

The impact of Covid19 on learning eco-system

تأثير جائحة كورونا على بيئة التعلم

by

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Abstract

The present study aimed at understanding the impact of Covid19 on the learning eco-system in U.A.E schools from the perspective of teachers. The study primarily focused on two key aspects which included teacher's response to the perceived change in the operational conditions due to the Covid19 and sudden closure of the schools as well as the perception of teachers about the use of digital technologies to enhance learning of students in the virtual classrooms. The study opted for interpretivism paradigm following which interviews with a total of 16 teachers from 3 selected schools of UAE were conducted.

Results of the study highlighted that Covid19 impacted the entire learning system. From a positive perspective, it fostered the needs of using a blended learning approach while ensuring the use of technological tools and interventions. On the other hand, the high cost associated with the use of technology, adherence of teachers and students to adapt to the sudden changes, lack of physical interaction between students and teachers as well as lack of effective assessment tools as key challenging aspects. It was also ascertained that although remote learning fostered independent learning; however, the gap between high achievers and low achievers was also increased causing concerns for the teachers.

Based on the findings of the study, it is suggested for the educational regulatory authorities of the UAE to inculcate technology-based learning model as a part of regular teaching and learning medium. Furthermore, it is important to organize effective teacher's training programs in order to keep them updated about the latest educational interventions.

الملخص

هدفت الدراسة الحالية إلى فهم تأثير جائحة كورونا على النظام التعليمي في مدارس الإمارات العربية المتحدة من وجهة نظر المعلمين. ارتكزت الدراسة في المقام الأول على جانبين رئيسيين تضمننا استجابة المعلمين للتغيير الملحوظ في الظروف التشغيلية للمدارس بسبب الجائحة والإغلاق المفاجئ للمدارس بالإضافة إلى تصور المعلمين حول استخدام التقنيات الرقمية لتعزيز تعلم الطلاب في الفصول الافتراضية.

اختارت الدراسة نموذج التفسير الذي أعقب مجموعة من المقابلات مع ما مجموعه 16 معلمًا ومعلمة من 3 مدارس مختارة في الإمارات العربية المتحدة. أبرزت نتائج الدراسة أن الجائحة قد أثرت على نظام التعلم بأكمله.

من منظور إيجابي، لقد عززت الجائحة الحاجة لاستخدام نهج التعلم الهجين مع ضمان استخدام الأدوات والوسائل التكنولوجية الحديثة. من ناحية أخرى، فإن التكلفة العالية المرتبطة باستخدام التكنولوجيا، والتزام المعلمين والطلاب بالتكيف مع التغييرات المفاجئة، وغياب التفاعل المادي بين الطلاب والمعلمين، فضلاً عن الافتقار إلى أدوات التقييم الفعالة تعتبر جوانب تحدي أساسية خلال الجائحة وعلى الرغم من أن التعلم عن بعد يعزز التعلم المستقل؛ ومع ذلك، فإن الفجوة بين المتفوقين والمتدنيين قد ازدادت أيضًا مما تسبب في بعض المخاوف لدى المعلمين.

بناءً على نتائج الدراسة، يُقترح على الهيئات التنظيمية التعليمية في دولة الإمارات العربية المتحدة تعزيز نموذج التعلم القائم على التكنولوجيا كجزء لا يتجزأ من أساليب التعليم والتعلم في الدولة. علاوة على ذلك، من المهم تنظيم برامج تدريب فعالة للمعلمين من أجل إبقائهم على اطلاع دائم بأحدث الوسائل التعليمية.

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Chapter 1

1. Introduction

The year 2020 proved to be devastating for the entire world leaving no countries and industries to save themselves from the impacts of the prevailing pandemic of Covid19. Educational institutions are considered to be learning hubs for students where students have shared goals and hence capacitate themselves with the modern-day skills, knowledge, abilities, and competencies which not only develop them academically but personally and professionally (Bayrakdar & Guveli, 2020). However, the globally prevalent change in the learning eco-system has drastically challenged the learning orientation and development of students. Besides that, Covid19 has broken the conventional point of contact between the stakeholders of the learning eco-system exacerbating an uncertain environment. Due to the pandemic's associated life-threatening risks, nearly all the educational institutions globally were temporarily closed for an undefined period of time as a containment strategy of Covid19 justifying the need to replace face to face learning system with an online learning system. An effective implementation of an online learning mechanism was necessary in order to retain the contact between students, teachers, parents, and all other stakeholders of the learning eco-system (Burgess & Sievertsen, 2020).

The nearly complete shutdown occurred in April 2020 affecting 90% of learning eco-system in more than 200 countries worldwide and impacting more than 1.5 billion students instigating the interest of researchers to present a real picture of the determinants of the eco-system which paralyzed the educational system for quite a long period of time (Hassan, et al., 2020). Social safety was another key reason which initiated the need for an online learning system attributed to an uncontrolled nature of the pandemic, poor understanding of medical healthcare specialists and

scientists about the pandemic, fast growth, and non-measurable impact respectively (Putri, et al., 2020).

“The temptation to compare online learning with face-to-face instruction in these circumstances”, as depicted by Hodges, Moore, Lockee, Trust and Bond (2020) has certainly given rise to a few negative perceptions about the efficacy of online learning, revealing that it cannot be an alternative to the real learning structure. “to the real learning structure” appears vague to me - do you mean “to an effective learning structure” or “revealing that it is not an effective alternative to a face-to-face learning structure”, or something similar? On the contrary, it is perceived that this sudden gap is due to grey literature, where the researchers demonstrated hope stating that after the ending of this challenging period, the schooling system or educational and learning eco-system will be highly improvised, advanced and ready to face and combat the effects of any pandemic on the learning system, in the future (Zimmerman, 2020). Likewise, Giovannella (2020) has also presented a similar stance stating that the challenging situation of the current pandemic will prepare the teachers and educationists to be well versed in online, physical as well as blended learning approaches. The researcher has further identified this emergency situation of lockdown and paralyzed learning systems as a catalyst to educational change unleashing the existence of an opportunity to improve all the elements and aspects of the learning eco-system including course content, mode of learning, competencies, places as well as the processes (Giovannella, Effect induced by the Covid-19 pandemic on students’ perception about technologies and distance learning, 2020). Therefore, on the basis of these two perspectives, it is ascertained that the whole experience of the research followed by the related evidence which will emerge from the results are most likely to increase the capacity of educationists to make informed decisions through devising learning-oriented and highly effective educational policies (Williamson, Eynon, & Potter, 2020;

Giovannella, Effect induced by the Covid-19 pandemic on students' perception about technologies and distance learning, 2020). Carpenter, Krutka, and Kimmons (2020) further elaborated the aim of all the researches stating that all the studies will not only contribute to the improvement of effectiveness of learning and educational readiness in order to deal with similar emergency situations, but will also instill the skill of adapting to the small learning environment among students, parents, teachers, and the management of the institutions.

1.1. The justification of topic as a researcher

Closure of schools at a massive level was identified to be the most effective and quick solution to the unpredicted circumstances of the pandemic (Hodges, Moore, Lockee, Trust, & Bond, 2020). Since the decision of closing the schools was made in haste, therefore, the challenges for the teachers and educational institutions about the sudden shift to online learning platforms became intensified urging the educationists to start research on it or perhaps urging the need for research on it. There exist a few pieces of research based on similar situations which included SARS (2003) and the epidemic of influenza (2009) and which clearly present the stance that the prevalence of Covid19 is not unique (Cauchemez, et al., 2009; Fox, ICT Use During SARS: Teachers' Experiences, 2007; Fox, SARS epidemic: Teachers' experiences using ICTs, 2004). Nonetheless researchers believe that conducting new studies is the most important aspect in the current time where the research findings will provide a well detailed and broad picture to policymakers about managing school settings, devising policies to facilitate blended learning operations as well as provide guidance about the interventions which educationists may adopt in order to conduct educational activities in an emergency and unpredicted time of pandemic in the future.

In addition, due to the prevalent public debate about the reaction and sudden management of learning as being organized by the schools, colleges and universities have increased the need for

the literature by identifying the gap revealing that the literature related to media, social networks, and education sectors lack within the domain of emergency responsiveness, as a result of which institutions do not have any framework guiding the implementation of certain policies. Therefore, this topic is expected to be a key area of research in many years to come (Thelwall & Levitt, 2020; Zimmerman, 2020; Bates, 2020).

1.2. Problem Statement

The pandemic has proved to be a catalyst urging the education industry to transform the learning eco-system through investing in digital solutions in order to streamline the learning patterns of students. When the concept of learning eco-system is discussed it includes integration among certain actors which include school leaders, teachers, technologists, researchers, and policymakers too (Clayton, 2016). This need for collaborative action requires the principals and school leaders to align shared objectives in order to create synergy between the actors; however, in order to do so, it is important to understand the extent to which the pandemic has impacted the entire learning eco-system.

