

**Exploring the challenges and opportunities associated with
using eLearning system in the classroom (to teach) - a
perspective of teachers in a primary school in Dubai**

دراسة حول والتحديات والفرص المرتبطة بالتعليم الإلكتروني في الفصل الدراسي:
نظرة عن كثر من تجربة لمعلمي مرحلة ابتدائية لمدرسة خاصة في دبي

by

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Abstract

The study is based on exploring the opportunities and challenges which are associated with using the e-learning system of education as a teaching medium, from the perspective of teachers in a selected primary school in Dubai. Besides that, the study recommends strategies that teachers and the educational stakeholders can opt for to combat the identified challenges. The study followed interpretivism research paradigm, inductive research approach and case study as a research strategy following which 10 teachers from the selected primary school of Dubai were interviewed. The data was analysed using Thematic analysis by Braun and Clarke (2016).

Results of the study highlighted that e-learning is equally effective for primary school students in terms of improving their educational development, academic progress, participation, and level of engagement in the e-learning class. It not only improves their learning but also instils the skills of critical thinking, brainstorming and independent learning. An increased understanding of the topic broadens their view which ultimately increases the academic grades of students. However, despite all these benefits, the teachers have also identified certain challenges which included the required assistance from teachers, cultural differences, communication barriers and lack of understanding of students of the given instructions about a task. The teachers also recommended certain opportunities for the management of schools along with calling for the need for them to collaborate with educational regulatory authorities to unleash the opportunities and attain them to their full potential for the benefit of students and teachers in an e-learning environment.

نبذة مختصرة

يهدف هذا البحث الى التعرف على الصعوبات والتحديات التي يواجهها المعلم في منظومة التعلم عن بعد من واقع تجارب معلمي مدرسة ابتدائية لمدرسة مدينة دبي. كما يقوم البحث باقتراح استراتيجيات يمكن للعاملين بالقطاع التعليمي الاستفادة منها والعمل بها كحلول لمواجهة التحديات المذكورة. اتبعت الدراسة منهج نموذج التأويل الاجتماعي، بالاضافة الى البحث الاستقرائي ودراسة حالة 10 معلمين و معلمات من مدرسة ابتدائية خاصة تمت اجراء مقابلات معهم في دبي. تم تحليل المعلومات باستخدام المنهج التحليلي الموضوعي.

أوضحت النتائج أن التعليم الالكتروني يشابه التعليم الحضوري في المرحلة الابتدائية من ناحية التطوير التعليمي والتقدم الاكاديمي للطلبة والمشاركة والاندماج خلال الحصة عن بعد. لم تقم الدراسة عن بعد بتحسين عملية التعليم فحسب، بل ساعدت أيضا في غرس وإبراز مهارات متعددة في الطلبة كالتفكير النقدي والعصف الذهني والتعلم الذاتي.

تبين أن زيادة الإدراك والفهم للمواد الدراسية أدى إلى توسيع مدارك الطلبة وصاحب ذلك ارتفاع ملحوظ في معدل التحصيل العلمي، ولكن بالرغم من إيجابيات التعلم عن بعد فقد واجه المعلمون تحديات عدة من ضمنها كيفية مساعدة المعلم للطلاب واختلاف الثقافات وعقبات في التواصل بين الطالب والمعلم ومدى فهم وتلقي الطالب لإرشادات المعلم عن كيفية تنفيذ المهام. وقام المعلمون بالإشارة الى فرص مهمة للإدارات المدرسية والحاجة الى تعاونهم مع الهيئات التعليمية المسؤولة لإطلاق الفرص واستغلال الامكانيات إلى أقصاها بما فيه من نفع للطلبة والمعلمين في بيئة التعليم الالكتروني.

Dedication

This thesis is duly dedicated to my family, friends and colleagues who have been a source of encouragement, support, and motivation for me.

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I am highly obliged to the thesis supervisor for providing me support and mentorship throughout the thesis while taking me through to all steps which were required to complete this thesis report.

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Chapter 1

i Introduction

This chapter introduces the topic along with identifying the existing gaps in the literature which formulates the basis of a problem statement and hence defines the rationale of the study. The chapter further elaborates research questions, objectives, term definition, the significance of the study as well as the thesis structure.

i.1. Background

In the current era, the fast-paced technological revolution has altered the functional aspects of most industries (Ali, Hossain & Ahmed 2021). This amalgamation of technology in the education sector transforming the patterns of learning and teaching is not a mystery anymore (ElSaheli-Elhage 2020). Software-based learning systems, e-learning and virtual classrooms have certainly increased the efficacy and effectiveness of education eradicating the limitations of conventional modes of learning in physical classrooms (Aboagye, Yawson & Appiah 2021). The topic has been under discussion for last many years where the existing literature has extensively identified e-learning as one of the most vital elements of the educational system all around the world; however, the fast-paced technological development has triggered the interest of researchers and theorists to focus on this domain of study to a great extent and from different perspectives including its efficacy as an opportunity as well as the challenge.

(Aljawarneh n.d.) (2010) contributed to this comparative view of traditional and online modes of learning, considering the goals, benefits, and challenging aspects of both approaches. The researchers identified that physical classrooms were necessary to foster collaboration and interaction among students, whereas, in adherence to the modern approaches of learning, most of the teachers preferred software programs over Blackboard due to its flexible nature. Despite acknowledging e-learning as a preferred approach, the researchers also highlighted security issues associated with the use of different software

programs as a key threatening agent which may hinder the process of active learning and development of students.

