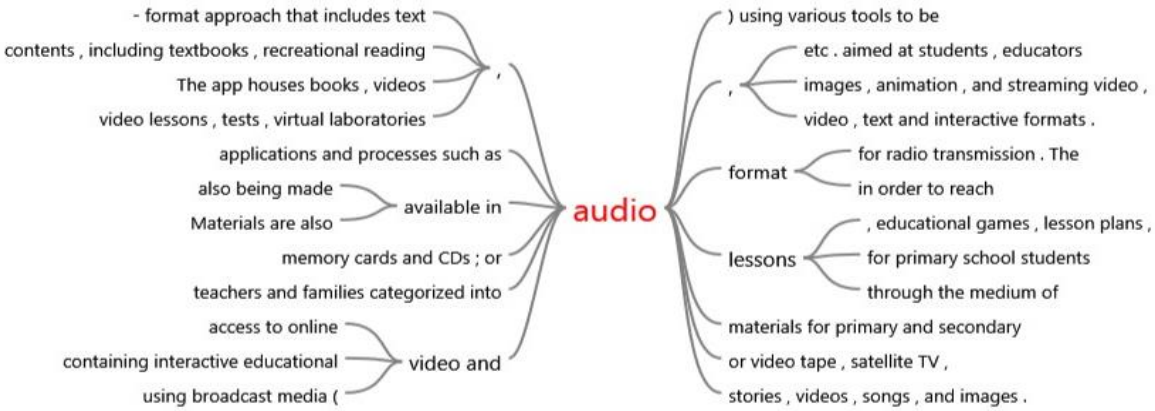
Yin, R. K. (2014). *Qualitative study research: Design and methods*.

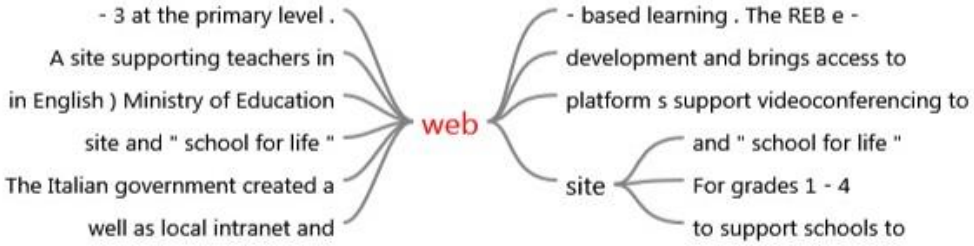
Ziguras, C. (2001). *Educational technology in transnational higher education in South East Asia : the cultural politics of flexible learning*. *4*(4), 1–18.