In addition to the above, scientific literature and pieces of evidence related to the impact of the pandemic on learning is quite limited. There are a few studies (Al-Darayseh, 2020; Bayrakdar & Guveli, 2020; Burgess & Sievertsen, 2020; Hassan, et al., 2020; Putri, et al., 2020) which have recently been conducted; however, not any study has taken into account multiple determinants of eco-system. Besides that, the majority of studies have opted for a survey approach in order to test the impact of the pandemic on the learning system. For instance, Verma and Priyamvada (2020) evaluated the perception of teachers on the implementation and efficacy of online learning solutions in India. Vu, et al., (2020) expanded the scope of the study and took into account the perception of teachers about the unprecedented damage to the entire industry while following a

quantitative approach. In addition to that, Whalen (2020) considered the views of teachers about the responsibility of educational authorities to organize teachers training which would enable them to respond to the emergency situation in an effective and well-organized manner and took into account the perception of teachers from various institutions of Massachusetts. Results from all these recent researches were based on quantitative survey methods where the subjectivism and behavioral aspects followed by the description of experiences and suggestions were not taken into account. Not only this, another gap which is identified in the recent literature is that not any research has, so far, been conducted within the context of the U.A.E. Therefore, understanding of the extent to which the learning eco-system has been impacted is quite scattered and hence requires further research with an expanded scope.

1.3. Rationale of the study

The present study aims at understanding the impact of Covid19 on the learning eco-system in U.A.E schools from the perspective of teachers. The study is primarily focused on two key aspects which include teacher's response to the perceived change in the operational conditions which have occurred due to the Covid19 and sudden closure of the schools as well as the perception of teachers about the use of digital technologies to enhance learning of students in the virtual classroom.

1.4. Research questions

The study consists of one primary and two sub-research questions which are mentioned as follows:

Primary RQ1: How has Covid19 impacted the learning ecosystem in the selected schools of U.A.E?

RQ1a: What do teachers perceive about change in the operational conditions during lockdown and its respective impact on the learning eco-system?

RQ1b: What is the opinion of teachers about using digital technologies for learning and its impact on the learning eco-system?

1.5. Significance of the study

The present study fills the identified research gap. Currently, most of the studies which have been conducted concerning the impact of the pandemic on school have either confined their focus towards a specific subject, or have considered a change in teaching methodology, leadership parental anxiety or academic performance of the students (Al-Darayseh, 2020; Bates, 2020; Bayrakdar & Guveli, 2020; Carpenter, Krutka, & Kimmons, 2020). The U.A.E based studies are not conducted similar to these aspects. No research has taken into account various constructs of the learning eco-system authenticating the need for conducting this study. Considering the lack of literature as well as other literature gaps which have been identified in the previous sections, the present study contributes to the early research and hence provides a detailed view of the extent to which the learning eco-system has been transitioned and drastically impacted by the pandemic.

Besides the above, the significance of the present study is also evident from the fact that it is based on an interpretive paradigm following which detailed interviews of teachers from the selected schools are conducted and which will provide a highly reliable point of reference to the policymakers and education Ministry of U.A.E to develop policies accordingly. Since the previous studies have been based on a quantitative approach, therefore, the present study provides a basis for future research of both quantitative and qualitative nature.

This study is one of the initial efforts providing a basis for possible developments which can be made in the education system and hence is necessary to foster decision making in the education sector in order to streamline the mechanism of online learning-based eco-system. In addition, this research encompasses a viewpoint of teachers which provides a basis for future research.

Furthermore, the results of the study provide a guideline in order to enable the policymakers and educationists to develop such policies which will support the institutions to streamline the learning system in accordance with the effects of the pandemic. The data was collected through conducting interviews with teachers at the selected schools, therefore, it was realistic, based on the personal experiences of teachers specifically in terms of comparing the modes of learning pre and during Covid19, which adds to the extent to which data is reliable to be used by the policy makers for developing future policies.

1.6. Dissertation structure

The research has been divided into different chapters where each chapter caters to a certain distinct aspect of the study. This breakdown of the whole research into different distinct factors facilitates the readers through providing them a direction of the research and hence makes the process of information tracking easier. The present research follows the following structure:

Chapter 1 includes a detailed explanation of the introduction to the topic followed by identification of the problem, research questions, significance and justification of the study and hence forms the basis of the study.

Chapter 2 provides a theoretical foundation to the research through conducting a descriptive and well-versed literary analysis, discussing the findings of previous studies which are conducted within the subject domain in adherence to the focus of the present study.

Chapter 3 encompasses an explanation of the methodological tools and techniques which have been adopted for data collection and analysis. The chapter also discusses research philosophy, approaches, research strategy, and a detailed discussion of research instruments followed by the identification of population and sample.

In addition to that, chapter 4 provides a detailed overview of the process of data analysis and the emerging themes which have been extracted from the data.

Lastly, chapter 5 includes a brief discussion of the results and its comparison with the literary research findings in order to track the similarities and differences. The chapter also includes ethical considerations, limitations, future scope, and conclusion of the study.

Chapter 2

2. Literature Review

Literature review refers to an in-depth analysis of the previous studies which are conducted within the subjected domain conducted on any or all of the variables of the study having a distinct or similar approach. Literary analysis is an important aspect of a research and hence contributes to the study through formulating a theoretical foundation of the study. This chapter presents an analytical view of the literary studies which have been conducted in order to determine or explore the impact of the pandemic of Covid19 on the education sector, all stakeholders as well as the learning patterns of students. Since the pandemic began in 2019; therefore, the existing research, within the subjected domain is quite limited; however, the results of the study formulate a significant theoretical basis of the present research.

2.1. Understanding Covid19 – Definitional view

WHO (2020) defined Corona Virus as an infectious disease which is spread due to the fatal virus named as SARS-COV-2. The disease is transmitted from one individual to an-other. The pandemic was first detected in Wuhan, China and was spread globally causing innumerable deaths, economic instability and functional destruction paralyzing all the activities, businesses, and industries. The CDC (2020) published a list of symptoms of the virus which included fever, cough, fatigue, shortness of breath, muscle pain, sore throat, nausea, headache, chills, nasal congestion, and many more given the probability of expansion of the symptoms list based on the newly admitted and tested patients suffering from the disease. Since not any case of this virus had been witnessed in the past; therefore, the accurate symptoms and understanding of the effect of this virus to the body are still under-researched.

The CDC (2019-20) report suggested people to adopt a few preventive measures including to be confined to home and avoiding close contact with other people. In addition, the increasing ratio of reported cases of life-threatening illnesses and deaths globally followed by high risks of prevalence of disease in children and the elderly with comparatively weaker immune systems urged the government to consider and finally implement frequent lockdowns. This uncertain situation of the pandemic and closure of schools for an undefined period of time, left a significantly negative impact on all the industries, including the education sector and broke the progressive learning patterns of students at all stages and impacted all the stakeholders of the learning eco-system.

2.2. Learning eco-system

Learning eco-system refers to an integration of all the sources which facilitate learning and hence are available for the students in an educational institution. It includes all stakeholders - teachers, parents, administration of the school, technologies which are used to inculcate the concepts and all the supporting resources, which may leave a significant impact on the students and their patterns of learning. eLearning Guild Report (2019) further presented a summarized conceptualization of the learning eco-system and categorized the system into three key aspects which included people related to the institution, resources which are used to foster learning among students and technological interventions.

There is multiple literary research which have considered either a few or all the components of learning eco-system in order to understand its efficacy and vitality for the education system which have identified three key findings. First, effective learning eco-system is a support mechanism which tends to improve the learning orientation while enhancing the performance of the institutions. Second, learning eco-system refers to an integrated approach between the stakeholders of educational institutions and hence involves all the aspects of training internal, external, formal

and informal conducted to facilitate a positive and learning based environment with the support of stakeholders. Third, learning eco-system is a multidisciplinary and systematic approach and is an extensive concept encompassing a variety of distinct components; a cohesion between all of them is necessary in order to establish an efficient, effective, and reliable learning environment for the students.

2.3. Covid19, education sector and learning eco-system- Literary review

Literary analysis has evidenced two types of research which have been conducted in the present times in relation to Covid19 and the education sector. First, there is numerous research which has focused on determining how uncertainty and sudden lockdown during the pandemic disrupted education systems and hence left a negative impact on the learning patterns of students. Second, a significant amount of research is present considering the prompt responsiveness of the education sector, government and regulatory authorities of various countries which considered lockdown an opportunity for innovation and hence focused on devising integrated e-learning platforms in order to bridge the gap that devastated the education industry due to Covid19. However, since the pandemic is still prevalent, the impact of pandemic as well as efficacy of the developed models and implemented solutions is still under-researched and uncertain.

Giovannella, Passarelli and Persico (2020) conducted research to understand the perceived effect of the pandemic of Covid19 on the learning eco-system of Italian schools. The researchers identified teachers to be one of the key stakeholders and contributors of the learning eco-system and hence took into account their perspective in order to understand how an unexpected educational break disrupted the flow of learning followed by the process of implementing an online educational system as well as operational challenges which they encountered in a steady state. The researchers further extended the scope of their study through testing the impact of changing

operational conditions and educational settings on the mental stability of teachers, and their expectations from the technology supported learning in an effort to determine the relationship between the subject variables. Results of the study clearly evidenced that despite an uncertain break in the educational setting, the Italian school system was well structured, mature and familiar with the online learning mechanism which was one of the key reasons for their robust responsiveness to the changing learning mechanisms. The technological promptness followed by collaborative and professional attitude of teachers provided a support to the learning pedagogy and hence teachers managed an increased workload and expected inadequacies of working from home quite efficiently and effectively. As the teachers were already well versed of working online, the connectivity issues were resolved immediately ensuring the connectivity of students with their teachers through video conferencing. Cloud applications were used to share all the data, modules and learning guidelines which fostered a collaborative environment and facilitated the successful implementation of Google Classrooms. The teachers identified content sharing and assessment processes to be challenging at an initial stage which were, later, managed effectively (Giovannella, Passarelli, & Persico, 2020).