This stance of the increased interest of teachers in the online tools of learning was also reflected in the research findings of (Yengin, Karahoca & Karahoca 2011) (2011) who pointed out e-learning as a mode of academic progress of students; however, the extent of student development depends on the usability of the software for learning, the performance trend of teachers and satisfaction of both teachers and students with the e-learning mechanism. The researchers further developed “E-learning Success Model for Instructors” which was an accountability and monitoring program designed to assess the technical communication, level of indulgence and interest of teachers in e-learning tools along with assessing the rate of student’s participation and satisfaction with online learning system (Yengin, Karahoca, & Karahoca, 2011).

Considering e-learning as an opportunity, studies have identified that virtual modes of learning foster motivation among students to learn and understand new concepts, theories, and frameworks in a flexible learning environment. Students have access to multiple knowledge sources both physical and online where they can look for different articles, research, YouTube videos, social media platforms and many other social networking groups to widen their view and understanding of the topic. Online discussions among students and a critical view of the topic further motivate the students to brainstorm, evaluate different aspects and hence pay attention to details in order to grasp a full understanding of the topic (Abou El-Seoud 2014).

On the contrary, (Harandi 2015) (2015) views e-learning platforms as a challenging aspect when discussed within the context of their impact of the motivation level of students. The researcher argued the findings of previous studies and highlighted that lack of physical and face-to-face interaction among students creates a gap between students and teachers. Not only this but the sole reliance on e-learning platforms also makes it difficult for the teachers to trace if students are hesitant in sharing their concerns, issues, or any problems related to studies.

This vitality of the e-learning mechanism surged up after the sudden and uncontrollable spread of Covid19 where the situation of lockdown and social distancing protocols left no

choice for the educationists but to rely on virtual modes of learning to bridge the study gap (Lara, Aljawarneh, & Pamplona, 2020) . However, it is important to note that the transition of educational institutions from physical to blended and solely virtual modes of teaching was still prevalent before Covid19, however, this situation of pandemic skyrocketed this progression in both developed and developing countries.

i.2. Situation analysis of Education system in Dubai

Dubai is one such region where technological development revolutionized the education sector increasing the number of technology-based classrooms in the school the number of students enrolled in virtual programs and the interest of government in providing support to the Ministry of Education (Report 2021). The statistics in 2013 and 2014 recorded a total of 271,926 enrollers including 218,386 expats and 53,540 Emiratis where more than 147 schools had set up their smart learning programs which included smart boards for students, social network platforms for students facilitating interactive learning as an adherence to the internationally acclaimed educational standards (e-learning infographics Report, 2014). This landscape of educational development follows a progressive trajectory in the current times by recording 93% literacy rate and valuation of the education market to AED 19 billion which has recorded a growth rate of 8.3% in 2019 and is projected to grow to 15.2% in 2023 (Lara, Aljawarneh & Pamplona 2020).

In addition, direct involvement of the government of Dubai, taking initiatives to promote technology-based learning is another progressive step. The programs like Madrasa e-learning, Duroosi Youtube Channel, Diwan e-book reader and Muhammad bin Rashid smart learning project are a few interactive learning platforms which have certainly enhanced the learning experience of students while improvising the teaching facilities for the educationists (Report 2021). Covid19 has certainly opened up a number of opportunities for the investors, teachers and management of educational institutions to normalize the technology-based education system and fostering e-learning (Report 2021). For instance, new entrants in the market may invest in the most modern technological tools and interventions as a promotional strategy for e-learning which can be a great competitive edge for them. Likewise, the fast-paced development of IT infrastructure as well as the changing dynamics of the market has

also triggered the importance and vitality of new opportunities related to e-learning (EISaheli-Elhage 2020); however, the aspects highlighted in the previous research concerning the benefits and challenges associated to e-learning which are prevalent globally cannot be ignored because they provide an excellent literary ground for the present study.

i.3. Brief review of existing research

Extensive research is present concerning the vitality of e-learning from the perspectives of both teachers and students. Most of the studies have highlighted e-learning as a positive and beneficial approach. For instance, Alves, Luisa, Miranda and Morais (2017) conducted research concerning the efficacy of e-learning and put forth their stance that the inclusion of technology in the classroom not only improved the performance of students but also enhanced their knowledge base about the assigned topics at the ease of their home. Naikoo et al., (2018) identified technology-based classrooms as a time-efficient mechanism of learning where the students become well versed in using the modern tools which adds to their competitiveness both academically and in their professional career. The researchers further added arguments from the perspectives of teachers stating that e-learning has eased the process of grading and assessment for the teachers through the automation feature of the grading software alleviating the hassle of manual recordings and assessments.

Aparicio et al., (2018) came up with a similar stance arguing that the emergence of online courses and virtual classes for students provides a flexible learning environment to the students while increasing their access to different knowledge-based platforms rather than relying on books. However, the researcher stressed upon opting for a blended learning approach to combat the challenges related to interaction among students and the vitality of physical activities of students. In addition, Hamid et al., (2018) conducted research and introduced e-learning as a VLE environment referring to the virtual learning environment. The researchers argued that VLE platforms enhance the overall learning and development experience for the students. However, Hamid et al., (2018) referred to the research arguments of Kintu, Zhu and Kagambe (2017) who stressed upon combining the physical and virtual learning modes ensures an easy distribution of learning material among students for both modes of learning while complying with the globally acclaimed educational system and

keeping pace with the traditional modes of education. As the most recent contribution, Gautam (2020) highlighted that e-learning facilitates students to have an easy access to the course material while fostering learning at the ease of their homes. Likewise, Mukhtar et al., (2020) highlighted reduced travel expenses as a key benefit of e-learning. Likewise, the studies also identified that e-learning reduced the administrative burden of the teachers specifically the time consumed in marketing attendance, tracking the record of leaves, and recording the time of entering and leaving the classes where they could focus more on teaching the concepts to the students and answering their queries during the session without at a facility of their home. In addition, e-learning capacitated the students to become an independent learner.