DOI: 10.53333/IJICC2013/15424

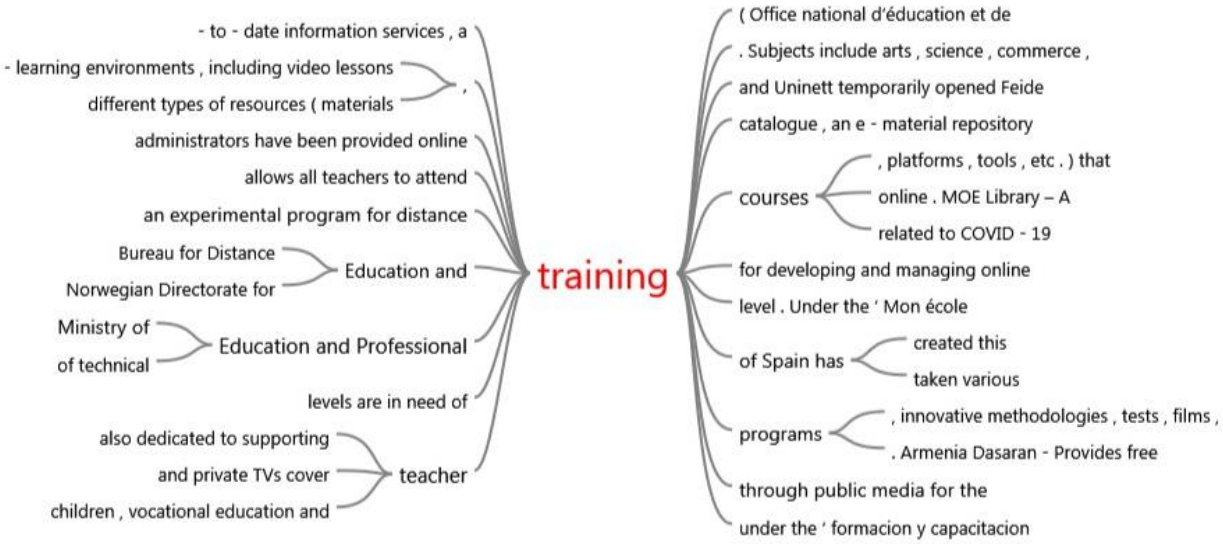
Appendix

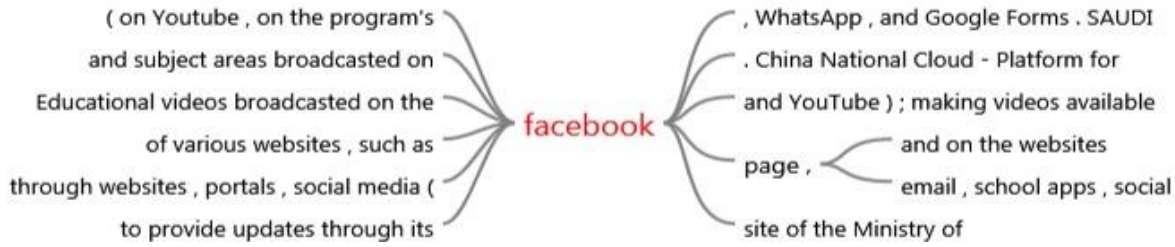


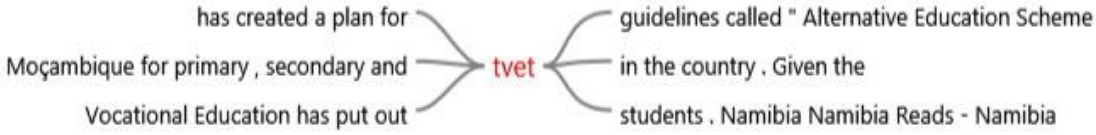




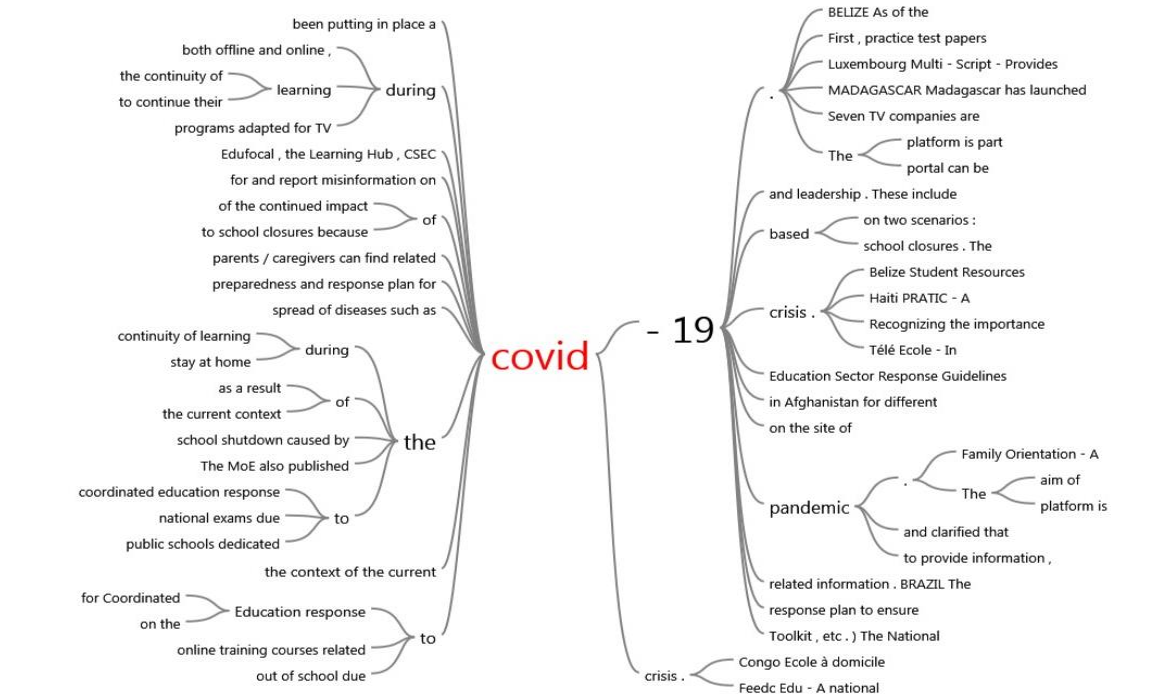
DOI: 10.53333/IJICC2013/15424

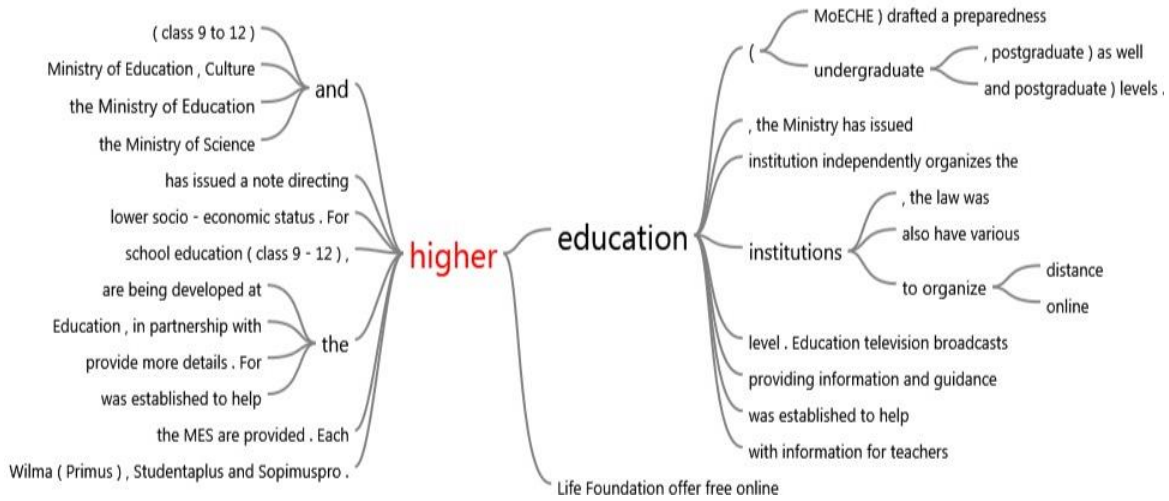






DOI: 10.53333/IJICC2013/15424





DOI: 10.53333/IJICC2013/15424