Upoalkpajor and Upoalkpajor (2020) also identified teachers and students as important stakeholder of the learning eco-system and hence took into account their views in order to determine the impact of the pandemic on educational activities in Ghana. The research was based on two key objectives which included determining the extent to which students were aware about the coronavirus and the views of teachers about the hindering effect of the pandemic on educational functions. The study opted for a mixed methods approach where primary data was collected through a survey whereas secondary data from the research reports, published articles, national and international reports was analyzed. . One hundred teachers and students from the selected higher secondary

schools in Ghana participated in the survey. Results of the study evidenced that students were aware about the prevalence of the pandemic and that the prolonged social distancing and confinement to homes impacted their physical and psychosocial aspects while increasing fear, tension, emotional detachment with their friends and anxiety. Disrupted academic continuity was identified to be the key impact of the pandemic. The findings also evidenced that sudden lockdowns resulted in closures of schools which impacted all students; however, the situation became more challenging for the underprivileged students due to intermittent schooling, economic pressure on their families, conceded nutrition and societal cost (Upoalkpajor & Upoalkpajor, 2020).

The perspective of students about the impact on Covid19 on the education system was also considered by many literary studies. Owusu-Fordjour, Koomson and Hanson (2020) conducted a survey with 214 Ghanaian students who were in their secondary or tertiary grades through opting a random sampling approach. Results of the study evidenced that students did not feel comfortable and were unable to focus on their study while attending online classes. The students further identified that learning from home could not provide them an interactive learning environment which they had in schools. Parents were also unable to provide assistance to their children during and after online sessions which significantly reduced the learning outcomes of students and hence hindered their ability to grasp the concepts. The findings of this research also highlighted inability of students to self-learn as another key challenge due to limited access to the internet, lack of technical knowledge of using e-learning platforms and reduced support from other students and teachers (Owusu-Fordjour, Koomson, & Hanson, 2020).

Gustafsson and Deliwe (2020) studied the effects of the pandemic on quality of education in the countries of the South African region through analyzing the most recent evidence and hence

determined the future risks associated to prolonged period of Covid19. The researcher compared the quality of education pre and post pandemic and stated that South Africa had been quite actively focused on improving the education quality for the students at a steady yet fragile pace. This fragility disrupted the educational quality to a great extent as evidenced by the devastating learning results showcased by the globally implemented models. Initially, the loss of schooling, no connectivity of students with the teachers and prolonged lockdown resulted in students forgetting the newly developed skills because of the lack of ability to perform experiments, lab tests or practical implementation of the learned skills. The researchers further performed a trend analysis and hence stated that the effect of this prevailing loss of learning might last till 2022 and in the case where lockdown period is extended, the effect may be stretched till 2031 (Gustafsson & Deliwe, 2020). Another important aspect which results of the study identified was the stance that Covid19 has not only impacted access to education but has also pushed the teachers and management of schools to compromise on schooling progress due to two reasons. First, since the school budgets will be cut due to economic instability and uncertainty; therefore, access of students to education is expected to decline to a significant extent. Second, since many people lost their jobs in the region, many students will not be able to be admitted to preschooling due to the inability of their parents to pay fees. The researchers further suggested the educational regulatory authorities of the South African region to ponder upon opting for an innovative education system specifically in the two domains which include introducing modern ways of teaching for the early grade students and designing an effective accountability systems for the schools in order to urge them to look for improvisations and hence focus on opting technological tools to create an effective and integrated learning environment (Gustafsson & Deliwe, 2020).

The health care education sector was another industry which witnessed an unprecedented impact on the learning mechanism due to the pandemic. This stance was further revealed in a national survey being conducted by Choi et al., (2020) who extended the scope of research and investigated the extent to which the global pandemic halted campus based teaching and examination of the medical students of UK in their final academic year. The researchers also focused on understanding how the prevalence of Covid19 impacted the confidence and preparations of students before initiating their foundational training. Students from 33 medical colleges in the UK participated in this survey which was distributed online and consisted of multiple choice, dichotomous and likert scale based questions. The variables which were considered in this study included impact on the written examination, assistantship, electives, clinical examinations, preparedness of students and their confidence before training. Results of the study evidenced a significant impact of Covid19 on the students' confidence and preparedness level leaving a direct negative impact on their transition from being a student to doctor (Choi, et al., 2020). Delayed examination, restricted assistantship placements and cancellation of electives devastated the planned schedules and hence the learning outcomes were directly impacted. Disrupted assistantships reduced the confidence of students. Likewise, the students who opted to go as front liners risked their lives; given that they required consistent guidance over maintaining their health safeguards (Choi, et al., 2020).

The next aspect which the literature identified was related to the digital transformation and technological innovation which occurred pre and post pandemic (Al-Darayseh, 2020; Bates, 2020; Burgess & Sievertsen, 2020). Researchers have evidenced the notion that this era had been a beginning of a brilliant technological innovation resulting in vast deployment of IoT based infrastructure and highly advanced technological advancements; the effects of which were duly disrupted due to the pandemic of Covid19 (Carpenter, Krutka, & Kimmons, 2020; Giovannella,

Passarelli, & Persico, 2020; Joshi, Vinay, & Bhaskar, 2020). Although the pandemic proved to be devastating for all the industries including the education system; however, it also pointed out the hidden and undervalued importance of digitisation and technology based learning especially in the education sector (Bates, 2020). Considering this stance, Mohammadian, Shahhoseini, Castro, and Merk (2020) conducted research and discussed the importance of digital transformation of the learning system and the needs to implement an innovative learning eco-system in the post pandemic era. The researchers opted for 7Ps model of sustainability which included political, social, educational, cultural, technical, economic, and environmental aspects as key determinants, on the basis of which, a new model for enhancing the learning eco-system was developed. Results of the study clearly evidenced that the prevalence of Covid19, not only hindered face to face interaction among the teachers, students, parents and management, but also stopped experimental and lab oriented activities along with reducing international mobilization for a significant period of time. The study suggested to formulate an innovative and digitally transformed learning eco-system through recognizing the value of technological resources and tools among stakeholders, improved collaboration in order to increase the corporate ability of the institution and develop leap frog strategies while ensuring the continuity of learning (Mohammadian, Shahhoseini, Castro, & Merk, 2020).

Another similar study was conducted in the South African Region which was primarily focused on disruption of the education system followed by prompt responsiveness of the educational sector to combat the effects of pandemic. Considering this notion, the impact of Covid19 in terms of transforming the education sector was further discussed by Mhlanga and Moloi (2020) who focused on the vicinity of South Africa. The study focused on two distinct aspects which included analyzing the extent to which the learning system was disrupted and the digital transformation of

the education sector in 4IR. The research was primarily based on secondary data following which various journals, newspaper articles, latest reports, journals and governmental data base sources along with the published report of both national and international organizations were analyzed in order to meet the research objectives. Results of the study clearly revealed that the education system got disrupted initially where sudden lockdown in the region broke the link between teachers, students and management of the schools. On the contrary, results also evidenced that the disrupted education and learning mechanisms also opened opportunities for the educational institutions to consider digital transformation at all levels in order to integrate all the stakeholders and develop a connection between teachers, students, parents , policy makers and management through introducing e-learning. It was further reported that the South African region has been actively adaptable towards inculcating digital transformation tools from primary to higher education levels and hence succeeded in creating an integrated, coherent and highly responsive virtual learning environment (Mhlanga & Moloi, 2020). Considering the cost based aspects, the educational institutions preferred to take the risk of transformation and hence implemented zero-rated digital applications, developed educational websites and introduced STEM based digital learning while transitioning from physical to remote learning during the extended period of lockdown. In brief, although the pandemic equally impacted the South African region in terms of economic instability, uncertainty, fear and disrupted learning; however, the policy makers took advantage by unleashing the opportunities and hence the risk of transformation enabled them to utilize the period of lockdown in an effective manner which resulted in improved access of students to learning modules and enhanced cohesion among the stakeholders (Mhlanga & Moloi, 2020).

A similar study was conducted in India with the aim to understand the devastating impact of Covid19 on the education system followed by looking into the measures which were being

implemented by the Government of India in order to prevent its expansion while bridging the persisting educational gap. Jena (2020) in her study identified that the negative impact of Covid19 on the learning and education system of India was no different than other countries in the world. The schools were closed. Classes and exams were all suspended and entrance tests were postponed for an unknown period of time. The sudden lockdown and increased mortality rate destroyed educational schedules creating a challenging situation for the government and educational authorities to devise a solution in order to combat the prevailing gap. The researcher further analyzed various national and international reports in order to develop an understanding of the governmental initiatives along with consulting with the Education Ministry of India in order to collect authentic information (Jena, 2020). Results of the research evidenced that the government of India responded promptly to the situation through introducing various digital solutions to streamline learning. A few of digital learning platforms included Diksha – an online learning portal having all the courses and modules uploaded by CBSE from grade 1 to grade 12, e-Patshala facilitating the availability of modules in different languages, National Repository of Open Educational sources as a guide for students and teachers, Swayam specifically for students of grade 9 to grade 12 and e-PG Patshala for post graduate students. The researchers also suggested for the educational institutions to consider minorities, marginalized groups and people from different ethnicities and hence devise a unique yet coherent learning strategy along with introducing online practice and assessment modules (Jena, 2020).