However, there are considerable research which have highlighted the challenges associated to e-learning which include confinement of students to theoretical knowledge, no social interaction, lack of communication and physical discussion between students and teachers, easy access to different databases which leads to a reduced level of critical thinking as well as limitation of students on objective exams and questions. Karthigesu et al., (2014) highlighted awareness of students and teachers with the latest technologies as a key challenge arguing that since the students and teachers are used to traditional institutional culture, therefore, it becomes difficult for them to adapt to the new systems and processes. Kisanga and Ireson (2015) took a broader approach and highlighted technology infrastructural issues and cultural diversity as academic challenges which are associated to e-learning.

Recently, Shadiev and Yang (2020) conducted research and identified technical issues related to the software, bugs and the risks of informational hacking as a key challenge associated to the amalgamation of technology with education. The researchers highlighted the need for both teachers and students to get technical help when needed to ensure an effective and efficient operation of the system. Not only this but the researchers also backed the findings of previous researchers Markova, Glazkova and Zaborova (2019) who identified technical difficulties as a key hindrance impacting the vitality of virtual learning platforms. In brief, if the findings of these studies are evaluated, it is quite evident that most of the studies are centred on a higher level of education where the views of students and teachers from high school, college and university levels have been considered. The studies which have focused

on primary level students are quite rare both in and outside Dubai which calls for the need to conduct more research. In addition to that, it is also highlighted that not any researcher has considered the opportunities and challenges which teachers at the primary school section face due to e-learning which is a key research gap. This primary school section of students cannot be ignored because of the association of this period with the educational development of students; therefore, it is important to analyse the views of teachers about the positive and negative aspects of e-learning for the students at primary school.

i.4. Problem Statement

The uncontrolled expansion of Covid19, the situation of uncertainty and the closure of educational institutions for a prolonged period promoted the schools to opt for e-learning methodology. This e-learning fostered independent learning and enabled the students to study at the ease of their home; however, there are certain challenges associated to it which include no social interaction among students, confinement to objective questions and lack of critical thinking abilities due to easy access to google and other data sources (Aboagye, Yawson & Appiah 2021) & (Report 2021) which have been identified as key gap in literature.

First, majority of the existing studies have taken into consideration the challenges which students at high schools, colleges and universities faced (Aboagye, Yawson & Appiah 2021) & (Aljawarneh n.d.). The studies concerning the impact of the impact of e-learning on school students from both the perspective of teachers, parents and students are quite rare.

Second, the studies related to the views of teachers considering the opportunities and challenges of primary school students are quite limited justifying the need for this study.

These two key gaps in literature formulate the basis of the aim of the study.

i.5. Rationale of the study

The study is based on exploring the opportunities and challenges which are associated to using the e-learning system of education as a teaching medium, from the perspective of teachers in a selected primary school in Dubai. Besides that, the study recommends strategies that teachers and the educational stakeholders can opt for to combat the identified challenges. My personal experience as a teacher in a renowned school in Dubai is one of the key reasons justifying the rationale of this study. I have been associated with the teaching industry for

more than 2 years where I have used e-learning tools and interventions to teach different concepts to the students, conduct different learning-oriented activities and hence perform assessments. I personally had to initially learn the software programs to provide a streamlined learning experience to the students. Besides that, there were a few times where I found many students losing interest in the virtual classes, especially in the primary section. However, based on my personal experience, I claim that the teachers are given very limited opportunity to discuss their views and experience with the e-learning medium of learning. In addition to that, the identified gaps which have been discussed in the problem statement also highlight the need to conduct this study along with my personal experience instigating my interest to further explore the unleashed opportunities and the existing challenges from the views of teachers in the selected school of Dubai.

i.6. Research aims and objectives

This study aims to explore the opportunities and challenges which are associated to using the e-learning system of education as a teaching medium, from the perspective of teachers in a selected primary school in Dubai. Besides that, the study recommends strategies which teachers and the educational stakeholders can opt for to combat the identified challenges.

In adherence to the rationale and aim of the study, this research encompasses the following research objectives:

1. To understand current e-learning systems used to support teaching and learning in the case school
2. To identify the opportunities and challenges associated with using the e-learning system in the classroom from the perspectives of teachers at primary school.
3. To recommend strategies for teachers and school management that can help deal with the identified challenges.

i.7. Research questions

The study is primarily based on one primary research question (RQ) and one sub-research question which is stated as follows:

RQ1: What are the opportunities and challenges of e-learning from the perspectives of teachers while teaching primary students?

RQ1a: What strategies can be opted to reduce deal with the challenges associated to e-learning?

i.8. Significance of the study

This study is significant from both academic and practical perspectives. Its importance, when analysed from academic perspective highlights that the results of the study will contribute to bridging the identified gap in the literature through considering the perspective of teachers at a selected primary school in Dubai. The study involves an in-depth analysis of the findings of the previous studies which are then compared with the views and opinions of the teachers at the selected primary school for similarities and differences. Doing so enabled the researcher to understand the extent to which the identified opportunities and challenging aspects are similar and different for both the higher-level students and primary school students.