Chapter 3

3. Methodology

According to Flick (2015), research methodology refers to a detailed explanation and overview of the techniques, tools and interventions which were adopted in a research in order to search for the answers to the research questions. Furthermore, it is also ascertained that research methodology sets the direction of a study along with providing an outlook of the effectiveness and reliability of the study ensuring that the selected methodology adheres to the nature of study (Sreejesh, Mohapatra, & Anusree, 2014). The present study aims at understanding the impact of Covid19 on the learning eco-system in U.A.E schools from the perspective of teachers. The study is primarily focused on two key aspects which include teacher's response to the perceived change in the operational conditions which have occurred due to the Covid19 and sudden closure of the schools as well as the perception of teachers about the use of digital technologies for learning.

This chapter provides an explanation of all the techniques which were opted in this research and includes a detailed overview of the research philosophy, approach, research strategy, population and sample, data collection instruments and modes, data analysis, reliability, and validity of the study.

3.1. Research philosophy

Research philosophy refers to the worldview pointing out nature and focus of a study. Generally, research is divided into three paradigms which are entitled positivism, interpretivism and pragmatism paradigm. Positivism paradigm follows a scientific approach and hence is based on rational, factual, and logical knowledge. According to Bryman and Bull (2011), positivism is the epistemological position which integrates social reality with scientific studies. It is also referred to

as an abstract and objective view of reality that encompasses singularity of the answer. On the contrary, interpretivism paradigm refers to the subjective approach and hence takes into account multiple facets of reality. Interpretivism is a behavioral approach entailing to integrate expressions, views, experiences, opinions and personal likes and dislikes in order to determine a phenomenon, situation, or focused stance. The limitations of both positivism and interpretivism give rise to the third paradigm which is referred as pragmatism immersing both logical and behavioral or objective and subjective view of reality.

The present study was based on understanding the impact of Covid19 on the learning eco-system where the views and experiences of teachers from the selected schools were considered as the key source of information. Since, the study involved behavioral aspects, therefore, the subjective nature of research was justified and hence, interpretivism paradigm was identified to be the most appropriate research philosophy.

3.2. Research approach

Research approach is generally connected to the research paradigm and hence is divided into two categories which include quantitative research approach and qualitative research approach. Quantitative research approach is based on numerical data and hence is followed by statistical analysis, whereas qualitative research approach is primarily based on descriptive data in the form of words which is analyzed subjectively in order to interpret the correct meaning from it. The third research approach combines both quantitative and qualitative approaches and hence is called mix method approach (Flick, 2015; Mohajan, 2018).

The present study was based on interpretivism paradigm and hence was not based on ascertaining singularity of the reality; therefore, positivism paradigm was inappropriate. On the contrary,

considering the subjective and exploratory nature of this research, the data was collected in a descriptive form using qualitative mediums, therefore, the present study was based on qualitative research approach which was also in compliance with the interpretivism paradigm.

3.3. Research strategy

Research strategy refers to the action plan which is adopted in order to collect the data. There are various options available; however, the selection of research strategy depends on the nature of study, focus of research, philosophical dimension, and personal preferences of the researcher (Flick, 2015; Mohajan, 2018). Generally, there are seven research strategies which include experiment, survey, case study, action research, grounded theory, ethnography, and archival research.

This study was focused on two selected schools in the UAE, the selection of which was made based on the personal association and reference of the researcher. Therefore, considering the scope of research, a case study strategy was opted.

3.4. Research instrument

Research instrument refers to the tools which are used for data collection about a research problem. The selection of an appropriate research instrument depends on the personal preferences of research, nature of study, research approach and focus. However, the two key characteristics of a good research instrument are that it must develop reliable and consistent results as well as must be valid. Distinctive options of research instruments are available which include observation, interviews, surveys and focus group discussions. Interviews and focus group discussions are divided into two types which include structured and non-structured interviews. Likewise, observation is further categorized into participant observation, non-participant observation,

naturalistic observation, and unstructured observation. In addition, surveys can also be either physical or online, free or with guided response (Flick, 2015; Mohajan, 2018).

The present study had a subjective and exploratory view of reality and hence complied with interpretivist paradigm and qualitative research approach, therefore, opting for any of the qualitative research instruments was appropriate. Since the study was based on getting an understanding of the views and opinions of teachers from the selected schools about their perceived impact of Covid19 on the learning eco-system, therefore, the interview method was selected as a key data collection instrument.

In order to facilitate data collection, an interview questionnaire was designed which consisted of 8 questions which were further divided into two categories. The first section of questions was related to changes in operational conditions attributed to the lockdown, whereas the second section encompassed questions related to the views and opinions of teachers about the use of digital technologies to support learning.

3.5. Research population and sample

Identification of the research population and representative sample is one of the most critical parts of a research. According to Mohajan (2018) the concept of population is referred as an integrated focus of the research consisting of all stakeholders, however sample is referred as a representative part of the population which participates in the process of data collection. The opinions, views and responses of a representative sample forms the basis of results of the study and their interpretation. The present study was, from a broader perspective focused on the education and learning system of the UAE, therefore, all teachers from the three selected schools based in the UAE are the population of the study. However, the teachers who were selected from each school for the

interview were sample of the study. The selection of schools was made based on the ease of data collection in the times of Covid19, willingness of the teachers and school's management to participate in the research as well as personal reference of the researcher in the schools.

The study opted for convenience sampling technique following which the selection of schools was made based on the access and personal association of the researcher. Furthermore, the selection of teachers was also made on the basis of their availability, access, and willingness to participate in the study.

5 teachers from two selected schools each and six teachers from 1 school were selected as a representative sample who participated in the research and recorded their views about the impact of Covid19 on the learning eco-system of UAE, making it a total of 16 teachers who participated in the study. The criteria of selecting teachers from the school consisted of two aspects. First, teachers must be currently associated with either of the two selected schools in UAE. Second, the teachers must possess at-least four years of teaching experience.

3.6. Data collection modes

The study was focused on exploring the teacher's point of view about the impact of Covid19 on the learning eco-system. Interview was selected as the most appropriate mode of data collection, following which recorded interview sessions with a total of sixteen teachers, from three schools were conducted. Each interview session was recorded through using an online recording software and hence was conducted after taking informed consent from the research participants. The interview questionnaire was prepared beforehand and a copy of the questionnaire along with a consent form was shared with the research participants one hour before starting the interview ensuring their familiarity with the topic and a confirmation of their volunteer participation in the

study. The participants had the right to withdraw their participation during or after the interview; however, in the case of their withdrawal after the interview, an intimation email was required at least one month before the results of the study were published.

Each interview session was conducted online through using Skype and Zoom as per the availability of research participants and consisted of approximately 45 minutes. The participants were encouraged to share examples of their personal experience, opinions and share suggestions in order to provide an evidence to their stance about a particular question. Furthermore, probing technique was opted following which counter-questioning technique was implemented during the interview in order to further attain the maximum information.

3.7. Reliability and validity

Reliability and validity of research are two key concepts of a research which become very complex and critical, when considered from the perspective of qualitative study. Reliability is defined as the extent to which the study has opted fair and honest approach for data collection and analysis. On the other hand, the concept of validity refers to the inclusion of researcher's biasedness, respondent's biasedness, and reactivity (Flick, 2015; Mohajan, 2018).

The present study was qualitative and hence opted for interviews as a mode of data collection. Considering reliability of the study, four strategies were opted. First, all the interview questions were clear, possessing easy wording and brief sentences with a focus on increasing the understandability of teachers during the interview and avoid any confusion. Second, the research instrument was reviewed and proofread by the senior peer group and thesis supervisor for any modifications as a result of which a few structural and worldly changes were made. Third, the researcher used probing technique which developed a good and positive reputation of researcher

in front of participants and hence they demonstrated a more serious and professional behavior throughout the process of data collection. Fourth, an interactive interview session was conducted which began with an introductory session as an ice-breaking activity facilitating interaction between the participant and the researcher.

Validity of the research was ensured through encouraging the research participants to share their views and opinions without the influence or unnecessary interruption by the researcher. Besides that, an unbiased analysis was being conducted where all the themes which emerged from the research were not influenced by the researcher's thoughts, likes, dislikes and preferences facilitating an unbiased interpretation of the views of teachers. Avoiding participant's biasedness was another key intervention following which volunteer participation was encouraged and hence the teachers had the right to refuse answering any question; however, they were encouraged to record honest opinions as an additional precautionary measure.

3.8. Data analysis

For data analysis, thematic analysis by Braun and Clarke (2006) was adopted. Thematic analysis is the most adopted approach for the analysis of qualitative data. It is a multi-step process which consists of six steps including data familiarization, coding, identification of key themes, review, naming themes and report writing (Braun & Clarke, 2006). The data from the interviews was first transcribed and reviewed as a prerequisite of running thematic analysis and hence formed the basis of the first step of the analysis which was data familiarization. As a second step, the transcripts were coded to distinguish the responses from all participants. Thirdly, all the transcripts were reviewed for important information, classified as a fourth step and themes were identified as a fifth step. Report writing was the last step which consisted of elaboration of all the themes which

emerged from the data. Results of the study were further compared with the literary findings in order to identify similarities and differences in the data patterns.

Chapter 4

4. Data analysis and discussion

The present study aimed at understanding the impact of Covid19 on the learning eco-system in U.A.E schools from the perspective of teachers. The study was primarily focused on two key aspects which included teacher's response to the perceived change in the operational conditions which have occurred due to the Covid19 and sudden closure of the schools as well as the perception of teachers about the use of digital technologies for learning. Since, the study involved behavioral aspects, therefore, the subjective nature of research was justified and hence, interpretivism paradigm was identified to be the most appropriate research philosophy. In addition, a qualitative research and case study approach was adopted. Data was collected through interviews conducted with 16 teachers from three selected schools in UAE. 5 teachers each participated from school A and B whereas 6 teachers participated from school C. The names of schools and teachers were kept confidential in compliance with the ethical considerations of the study. The selection of teachers from each school was random based on their availability and willingness to participate in the research where each participant had a right to withdraw their responses from the research any time before the research results is published. The collected interview data was analyzed through following thematic analysis by Braun and Clarke (2006), which is discussed as follows:

4.0. Thematic analysis

Thematic analysis consisted of six steps which included data familiarization, coding, identification of key themes, review, naming themes and report writing (Braun & Clarke, 2006). As a first step of data familiarization, all the data from 16 interviews was transcribed and reviewed multiple times which formed the basis of the first step of the analysis. The transcribed document was reviewed

by one of the external evaluators ensuring the accuracy of data and assurance of unbiasedness through comparing the audio with the written document. This step also validated the reliability of interview data authenticating the initiation of an unbiased data analysis. As a second step, the transcripts were coded to distinguish the responses from all participants. Since 16 teachers participated in the study, the participants were coded as RP1, RP2, RP3, RP4.....RP16. The third step involved theme identification following which all the transcripts were reviewed for important information which were further classified on the basis of similarities and differences forming the basis of the fourth step. Three key themes emerged from the data in the fifth step. Report writing was the last step which consisted of elaboration of all the themes which emerged from the data. Results of the study were further compared with the literary findings in order to identify similarities and differences in the data patterns. The following table illustrates the whole process of thematic analysis where the first column consists of highlighted information which was extracted from the transcripts. The second column consists of categories or classification of the highlighted data which are further combined as one theme in the third column of the table:

<ul style="list-style-type: none"> - Permanent impact - Profound impact - Affected the time and allocation of periods - Another impact is cost - Finding assessment tools - Positively in terms of the use of technology - Negatively in terms of dealing with students' communication - Change their pedagogy by relying more on using technology - New dimension to education - Enforced blended learning - Targeting students' interest and engaged them more 	General impact	Theme 1 – Impact of Covid19 on education sector
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<ul style="list-style-type: none"> - Making teaching and learning fully data driven - Number of students in classes decreased - Lack of resources and physical collaborative environment - Lack of socialization through face-to-face interaction - Students' disengagement - Modify curriculums and adapt it to work with remote and blended learning strategies 		
<ul style="list-style-type: none"> - Nurturing and building their self-esteem - Relies on visual and auditory communication - Serious knowledge of what they need to do is decreasing - Challenged the traditional ways of teaching and learning - Less involved in physical activities - Differentiated and personalized teaching 	Impact on learning patterns	
<ul style="list-style-type: none"> - Hybrid learning protocols rather than the normal classroom - Obligated to enter a new lifestyle with new techniques - Student's monitoring is online - More teacher's collaboration and time - More independent learning - Less willing to learn - More self-reliant and independent to chalk out their learning journey - Teacher as a source of knowledge 	Impact on operational conditions	
<ul style="list-style-type: none"> - Teaching more engaging and interesting - Better prepare for next generation skills 	Positive aspects	Theme 2 – Efficacy of digital technology

<ul style="list-style-type: none"> - Enhancing the ability of students to get more involved in digital technology - Choose their task - Broadens student's awareness and interests of topics - Data driven teaching - Classes will be recorded - Promotes collaboration among students - Incorporates different learning styles - Immediate feedback 		
<ul style="list-style-type: none"> - “Assessing the students and enabling students to apply the experiments physically - To create interactive and collaborative activities - Cost of some of the applications - Readiness of students for digital technology and the parent’s seriousness - Students’ usage of their devices - Unavailability of the device/ right device with few students - Student cheating by finding answers on google 	Challenging aspects	
<ul style="list-style-type: none"> - Reconfiguration of education systems - Evolving learning ecosystems - Huge load of training - Regular trainings for school faculty - Effectively monitor student's work and level - Improve the quality of online education - Nurturing soft skills in students and teachers 	N/A	Theme 3 – Future actions

Table 1 – Thematic analysis processing

4.1. Theme 1 – Impact of Covid19 on education sector

The first theme which emerged from the study covered the impact of Covid19 on the education sector in the U.A.E. The theme was further classified into three aspects which included the general impact of Covid19 on the education sector, the extent to which prolonged duration of pandemic impacted the learning system and how it affected the operational conditions of educational institutes in the region. All these sub-aspects covered the indicators as being pointed out by the research participants while answering the first three interview questions. A detailed elaboration of the sub-aspects forming the first theme of study is as follows:

4.1.1. General impact of Covid19 on education

The first sub-aspect which was identified within the context of determining impact of Covid19 on the education sector were general aspects in which teachers from the selected schools perceived as having had considerable impact of Covid19 on the education sector. The research participants stated both positive as well as negative impacts of the pandemic in terms of resource allocation, assessment patterns and most importantly the cost. *“The impact affected the time and allocation of periods. Another impact is cost. Finding assessment tools”*, said RP2. The teachers clearly identified that if the impact is taken into account from the perspective of technological innovation, Covid19 brought about a positive progression for the education sector; however, on the other hand, the impact it had on the learning efficacy of the students cannot be undermined. This stance was very clear in the statement of RP1 who stated that:

“I think it affected positively in terms of the use of technology and negatively in terms of dealing with students' communication and body language skills.”

RP15 further acknowledged the technological revolution which was accredited to the impact of the pandemic in terms of changing educational pedagogy and clarified that this change brought in a new dimension to the education industry. In the words of RP15:

“It brought a lot of changes to the educational system and required teachers and administrators to change their pedagogy by relying more on using technology. It added a new dimension to education.”

The positive and negative aspects of the pandemic, when discussed within the context of the education sector, were quite effectively elaborated in the interview statement of RP7 who highlighted technology integration, data driven approach towards learning and more personalized time for students as key benefits. However, on the other hand, the participant shared personal experiences reflecting on the challenges which were attributed to this change in the educational system which included less development of soft skills, lack of socialization and reduced number of expected deliverables. In the words of RP7:

“In my opinion the pandemic impacted the educational sector in positive and negative ways. The pandemic enforced blended learning where in some schools it was hard or even not expected within many years to have students fully involved in blended learning to this level. Technology integration also helped in targeting students’ interest and engaged them more in the learning process. Additionally, blended learning helped in making teaching and learning fully data driven where data collection and analysis is easier and more meaningful. Moreover, due to distancing, the number of students in classes decreased which allows a more suitable environment for differentiation and students teacher time. On the other hand, there are some negative impacts. One of them is the quality of teaching and learning material and deliverables due to lack of experience for teachers and students. The most important part in my opinion is that the new

teaching and learning practices limited the development of the soft skills of students in some schools due to lack of resources and a physical collaborative environment where students develop their communication skills the most.”

Another research participant added to the stance proclaimed by RP1 and highlighted the negative impact of social distance between teachers and students. A majority of the teachers identified that they were unable to observe the students as they could in the class, which was a key hindrance impeding their ability to control their behaviors and hence inculcate new skills in them. The teachers agreed that although the prolonged prevalence of Covid19 pushed teachers to adhere to the new teaching protocols through adapting blended techniques of learning and teaching; however, the approach was not as effective as face-to-face conversation between teachers and students. RP3 further clarified that:

“No one can neglect the negative effect of Covid pandemic on all the sectors especially education, being away from the students is a big barrier from enhancing their learning abilities, through controlling their behavior into using the new specific techniques for the online teaching”

This aspect of lack of socialization between teachers and students was also quite evident in the statement of RP5 who stated that:

“The prolonged period of the pandemic has forced schools to shift to online and/or blended teaching-learning which causes lack of socialization through face-to-face interaction, students’ disengagement (to a certain extent), and the validity of assessments.”

The next aspect, which was identified by a majority of research participants, considering the negative impact of lack of social contact between teachers and students was less inclination of students towards skills development. The teachers clarified that socialization among students and

teachers fosters social awareness among children while inculcating the development of new skills in them, which had reduced at the time of Covid19 where students learn at home and hence the level of skills development is quite less. During the interview, RP14 clearly mentioned this stance stating that:

“Frankly speaking , going to school is the best public policy tool available to raise skills. While school time can be fun and can raise social skills and social awareness, all of us know that being in school increases a child’s ability. Even a relatively short time in school does this; even a relatively short period of missed school will have consequences for skill growth.”

In addition to all of the above, the majority of the teachers identified it as a challenging time period when discussed from the perspective of student’s progress, curriculum development and provision of a supportive environment for the students. The teachers clearly highlighted student assessment patterns as one of the most critical aspects which brought in new challenges for the teachers in terms of keeping a track record of the progress of students and determining the extent to which they had improved their competencies and academic success. This stance was quite evidently highlighted in the response of RP8 who stated that:

“It impacted the sector positively and negatively where technology is mostly used but the evidence of students’ progress is getting less reliable.”