From a practical perspective, since the study is based on primary data following which the experiences and opinions of teachers at the selected primary school are taken into consideration, therefore, the reliability level of the results is automatically increased. Furthermore, the results of the study provide a guideline to the educationists and policymakers to design strategies to combat the identified challenges of e-learning. In addition to that, the study highlights the strategies which primary school teachers can opt for to combat the e-learning challenges. The findings of the study also provide a guided framework to the teachers, educationists, and policymakers to be aware of the issues they might encounter in the future. Finally, the study findings provide a ground to future researchers to base their research on the present study exploration as a contribution to this knowledge domain.

i.9. Thesis Structure

The thesis is divided in different chapters. The topic introduction, problem statement, rationale of the study as well as the research questions are elaborated in the first chapter. The second chapter formulates theoretical underpinnings where a detailed literary analysis is conducted. The third chapter highlights methodological aspects using the research onion framework. The fourth chapter discusses the results of the interviews in a discussion form after conducting thematic analysis by Braun and Clarke (2016). Ethical considerations, limitations, future scope, and conclusion of the study are elaborated in the last chapter.

Chapter 2

ii Literature Review

This chapter presents an analytical view of the previous studies which have been conducted concerning the impact of e-learning and the associated opportunities and challenges. This literary analysis formulates a theoretical foundation of study providing a chance to further compare the findings of the present study with the results and findings of the previous studies. The chapter is divided into different sections. The first section introduces the concept of e-learning through giving a brief overview of the history and origination of the concept of e-learning. The second section presents a brief overview of the latest research explaining the definitional perspectives of e-learning, whereas the third section consists of the analytical view covering both challenges and opportunities discussed chronologically.

ii.1. What is e-learning

ii.1.1. Conceptualization of e-learning

The advancement of eLearning is linked to technological advancements, as well as improved computer affordability. The first kind of electronic education, Computer-Based Training (CBT), was created in the late 1980s and early 1990s of the previous centuries (Hubackova, 2014). This is said to be the foundation of today's eLearning. The CBT system necessitates the interconnection of a personal computer to another kind of multimedia, such as a CD-ROM. Even though the system itself represented a significant advancement, its content was not fully developed, and it lacked several subsequent elements of eLearning, such as no time or location constraints. Parallel to the growth of CBT, technology progressed, eventually leading to the advent of the internet and the construction of the web system. In this instance, the origins and technical foundation were also in the United States. Technology has made strides. (Hubackova 2014)

At first, data could only be transmitted in text format, although in the early 1990s, browsers were developed that allowed users to add visuals to the text. (Hubackova 2014) The internet grew swiftly, and its cost dropped, making it more accessible to the middle class. The web system was upgraded to become the now famous and widely used www (world wide web).

The emergence of eLearning, created as well as published on the tenth anniversary of such a learning technique, discusses its origin and ties that with the web adaptation to the information resource that is kept here and made available to all participants through the Internet connection. The new Web-Based Training (WBT) program was established. Not only were new programs built to instruct, but also to effectively communicate amongst the teacher along with the student (Hubackova 2014)

The new system was like the one in use today, although it was only given a name during 1999. The WBT system was rapidly growing, and the related programs were developing as well. "In combination with the pedagogical approach, which therefore began to be more and more mandated throughout 2002, with managerial control, hybrid learning, and evidently positive outcomes from some universities along with companies, it demonstrates that eLearning has its benefits and can be successfully used not just for distance but also for face-to-face schooling" ((Hubackova 2014), Page Number 2). These terms apply to the first stages of development as well. The present use of electronic modes of learning in Europe was documented by the Council of the European Union during 2002.

The discussion regarding eLearning programs for the years 2002-2006 began only the following year. Its primary purpose was to disseminate information about innovative teaching methods, as well as to enhance the educational system. The required amount of expenses for eLearning advancement was concretized inside the Council of the European Union meeting in Barcelona. This advice applied to all member nations and provided a solid foundation for the development of innovative educational methods. A fresh wave of eLearning advancements has begun, primarily in the content and structure of new university courses and programs. This tendency has also affected the use of electronic forms of education throughout the Czech Republic. Interaction with other countries was greatly aided by the subproject ODL NET (Learning and Distance Learning Connectivity for Exchange Encounters). ((Hubackova 2014), Page 3)

This initiative was created as part of the European program Sokrates, that promotes remote education via the use of information and communication technology. This was done not merely to make eLearning available, but also to elucidate its theoretical foundation. This was intended for teachers who had begun to use these formats, as well as writers of new programs

and students who may advantage from these new learning methods in the first place. The goal of this initiative was to allow all users of new kinds of learning to share their experiences. The following are the most essential objectives: To enhance the effectiveness of on-line teaching by incorporating new learning and methodological techniques, as well as to keep the academic community informed about technological advancements in the field of online education.

With some foresight, eLearning was adopted first and foremost by huge corporations, who were unconcerned about the relatively hefty initial financial investment. Its advantages, on the other hand, were rapidly recognized by rectors and academic university legislative bodies. They encouraged the establishment of computer networks within colleges alongside the cooperation of the Ministry of Education, Youth, as well as Sports, which might eventually link to the Internet nearly immediately. CTU (VUT) began the procedure in 1991. Ever since the turn of the millennium, the adoption of eLearning in universities has progressed at a rapid rate, which has continued until this day. Other institutions quickly joined the CTU, notably the University of Hradec Kralove (UHK), which was supported by the Faculty of Informatics and Management in this case (FIM). Therefore, we have seen the spread of eLearning into secondary and elementary schools in recent years. In today's world, higher education is where eLearning is most used. Moreover, with the emergence of Covid-19, the adoption of e-learning has spread all over the world. The countries had no other choice than to adopt the e-learning techniques to continue the education of their students. In the United Arab Emirates, the government adopted Microsoft Teams as their main e-learning platform where they provided the students with online classes and through various other tools provided by the Teams, they provided the best possible education to the students (Microsoft, 2020). Other than the United Arab Emirates, almost all the countries from all over the world, they adopted the available best ways to provide online classes to their students.

ii.1.2. View of latest definitions

Researchers presented several definitions of e-learning; however, the definitions seem to be interconnected with minimal difference in the approach utilized to define the concept. Samir et al., (2014) defined e-learning as an online educational setting which requires the support of all kinds of ICT tools and electronic devices to conduct lectures and teaching sessions. Gaebel et al., (2014) further elaborated this concept and highlighted the use of web-based sources and software programs to enrol in different degree programs and attend the classes without the mandatory requirement of the physical presence of students or teachers.