In consideration of curriculum development as another challenging activity, teachers identified that since they were not prone to online teaching mechanisms before the prevalence of Covid19, therefore, they were not prepared for handling any such situations which was the key hindrance in developing and managing the curriculum. Besides that, the teachers were cognizant that their inability and lack of expertise in managing technology-based classrooms added to the hurdles they

had to face in developing a supportive learning and teaching environment. Majority of the teachers agreed that they had to become more flexible and develop a capacity to adapt to the changing teaching environment. This stance was clearly reflected in the recorded statement of RP13:

“It had an impact on schools, teachers and students. Schools had to adopt new and updated approaches and technologies. They had to modify curriculums and adapt it to work with remote and blended learning strategies. Teachers had to learn how to provide new and good teaching strategies to maintain good quality of teaching. Students had to learn using devices and adapt to being behind a screen for a long time and not being able to communicate with others the normal way.”

4.1.2. Impact on learning patterns

The next sub-aspect under the first theme of determining the perceived impact of Covid19 on education is the extent to which prolonged lockdown and the situation of pandemic affected learning patterns of students. This sub-aspect was in-line with the second interview question where teachers were asked to share their experiences, opinions, and views about the disruptions which Covid19 caused to the learning eco-system of students or otherwise. A majority of the teachers agreed that Covid19 left a devastating impact on the learning efficacy and motivation of students while abruptly disrupting their interaction with each other, effective communication patterns with teachers and self-esteem of students while increasing the gap between “*high scorers and low scorers*”, as identified by RP 12, in the classroom. For instance, “*It has changed by leaps and bounds, nurturing and building their self-esteem and well-being playing a major role in it*”, said RP11.

The first aspect, considering the impact of Covid19 and prolonged lockdown on learning patterns, was interrupted communication which was only confined to virtual discussions, without any physical or face to face contact possible between students and teachers, and hence hindered direct communication. The teachers further identified that they ensured to give clear instructions related to the assignments and home-based learning activities. However, there were a significant number of students who could not grasp the context of instructions which further impacted their performance negatively. In the words of RP1:

“There is certainly an impact on learning styles, with students missing out on instruction that relies on visual and auditory communication as well as direct conversation with teachers. In addition, the use of technology has benefited students in terms of their use of research skills”

Other participants also identified a similar stance and added to the points raised by RP1 by relating the issue of ineffective interaction and communication between students and teachers to reduced level of learning and skill attaining ability of students. The research participants further showed their concern about possible decrease in the knowledgeability of students, if the students would have prolonged for next few months. For instance, RP3 stated that:

“Yes, all of the teachers are facing a common problem is that we are working several times more, but the student’s level, their learning skills and their serious knowledge of what they need to do is decreasing with time as we are teaching online”

The next factor which impacted the learning patterns of students was technology. Although the majority of the teachers found blended learning as a positive opportunity for students to keep pace with the modern and changing trends of the education industry. However, a few teachers also identified negative aspects related to technology which included lack of socialization, interrupted connections, limited access of students to laptops and other devices of online learning as well as

less involvement of students in the physical activities. *“It forced teachers and students to resort to technology and use more online resources. However, it (also) challenged the traditional ways of teaching and learning”*, said RP15, which clearly indicated both negative and positive aspects of Covid19 and remote teaching on the learning pattern of students. This stance was quite clearly reflected in the research response of RP7 who stated that:

“Yes, for sure it distributed it since students were not actually fully involved in blended learning and distance learning where there are more responsibilities upon them. Also, students are much less involved in physical activities due to the regulations which affect students’ skills and activity.”

In addition, access of students to technological learning devices was highlighted as a non-negligible point, when discussing the extent of disruptions caused by Covid19 in the learning ecosystem. A few teachers highlighted limited access of students to modes of learning. For instance, in the words of RP5:

“Yes, it does. As students may have not consistent access to their devices and/ or to the internet access. Also, their learning patterns might be disrupted when students do not receive differentiated and personalized teaching. The lack of small-group discussion, negotiation, and collaboration also contribute to the learning disruption.”

However, when considered through the opposite direction of the lens, the teachers identified that increased use of technological modes of learning disrupted family times where students preferred to spend time alone while compromising spending quality time with family. This added focus of students on remote learning hindered the development of their socialization, team working and communication skills. RP13 quite clearly raised this concern by saying that,

“For sure it disrupted the learning patterns. Students have to sit for long hours using a technological device. Those who are studying remotely, spend their time mostly alone, so the building of needed skills, such as communication, team-work, and motivation are disrupted.”

4.1.3. Impact on operational conditions

The third sub-aspect which was highlighted as a key determinant of understanding the impact of Covid19 on the education sector was through grasping the knowledge about how the prolonged lockdown and sudden shift from conventional to online teaching and learning methods impacted the operational conditions of both teaching and learning. This sub-aspect was in line with the third interview questions where teachers were asked to share their views and experiences about the challenging and beneficial aspects of unexpected change in the operational conditions which were prolonged for more than a year due to the extended period of lockdown and related safety concerns for the health of both teachers and students due to drastic effects of the pandemic. The teachers were also asked to compare the efficacy of educational protocols which they used to follow before the pandemic and how they changed during the pandemic.

The first aspect which the majority of the teachers identified was increased focus on technology-based learning which included the usage of several online tools, programs, and frameworks to enhance the tendency of learning for students. This sudden shift to online learning changed the educational protocols transitioning from a normal environment to a hybrid learning environment. RP1 stated that:

“The classrooms are more in the hybrid learning protocols rather than the normal classroom environment that was existed before the pandemic”

On the contrary, teachers also found this sudden shift quite challenging in terms of fulfilling the teaching and student's learning goals. It was further highlighted that it was not only an educational shift, but also a shift of lifestyle, techniques, and situations. In the words of RP3:

“The way we started this mission was a huge step for every teacher to get back to their main goal. The new situation puts us under a new condition that we never seen before, we were obliged to enter a new lifestyle with new techniques that fits our new situation (everything was different)”

RP7 further elaborated a similar stance as mentioned by RP3 and highlighted online monitoring as a critical aspect, hindering the ability of teachers to evaluate the level of student's learning and its efficacy. However, the fact which cannot be ignored is that the change is equally challenging for both students and teachers impacting both the process of teaching and learning. In the words of RP7:

“Well major changes happen during lockdown as students shift fully to distance or online learning where students monitoring is online which is completely new for both students and teachers. [However, it facilitated] more teachers' collaboration and time which enhanced the teaching and learning process.”

Another challenging aspect which the teachers identified was that high reliability on technological tools has reduced the ability of students to critically analyze a situation, interpret effectively, brainstorm and hence operate independently. *“More independent learning took place during the pandemic period. Students less willing to learn didn't participate effectively”*, stated RP10. RP4 further clarified this stance and stated that:

“I am not sure what the question is asking, sorry. I did notice that students have become very reliant on being able to google answers and might struggle when they are expected to operate independently from google again.”

However, this aspect of independent learning, regardless of its negative impacts, was also identified as a beneficial step, because it triggered self-reliance and curiosity among students to explore different learning styles. There was also evidence that the changing mode of learning also brought flexibility to the system. RP11 shared personal experience and stated that:

“Changes observed are technology playing a vital part in the teaching and learning process. Also, this period has fostered the students to be more self-reliant and independent to chalk out their learning journey, giving them options to use the learning style of their interest. Flexibility has been a key factor with its pros and cons. It has brought more agility into the system.”

The next aspect which emerged from this theme was related to changing protocols of both educational settings as compared to the previously followed standards, the research participants highlighted that the pandemic transformed all the normal and standardized protocols which were being implemented in the education sector, pushing the regulatory authorities to find an alternative system of both teaching and assessment cohering with digital education. It was further identified that the pandemic pushed both teachers and students to follow the safety protocols which included washing hands, wearing masks, social distancing, arranging their food from home and reduced number of students in both classes and buses. Besides that, there were a number of new assessment and knowledge providing tools which teachers had to learn before delivering an effective lecture to the students because of its direct connectivity with the learning and skills development of students. Above all the role of teacher was transformed to a knowledge source for students. RP15 stated that:

“Before the pandemic, many teachers were using old and traditional ways for teaching, assessment, etc. However, after the pandemic there were a lot of aspects that changed. Even the role of the teacher as a source of knowledge was challenged as students could easily verify the teacher's knowledge with a click of a button.”

Likewise, the changed school timing and increased responsibility of parents were the two other considerable changes where both parents and teachers had to embrace the change and learn new technologies and assessment techniques which had never been opted before. Not only this, but parents also had to play an additional role of facilitator between teachers and students ensuring the student's presence in the online session, attending parent teacher meeting sessions and managing the online homework of students. Therefore, collaboration between teachers and parents was another significant yet critical change in the operational condition which is attributed to the prolonged prevalence of Covid19. RP12 explained this change very well by saying that:

“Parents and teachers played a fundamental role in supporting students during lockdown, they even learned how to use different applications and websites they didn't imagine they could even use, which could be applicable after the pandemic”

4.2. Theme 2 - Evaluating the efficacy of digital technology

The second theme which emerged from the research was related to understanding the extent to which the use of digital technology proved to be beneficial for the educational sector. To be more specific, considering the scope of the present study, this theme was more inclined towards understanding the perceived views of teachers from the selected schools within the U.A.E to share the beneficial and challenging aspects related to the use of digital interventions for teaching. The themes emerged as a response to the fourth and fifth interview questions. The responses were quite diverse. The teachers, on one hand, shared positive aspects related to the effective use of digital

technologies for learning. On the other hand, there were a significant number of challenging aspects which were identified as impeding the efficacy of the learning eco-system while intensifying the situation of teaching for teachers in the U.A.E.

The first beneficial aspect which the teachers identified considering the use of technological tools was inculcation of modern skills among students rather than their reliance on traditional tools of learning and creativity. This adaptation was found equally effective for the teachers as it posed them to the next generation tools and enabled them keep pace with the globally proclaimed teaching practices. *“It makes teaching more engaging and interesting”*, said RP9. RP1 clearly elaborated this aspect and stated:

“Technology helps students and teachers to better prepare for next generation skills and transfer knowledge from its traditional tools to modern tools for analysis, thinking and creativity.”

RP8 further added to this view and shared the positive aspects of technology-based learning from the student’s point of view stating that:

“Enhancing the ability of students to get more involved in digital technology and future creativity.”

The second aspect which emerged from the results of the study was that technology-based learning provoked independent learning among students and enabled them to *“choose their task”*, said RP2, depending on their areas of interests. The teachers further identified that this independent attitude also fostered ease of access to content, ownership to learning and effective decision-making skills. According to RP4:

“It broadens student's awareness and interests of topics. It also allows students to access the curriculum in a mode that they are extremely comfortable with.”

RP7 further added to the stance of independent learning and entitled the use of technology as a data-driven approach of teaching and learning which provokes self-learning, creative thinking, brainstorming, and determining their progressive pathway of learning and development. In the words of RP7:

“As I highlighted in the first question, the use of technology helped target students’ interest more and made data-drive teaching and learning easier and more meaningful. Moreover, the use of technology opened unlimited resources and helped in developing students’ skill in self-learning”

While discussing the benefits of independent learning, it was further understood that the use of technology not only increased the sources of learning, but it also made learning flexible. Since all the sessions were recorded, they were available for students to review anytime depending on their availability for more understanding and clarity of concepts. The teachers further stated that learning flexibility improvised the notion of collaborative learning among students and fostered group discussions through online calls and discussion. RP12 stated this benefit and recorded that:

“One big benefit of digital learning is that some of the classes will be recorded. This means that if the students miss something or realize later that they don’t quite understand a particular topic, they can go back and watch the class again to get the answers they need.”

The third key benefit of the technology-based learning which was highlighted by the research participants was increased collaboration among students promoting a cohesive and friendly yet independent learning environment. RP5, in the statement, revealed that:

“Using digital technologies for learning promotes collaboration among students, it also enhances individual learning as students will work at a personalized pace and style. It is a safe

and friendly environment where students can share their thoughts with no threat using the limitless and valuable resources available online.”

RP10 further added to this stance and highlighted the development of an engaged learning environment as a key benefit of using technology. It was further highlighted that technology -based learning facilitates different learning patterns along with improving collaboration among them. In the words of RP10:

“Incorporates Different Learning Styles. Improves Collaboration. Prepares Children for the Future. Connects You with Your Students”

The next benefit of technology-based learning which was highlighted by the teachers was faster review and feedback. The teachers proclaimed that technology enabled students to learn the concepts faster using different modes of learning rather than confining themselves to physical or lab-based learning. Faster learning and early submission of all the assignments also paced up the process of teacher’s review and feedback. Furthermore, the level of creativity of students while attempting the assignments was also improved. RP13 elaborated that:

“They enable easy access by school admins, teachers and students. They provide students with opportunities to be creative. Teachers would provide immediate feedback as students are working and thus develop their skills.”

The second key determinant which emerged as a part of the second theme while determining the impact of technology-based learning on the learning orientation was challenges being faced by both teachers and students. The teachers admitted that although the use of technology proved to be effective in many ways; however, there were certain critical situations which impeded a smooth learning eco-system. The first key challenge which was identified by the teachers was lack of physical interaction between students and teachers. The prolonged lockdown hindered the students

to perform different experiments in the lab which certainly affected the level of their understanding as well the learning outcomes. Not only this, the teachers could not assign the “*group-based assignments*’”, said RP2, and hence the level of interaction between students also got disrupted.

In the words of RP1:

“Assessing the students and enabling students to apply the experiments physically are the most challenges that digital technology faces. the impact of those things affects the quality of the outcomes and the way the students are dealing with the ecosystem”

RP5 also highlighted the broken interaction as a key challenge and related it as having a negative impact on the student’s learning outcome. In the words of RP5:

“Some challenges I face when using digital technologies are not being able to engage with all the students during the session, and when some students need consistent teacher’s support with some skills, this may impact the learner’s attainment.”

RP13 recorded a similar aspect and stated that:

“The major challenge was to create interactive and collaborative activities where students have to communicate with other team members. This had an impact on how students usually learn in a classroom where they interact with the teacher, and with each other.”

Considering the challenges related to implementation of technological tools, the majority of teachers highlighted the learning new methods for teaching concepts to the students and understanding the functionality of software was the key critical Phase. “*First it was the lack of knowledge in using technology and applications, then the concern of keeping students safe while using technology, and I think the cost of some of the applications would be useful*”, said RP12.

The teachers also identified that this sudden shift was equally challenging for students, teachers

as well as parents who had to arrange the learning setup for students. RP7 framed this situation of transition from usual modes of learning to technological tools stating that:

“Well one of the most important challenges I faced at the beginning is the readiness of students for digital technology and the parent’s seriousness regarding distance learning as they play an important role in the teaching and learning process. The sudden shift of all protocols, methods, and routine in the teaching and learning process was hard at the beginning. Also, since everything was sudden, control over students’ usage of their devices was a major issue at the beginning where they can get distracted easily if they are not fully engaged and interested in the topic. Also, digital literacy and safety are one of the most important challenges.”

Another respondent added to this challenge of adaptation and highlighted that all the teachers had to begin the teaching session without any orientation or preparation fostering self-learning among students. *Teachers started the distance learning process without any preparations or orientations. The self-learning strategy on how to use all the platforms and the communication teaching apps was a big challenge*, said RP10. However, the importance of devising an effective curriculum plan which was learning-oriented as well as interactive could not be ignored. Therefore, the responsibility of teachers was multifold; ensuring on time curriculum development, effective delivery, and feedback, each of which encompassed its own challenges. *“Following up with my online students was my main concern”*, said RP9. RP11 further elaborated all the challenges faced by teachers and stated that:

“It was indeed a roller coaster ride at the beginning of the pandemic. To list a few of those: Unavailability of the device/ right device with few students was hampering the process. The internet server had to be upgraded. Long hours were spent on planning and accumulation of grade and standard specific resources. A number of platforms available were not free of cost

initially. Orientation to the various platforms to be used in school was a must for the entire community: teachers, students, and parents. All of these had some impact on the implementation of the curriculum.”

In addition, tracking the transparency of submitted assignments followed by highlighting any sort of cheating by the students in a very limited time was identified as another key hindrance of relying on technological tools of learning. The teachers clearly stated that students had easy access to google and other search engines, using which they could copy the answers rather than pondering upon the given problem statements or assignments. Therefore, assessing the actual level of learning of students became one of the most critical aspects in the words of RP15:

“Finding the right resources, adapting to new features of technology, time management. These challenges made me spend more time and effort trying to solve them at the beginning of the pandemic. It felt like learning again from the beginning how to be a good teacher according to the new criteria.”

RP4 further highlighted the aspect of cheating and stated that:

“The amount of student cheating by finding answers on google, it created a problem that I do not know the exact level of my students truly as the tests could no longer be used as an accurate determinant of this.”

4.3. Theme 3 – Future actions

The third theme which emerged from the research was recommended actions to devise future educational policy of the U.A.E to ensure the development of a structure which is efficient enough to bear the impact of any such pandemic in the future. Besides that, the theme also highlighted learnings of teachers while surviving through the changing educational mechanisms, where their

experiences and reviews can prove to be quite beneficial for the regulatory authorities to ensure that learning eco-system is sustained in the case of pandemic or any sort of uncertainties or unexpected situations without breaking a loop or distorting the connectivity between the actors of the learning eco-system. This theme was in-line with the sixth interview question, where teacher's participation was quite impressive in terms of suggesting realistic and constructive solutions for the upgradation of educational policy for the academic institutions of the U.A.E with an equal focus on the development and training of both teachers and students as a prerequisite to developing a sustained learning eco-system.

The first suggestion which teachers recorded for the educational regulatory authorities was reconfiguration of the entire education system. The teachers further proclaimed that the authorities must ensure the provision of an effective training and development program for the teachers of all educational systems in order to prepare them to encounter any pandemic or unforeseen situation in the future. Training about using the latest technological tools, software and interventions followed by mental health training were also identified to be the key need of the hour. RP1 clearly highlighted the need for the development of a dynamic learning eco-system and stated:

“The leaders and system leaders alike have begun to explore whether the opportunity exists to create dynamic, diverse and evolving learning ecosystems which enable all young people to be lifelong learners, leveraging a broader and more powerful range of assets than ever before. Such a reconfiguration of education systems and our collective mindset promise to create the conditions for more dynamic and powerful collaborations which stimulate and enable innovation.”