Aljawarneh (2020) considered a broader perspective of e-learning and defined it as a web-based education, alternatively referred to as digital learning, which facilitates an interactive approach of learning while providing computer-based assistance to the students. Most recently, Lara et al., (2020) used the word internet learning to refer to the e-learning approach and defined it as an online system of education where the students have an opportunity to explore and utilize the modern technological tools to learn new concepts and improve their knowledge base.

ii.2. Key theories and frameworks of e-learning

ii.2.1. RAT model

Dr. Joan Hughes established the RAT Model, which enables instructors to examine their use of technology throughout the classroom. Digital technology can be employed throughout the classroom as a substitute, augmentation, or transformation, as per the RAT Model. The term "replacement" alludes to the utilization of technology that does not alter educational methods in any manner. The technology is merely a new method of achieving the same educational goal. When a work stays basically the very same, however technology is used to boost efficiency, effectiveness, and production, this is referred to as amplification. While technology "reinvents components of education, learning, or curriculum in new and imaginative methods," transformation happens. When all these options are viable, amplification as well as transformation are more successful than replacement. Teachers are

invited to remark on and evaluate the utilization of technology throughout the classroom using the RAT Model. (E.D.U.P.E.D.I.A. 2018)

In the classroom (whether face-to-face or online), technology may be used for a variety of objectives. The RAT framework is such an approach to categorize these goals. Teaching and learning can be replaced, amplified, or transformed because of the development of new technologies. While new technology delivers "unconventional modes to the same educational purpose," it is referred to as technology as a substitute. A teacher who lets pupils use word processing software to underline unfamiliar terms inside a text instead of a highlight marker upon a printed page is an instance of replacement. Improvements in efficiency and production are referred to as amplification. Teachers, for instance, can increase their operational efficiency by using word processors to create and then continually update teaching materials using spreadsheet software to monitor and compute grades, without altering the activity at hand. (E.D.U.P.E.D.I.A. 2018)

The RAT model is helpful for teachers as they integrate technology into the classroom. The first step of replacement is concerned with the process in which the technology takes place of other traditional methods of teaching material. The process of amplification involves the process in which technology increases efficiency along with productivity without bringing forth a strong level of change towards the overall lesson impartment process. Lastly, the transformation process involves the fact that technology completely tends to transform the lesson towards instruction and learning that was previously not achievable. The model aims to simplify the teaching process as far as technological adaptation is concerned. It is imperative to understand that a focus on technological adaptation and integration in an effective manner brings forth ease and convenience as far as the adoption of e-learning techniques are involved. (Harandi 2015)

RAT, which is also known as Replacement, Amplification, and Transformation is a framework created by Dr. Joan to replace the existing ways of teaching with newer ones, amplify the learning that was occurring and at the same time, transform the ways in which the education is being provided to the students without having a negative impact on the outcome for students (Kimmons n.d.)

The technology is based on 3 main principles, which are:

- 1. Replace:** is the technology which doesn't change anything from the side of the outcome for the student but focuses on changing the digital means of providing education to the student for the same instructional end with different efficiency.
- 2. Amplify:** in this technology the effectiveness, efficiency, and productivity of the technology that is being used to provide digital education to the students. This technology focuses on making changes in the same technology to make it quicker, efficient, effective, and productive without having to make root changes.
- 3. Transform:** this technology is to make changes in the system in a way that it reinvents aspects of learning, instruction, or curriculum which the students' study in a new and original way. If we take an example, new people might be added to the process, new cognitive forms might be added or new content might be made accessible by the students in order to make the system easier to access and use (Edges n.d.)

ii.2.2. Tpack Framework

The TPACK framework, which emphasizes on technical knowledge (TK), pedagogical knowledge (PK), as well as content knowledge (CK), provides a practical solution to many of the challenges instructors have when adopting educational technology (EdTech) throughout their classrooms. The TPACK framework illustrates how material (what is being taught) combined with pedagogy (how the instructor transmits that subject) should lay the cornerstone for any successful EdTech incorporation by distinguishing between these three forms of knowledge. It is significant since, to add value to students' learning experiences, the technology being adopted must convey the material and complement the pedagogy.

Specific technical tools (hardware, software, apps, related information literacy practices, and so on) are effectively employed to train and assist students forward towards a deeper, more comprehensive grasp of the subject matter, as per the TPACK framework. Inside the TPACK framework, the three categories of knowledge – TK, PK, and CK – are therefore merged and reassembled in numerous ways. Technological pedagogical knowledge (TPK) represents the relationships and interconnections among technological tools as well as pedagogical practices, pedagogical content knowledge (PCK) characterizes the same across pedagogical

practices as well as specific learning goals, and technological content knowledge (TCK) identifies the same across technologies along with learning objectives. The three categories are then combined to form TPACK, which considers the connections between them all and recognizes that educators are working in a complicated environment.

Since the advanced models outlined above create a range of individual educational contexts, TPACK has maintained such a potent idea for over 12 years. Every successful use of technology throughout the classroom necessitates an understanding of the dynamic, transactional connection that exists between content, pedagogy, as well as inbound technology - all inside the settings of diverse schools, classrooms, along with cultures. Due to factors including the educator, grade level, classroom demographics, and much more, each circumstance will necessitate a somewhat different strategy to EdTech integration. There is no one-size-fits-all mix of content, pedagogy, as well as EdTech that will function in every situation, and TPACK allows academics and practitioners to adjust its framework to varied situations.

Content knowledge is one of the most essential aspects of TPACK. Teachers' content knowledge refers to their understanding of the subject matter. Knowledge about concepts, theories, facts, as well as organizational frameworks inside a subject area could be included in CK, as well as best practices and established techniques to present this knowledge among students in the field. Pedagogical Knowledge refers to instructors' understanding of teaching and learning techniques, procedures, and approaches. PK incorporates the objectives, values, and goals of education as a generalized kind of knowledge and may relate to more specialized areas such as student learning styles, classroom management skills, lesson preparation, as well as assessments.

Teachers' technical knowledge (TK) refers to their understanding of and capacity to use a variety of technologies, technological tools, and related resources. Understanding EdTech, analysing its potential for a certain topic area or classroom, learning to identify when it will help or hinder learning, and always learning and adapting to new technological offers are all part of TK. Teachers' understanding of core areas of teaching and learning, such as curriculum creation, student assessment, including reporting outcomes is referred to as pedagogical content knowledge (PCK). PCK is concerned with enhancing learning and

exploring the connections between pedagogy and its supporting behaviours (curriculum, assessment, etc.).

Teachers' grasp as to how technology, as well as the content, may both impact and push against one another is referred to as technological content knowledge (TCK). TCK entails determining how various EdTech solutions can impart subject content and determining which EdTech tools are best suited for certain topic subjects or courses. Teachers' awareness of how certain technologies might transform both the teaching and learning processes by introducing innovative pedagogical affordances and restrictions is referred to as technological pedagogical knowledge (TPK). Recognizing how such technologies may be used alongside teaching in ways that are suitable to the field as well as the progress of the lesson at hand is another part of TPK.

TPACK is the culmination of these many permutations and objectives, combining them – as well as the three basic domains of content, pedagogy, as well as technology – to provide an effective foundation for teaching with technology within education. Teachers must be receptive to some important principles to effectively use the TPACK framework, such as Various content inculcations require varying abilities but also skill sets from students, and therefore EdTech can help alleviate a few of these requirements. Students are coming through into the classroom with a variety of backgrounds – including prior educational experience and knowledge towards technology – and lessons utilizing EdTech must take full responsibility for this possibility (Kimmons n.d.)

As it was mentioned above, TPACK plays a crucial role in enabling digital instructors in the way they teach. That is because it enables them to select and use software and hardware, at the same time, identify the affordance of a particular feature and then use it in the way of their teaching. It is a very useful and effective way of teaching students.

ii.2.3. Connectivism

Connectivism is a comparatively recent learning theory that proposes that students link their ideas, theories, as well as general knowledge in a productive way. It recognizes that technology is an important element of the learning process and that our continual connectivity allows us to make decisions about our education. It also encourages group participation and

debate, providing for a variety of opinions and perspectives while making decisions, fixing problems, and interpreting data. Connectivism encourages learning that takes place outside of the classroom, including through social media, networking sites, blogs, and information databases.

Learning, as per connectivism, is much more than our individual internal knowledge production. Alternatively, we may learn from what we can access through the external networks. Two phrases and links—have become widely used to represent how humans acquire and connect information inside a network based on this principle. Students are viewed as "nodes" inside a network under connectivism. Every object that can be linked to some other object, such as a book, webpage, or person, is referred to as a node. Connectivism is founded on the idea that we learn by making connections, as "links," among different "nodes" of data, and that we continue building and retain those connections as we gain knowledge.

The new learning obligations transfer from the instructor to the student under a connectivism perspective. Unlike conventional teaching techniques and ideas such as constructivism as well as cognitivism, the teacher's role is to assist students in becoming successful agents of their own learning along with growth. To put it another way, the student is responsible for creating their individual learning experience, making decisions, and expanding their learning networks. Since connectivism is primarily reliant on technology, the primary step in establishing a connectivism classroom is to expand digital learning possibilities, including online courses, webinars, social media, and blogs (Wang n.d.)

Connectivism, it is another way that teachers use in providing digital education to their students. It suggests that the students put together their thoughts, theories, and general information in a useful way. Technology is accepted as a major player in this learning process. It is a different but very useful way that is used to provide education to the students digitally.

ii.2.4. The Behaviourist Learning Theory

B.F. Skinner's work, which postulated that learning happens through a succession of rewards or punishments, is incorporated into Behaviourist Learning Theory. Although Skinner argued that this was the best method to learn, Behaviourist Theory is now most typically used in schools as a behaviour management technique. Educators, on the other hand, continue to use rote practice and repetition, both of which are tied to Behaviourist Theory. Rewarding actions increase the chance of recurrence, while punishing behaviours decrease the probability of repetition, as per Skinner. In addition, he proposed that incentives and punishments might be positive or negative. Many people will be perplexed by this! When we provide or add anything to the environment, we have a positive interaction; if we take something away, we have a negative interaction. Eliminating an undesired task off the agenda, for example, might be a negative incentive.