RP3 further added to this stance and highlighted the need for teacher's training as a proactive preparatory step for the future. The participant stated that:

“After this pandemic I think the way we are going to face any new issue in the future will be easier, we really got a huge load of training for too many new things, but they can put a plan for training us on how we can face such an issue and to learn from others experience to increase our knowledge in addition to make sure that the needed stuff is available to all of us.”

Likewise, it was quite clear from the responses of teachers that training was not only needed for teachers, but for students as well. Many participants obliged the regulatory authorities to arrange workshops for students as well in order to interact with them and involve them in the process of transitioning to a blended learning approach. RP5 suggested the following recommended actions for the regulatory authorities:

“Conduct regular training for school faculty (on using technology, teaching methods, mental health and wellbeing. Conduct regular workshops and fun activities for students where they can meet their interests and express themselves. Involve teachers in more professional development related to blended learning and up to date teaching methods. Focus on students and teachers’ digital literacy, e-safety, and digital citizenship. Involve teachers’ voice in the formation of these regulations.”

The second key recommendation which teachers suggested was to continue with the blended learning approach in terms of combining both the physical modes of learning as well as online learning methods. *“They should maintain and support online education even after the crisis has passed”*, said RP9. Furthermore, it was suggested to devise and practice the best assessment tools to avoid such issues in the future. In addition, the teachers also suggested the need of creating more interactive tools and software programs to cater the issue of effective and direct interaction between teachers and students. RP4 clearly stated that:

“To make more resources available to schools to effectively monitor student's work and level. (like websites to monitor computers during tests, or full access to websites like google meet or classroom).”

RP15 also highlighted the same stance of improving the quality of education followed by integration of technology in all the educational practices. The research participant clearly stated that:

“Improve the quality of online education, integrate technology in all educational practices, develop more resources to be available for teachers and students, encourage students to document their learning journeys so that they can benefit from it in the future.”

RP11 further stated that:

“Use of technology should be mandatory with regular teaching pedagogies. Nurturing soft skills in students and teachers. Better training and planning to handle future scenarios.”

Chapter 5

5. Discussion of results and conclusion

This study aimed at understanding the impact of Covid19 on the learning eco-system in U.A.E schools from the perspective of teachers. The study was primarily focused on two key aspects which included teacher's response to the perceived change in the operational conditions which have occurred due to the Covid19 and sudden closure of the schools as well as the perception of teachers about the use of digital technologies for learning. The study opted for interpretivism paradigm and qualitative research approach following which interviews were conducted with 16 teachers from the three selected schools of UAE. The research encompasses one primary question which was further divided into two sub-questions. The collected data was analyzed through thematic analysis.

The first sub-research question consisted of understanding the impact of Covid19 on the operational conditions of schools during lockdown from the perspective of teachers which was clearly reflected in the first theme which emerged from the results of the study. Considering the general impact, results of the study highlighted that Covid19 impacted the entire learning system in both positive and negative manners. From a positive perspective, it fostered the needs of using a blended learning approach while ensuring the use of technological tools and interventions. On the other hand, the study clearly evidenced the high cost associated with the use of technology, adherence of teachers and students to adapt to the sudden changes, lack of physical interaction between students and teachers as well as lack of effective assessment tools as key challenging aspects. Results also highlighted that although remote learning fostered independent learning; however, the gap between high achievers and low achievers was also increased causing concerns for the teachers. The changing operational conditions were equally challenging for both teachers

and students. For teachers, effective curriculum development and adapting to the new teaching modes was challenging. For students, their learning ability was negatively impacted due to changing operational conditions and flexible class timings where disrupted internet connection and reduced access to the online learning sources were the key highlighted challenges. Furthermore, it was quite evident from the research findings that the education system in the UAE was not used to hybrid or blended learning approaches. Hence, teachers felt more at ease following the traditional physical modes of learning, as the sudden shift to operational requirements required them to learn new software programs to ensure an effective teaching for the children. This sudden shift also highlighted parents as one of the most important stakeholders of the learning eco-system, who in the times of Covid19 had to ensure the availability of all learning resources to their children followed by assuring their availability in the online classes as well as the submission of homework on time.

When compared to the literature, results of the study were consistent with the findings of Upoalkpajor and Upolkpajor (2020) who identified disrupted academic continuousness as one of the key impacts of the pandemic. Literary research also evidenced that sudden lockdowns resulted in closure of schools which impacted all students. Likewise, another research with which the findings of this study supports was by Giovannella, Passarelli and Persico (2020) where the teachers identified content sharing and assessment processes to be challenging at an initial stage which were, later, managed effectively. The next aspect which was similar between the results of study and the literary findings was related to the digital transformation and technological innovation which occurred pre and post pandemic (Al-Darayseh, 2020; Bates, 2020; Burgess & Sievertsen, 2020). Researchers have evidenced the notion that this era had been a beginning of a brilliant technological innovation resulting in vast deployment of IoT based infrastructure and

highly advanced technological advancements; the effects of which were duly disrupted due to the pandemic of Covid19 (Carpenter, Krutka, & Kimmons, 2020; Giovannella, Passarelli, & Persico, 2020; Joshi, Vinay, & Bhaskar, 2020). Although the pandemic proved to be devastating for all the industries including the education system, it also pointed out the hidden and undervalued importance of digitisation and technology based learning especially in the education sector (Bates, 2020).

The second sub-research question which the research focused on was understanding the impact of digital technologies on the learning patterns and efficacy of students. The second theme which emerged from the results of the study cohered with this research requirement where the teachers highlighted both positive and negative aspects of using digital technologies for learning. It was proclaimed that although the technological tools of learning instilled self-learning and ownership to learning among students, it enabled them to keep pace with the requirements of the modern world. On the other hand, the level of learning capacity was also negatively impacted in terms of easy access to all the problems through google provoking cheating. The results further highlighted that although the online classes had flexible schedules where the course recordings were available for students afterwards too; however, the students lacked group discussions, brainstorming and interactive learning approach which added to the criticalities of technology-based learning. Literature has evidenced similar stances as being identified in the present study. For instance, Jena (2020) in her study identified that the negative impact of Covid19 on the learning and education system was no different in any countries in the world. The schools were closed. Classes and exams were all suspended and entrance tests were postponed for an unknown period of time. Result from the study of Mhlanga and Moloi (2020) also evidenced that the disrupted education and learning mechanisms also opened opportunities for the educational institutions to consider digital

transformation at all levels in order to integrate all the stakeholders and develop a connection between teachers, students, parents , policy makers and management through introducing e-learning; however, the level of student's learning and capacity to brainstorm got negatively impacted (Mhlanga & Moloi, 2020).

Considering the areas of improvement, results of the present study recommend the governmental representatives and educational regulatory authorities of the UAE to reconfigure the entire education system and continue with the blended learning approach as a preparatory effort to avoid such disruptions in future. In addition, teachers training to ensure their familiarity with the modern technological tools and interventions was highlighted as another necessary aspect followed by devising an effective assessment criteria and tool for the teachers. These recommendations adhere to the research findings of Mohammadian, Shahhoseini, Castro and Merk (2020) who suggested to formulate an innovative and digitally transformed learning eco-system through recognizing the value of technological resources and tools among stakeholders, improved collaboration in order to increase the corporate ability of the institution and develop leap frog strategies while ensuring the continuity of learning.

5.1. Ethical considerations

The study adhered to the following ethical considerations. First, anonymity of the research participants was maintained. The interview transcripts were coded by RP1...RP11 to distinguish their responses while ensuring that names of the participants are not disclosed. Second, confidentiality of data was another key ethical practice following which the data was stored in a password protected cloud file. Third, consent forms were sent to all the research participants ensuring their volunteer participation in the research followed by giving them the right to withdraw their participation, with prior intimation of at-least two weeks, before the completion of two

months of data collection. Fourth, all the literature and published articles which were used in the study were correctly cited as an acknowledgement to the efforts of researchers.

5.2. Limitations of the study and future scope

The study encompassed a few limitations which created room for the future scope. First, the study was aimed at understanding the impact of Covid19 on the learning eco-system where only two variables were discussed which included impact on operational conditions and learning patterns. The future researchers can take into account multiple variables including the psychological impact, effect on creativity, effects on academic performance and many more. Second, the present study was confined to three selected schools in the UAE where data was collected using a mono method of interviewing 16 teachers. This limitation clearly leaves a significant impact on the level of data generalization. Therefore, future researchers can opt for multi-method of data collection and may expand the scope of their study by involving more schools, parents, students, and teachers in order to attain a broader view for comparative analysis and generalization of the impact of Covid19 in the subject domain.

5.3. Conclusion

The impact of Covid19 on the learning eco-system cannot be understated specifically when discussed within the context of the effect of prolonged lockdown on operational viability of educational institutions and the efficacy of learning patterns. Therefore, the educational regulatory authorities of the UAE tend to inculcate technology-based learning model as a part of regular teaching and learning medium. Furthermore, it is important to organize effective teacher's training programs in order to keep them updated about the latest educational interventions. However, a highly systematic and integrated curriculum design and learning approach needs to be devised

beforehand as a proactive step to avoid the impact of any unforeseen situation on the educational eco-system in future.

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