The behavioural learning theory is crucial in understanding how to encourage and assist pupils throughout the classroom. As a result of a reaction to the relevant stimulus, information is passed from teachers to students. In behavioural learning, students, therefore, exist as passive participant; teachers provide them with knowledge because of a stimulus-response system. Thus, the teachers are responsible for teaching pupils how to behave and react to specific stimuli using behaviourism. This should be executed on a frequent basis to educate pupils of the behaviour that a teacher is searching for. The behavioural learning theory emphasizes the importance of positive reinforcement. Pupils would rapidly forsake their comments and positive responses if they do not appear to be containing any positive reinforcement (Hambulo & nd n.d.)

ii.2.5. The Cognitive Learning Theory

The learner is a proactive participant throughout the process, according to Cognitive Learning Theory. They bring their own talents, expertise, memories, and pertinent information from previous experiences to the table. Individual's process and develop their own comprehension of any concept because of their prior experiences and expertise while trying something new. Learning occurs in a social context and therefore is influenced by the

person, environment, and behaviour, according to social cognitive theory. According to social cognitive theory, a person's capacity to function and learn is influenced by a few circumstances. Both their inner thoughts as well as the external elements that surround them can influence their cognitive process. Behaviour and learning are influenced by social interactions, what they see surrounding them, observed behaviour, and how they perceive these things.

Teachers can employ cognitive learning tactics to help their pupils learn more effectively. They can design behavioural systems that foster better conduct through cognitive learning. They can assist students to feel more confident in their studies by creating a calm and informed classroom environment. They can also assist in the creation of an atmosphere that is based on positive thinking, which can lead to improved learning. It also is beneficial for instructors to collaborate with parents to provide healthy learning environments outside of the classroom (Erisen n.d.)

ii.2.6. The Active Learning Theory

Discussions, problem-solving, case analysis, role-playing, as well as other hands-on approaches are used to engage students in understanding the course material through active learning. This approach requires the student to be more engaged than passive methods including lectures along with seminars. It encourages students to participate in meaningful material engagement, both individually and throughout the classroom as a whole. A teacher who serves as a guide, organizing the education rather than focusing on obtaining factual knowledge, is an important component of effective active learning sessions. Rather, they aid in the development of a student's capacity to comprehend concepts along with ideas by allowing them to interact with the course material.

Game-based learning is one of the most well-known examples of active learning, in which students are experiencing so much fun with the content that they do not even realize they are learning anything. Reciprocal questioning, that encourages students to design their own courses or ask their own questions about a topic, is also an effective method. Another frequent strategy is to take a break during a lecture and allow students to process knowledge, as well as ask questions or solve issues. Students are motivated to explain various concepts to their

peers through peer teaching activities, which are also effective active learning tactics. Rotating chair group discussions, a much briefer peer teaching strategy, is also a good way to keep students involved by allowing each student to describe a subject and then having the next participant summarize the preceding student's comments (Brame 2022)

ii.3. Analysis of the previous studies

Literature has extensively identified e-learning as one of the most vital elements of the educational system all around the world; however, the fast-paced technological development has triggered the interest of researchers and theorists to focus on this domain of study to a great extent and from different perspectives. Most of the studies which were conducted in the era of early 2000s considered a generic view of e-learning and hence focused on understanding its benefits and challenging aspects as compared to traditional modes of learning while acknowledging the opportunities available for the educational institutions in the next few years due to the forecasted wave of technological revolution. The studies analysed e-learning from different aspects which included theoretical review, views of teachers, students and parents ensuring that the experiences and opinions of all the key stakeholders are included while developing a stance about its efficacy for the educational development and learning-orientation of students. For instance, Selim (2007) conducted a study intending to understand the critical success factors which were attributed to e-learning approach. The researcher clearly identified characteristics and personal inclination of both students and teachers, technology-based infrastructure and the extent of support received from the educational institutions streamlining the implementation of different learning and teaching software as the key considerable factors determining the success or failure of e-learning. The researcher further compared all the identified critical factors and created a hierarchy based on their criticality and importance for the successful implementation of e-learning where the characteristics and personal interest of teachers were identified as the most challenging aspect. IT infrastructure was placed in second place followed by the university support. According to (Selim n.d.) (2007), the characteristics and interests of students were

a critical factor; however, it had the least impact on the success and efficacy of the learning program when compared with other constructs.

(Lara, Aljawarneh & Pamplona 2020) contributed to this comparative view of traditional and online modes of learning, considering the goals, benefits, and challenging aspects of both approaches. The researchers identified that physical classrooms were necessary to foster collaboration and interaction among students, whereas, in adherence to the modern approaches of learning, most of the teachers preferred MOODLE and related software programs over Blackboard due to its flexible nature. Despite acknowledging e-learning as a preferred approach, the researchers also highlighted security issues associated to the use of different software programs as a key threatening agent which may hinder the process of active learning and development of students. This stance of increased interest of teachers in the online tools of learning was also reflected in the research findings of (Yengin, Karahoca & Karahoca 2011) who pointed out e-learning as a mode of academic progress of students; however, the extent of student development depends on the usability of the software for learning, the performance trend of teachers and satisfaction of both teachers and students with the e-learning mechanism. The researchers further developed “E-learning Success Model for Instructors” which was an accountability and monitoring program designed to assess the technical communication, level of indulgence and interest of teachers in e-learning tools along with assessing the rate of student’s participation and satisfaction with online learning system (Yengin, Karahoca & Karahoca 2011)

Another important consideration which several studies conducted in the era of 2000s highlighted included an evaluation of the existing e-learning system followed by suggesting different ways of improving its implementation for the educational institutions. For instance, (Goyal 2012) emphasized the vitality and effectiveness of e-learning based teaching mechanisms while calling for the needs of instructor-led trainings (ILT) to be organized for the teachers in order to create a balance between the conventional method of teaching and e-learning. Likewise, the study findings of Oludare, Grace and Thomas, (2012) also acknowledged the emergence of e-learning as a new yet revolutionary mechanism in the domain of learning and teaching. However, the researchers identified reduced interaction among teachers and students as a challenging aspect of e-learning, suggesting the concept of

blended learning combining both physical and online modes of learning to ensure a combination of flexible online learning and social interaction of students with each other, teachers and the community. Considering the challenges related to social interaction as identified by Oludare, Grace and Thomas (2012), (Toro & Joshi 2013) conducted research investigating the attributes, advantages as well as challenging aspects of e-learning from a broader perspective. The researchers identified cultural hindrances as a key challenge for teachers and students in an e-learning environment. The results proclaimed the physical classrooms foster behavioural development of students, enabling them to embrace cultural differences; however, the efficacy of e-learning cannot be undermined as well. Therefore, the researchers suggested a need for teachers to design effective learning and educational activities for students where they can learn cultural and behavioural attributes in both physical and virtual learning environments (Toro & Joshi 2013)

The next aspect which literary studies have identified is the relationship of e-learning with students' motivation and engagement discussed both as an opportunity as well as a challenge. Considering e-learning as an opportunity, studies have identified that virtual modes of learning foster motivation among students to learn and understand new concepts, theories, and frameworks in a flexible learning environment. Students have access to multiple knowledge sources both physical and online where they can look for different articles, research, YouTube videos, social media platforms and many other social networking groups to widen their view and understanding of the topic. Online discussions among students and a critical view of the topic further motivate the students to brainstorm, evaluate different aspects and hence pay attention to details in order to grasp a full understanding of the topic (Abou El-Seoud 2014). On the contrary, (Harandi 2015) views e-learning platforms as a challenging aspect when discussed within the context of their impact of the motivation level of students. The researcher argued the findings of previous studies and highlighted that lack of physical and face-to-face interaction among students creates a gap between students and teachers. Not only this but the sole reliance on e-learning platforms also makes it difficult for the teachers to trace if students are hesitant in sharing their concerns, issues, or any problems related to studies. Therefore, the chances of miscommunication may increase. However, one limitation of the arguments posited by (Harandi 2015) was that the results cannot be

generalized because the study was confined to only one culture and hence took into account the views of teachers at one locality.

The efficacy of e-learning has further been discussed within the context of instigating a trend of innovation among students. The research conducted at the Payame Noor University of Hamedan, Iran highlighted that the electronic modes of learning develop critical thinking skills among students where an easy access to diversified knowledge sources increases their awareness and fastens their information processing ability which leads to the generation of innovative ideas (Zare et al. 2016). The researchers experimented the efficacy on one group of Chemistry students at the university and hence proclaimed e-learning as an opportunity to bring in innovation among students, when introduced at a wider scale and to broader audience. Likewise, (Somayeh 2016) conducted research evaluating the extent of effectiveness of e-learning through conducting literature review where all data related to the previous studies was collected through Medline and CINAHL databases, consisting of 38 papers. The researchers clearly identified that virtual classrooms promote more learning among students where the teachers can cater individual needs and hence the process of learning is evidently improved. Results of the study also highlighted that e-learning provokes independent learning where students learn to take ownership of their studies and learning and get indulged in researching about different topics which further capacitates them to think innovatively (Somayeh 2016).

Recently, (Ali, Hossain & Ahmed 2021) expanded the scope of their study and tested the views of students about the vitality of e-learning at a university level. A survey questionnaire was designed and distributed among 700 students. 94.9% of the participants were familiar with e-learning and had used any of the e-learning platforms, techniques, or tools. A few benefits of e-learning which the students identified included time-efficiency, affordability, ease of use and free time to think about different ideas and business plans. This stance was also quite evident in the research findings of Gautam (2020) who proclaimed that the students can easily manage online learning where they can access the learning material 24 hours a day at the facility of their home. The researcher further advocated for the implementation of virtual modes of learning stating that it saves the cost of travelling and accompanied expenses of the students as compared to the traditional modes of learning. (Mukhtar et al. n.d.) (2020)

also backed the stance of (Gautam n.d.) and highlighted that e-learning reduces the administrative efforts of teachers, especially the attendance time which can, now, be dedicated to the learning and development of students. The researchers further identified e-learning as a self-directed learning approach.

However, despite all these benefits, many studies were confined to highlighting the challenging aspects associated with e-learning which included reliance on theoretical knowledge, less interaction among peers and less exposure to practical and collaborative skills. (Kong 2018) investigated the perceptions of parents about e-learning while determining the need to develop collaboration between parents and the school administration from the streamlined learning experience. A survey questionnaire was distributed to 61 parents in 21 different schools of Hong Kong. Besides that, focused group discussions were conducted as a probing technique to attain more data. Results of the study demonstrated that parents had a very basic understanding of the usage of e-learning platforms which might have an impact on the presence and engagement of students. Therefore, it was important to strategize for developing a mechanism of connecting parents and teachers to provide support to the students. The study further recommended for the schools to design a collaborative program between schools and parents fostering a proactive e-learning policy in order to alleviate the concerns of parents responsively (Kong 2018)

(Shahmoradi n.d.) (2018) argued that the fast-paced development of information technology in the field of education has introduced new methods of teaching and learning in Iran. E-learning programs have been introduced in schools and higher levels which are a prerequisite to enable them for the global competition. Keeping in view this transition, the researcher conducted a survey with 300 students who were selected through stratified random sampling. The research revealed that although most of the students were familiar with the e-learning methodology; however, 40% of the students pointed out access issues as a key hindrance for them. Likewise, a significant number of students identified cultural and lingual barriers as another challenge associated to reduced physical interaction between students and teachers (Shahmoradi n.d.) (2018). Recently, (Aboagye, Yawson & Appiah 2021) identified a similar aspect attributed to e-learning and stated that lack of face-to-face learning experience is a key hindrance to e-learning. Likewise, when analysed from the perspectives of teachers, online

assessment of the extent to which students have gained skills and have grasped the full knowledge is also a challenging aspect. Likewise, the access of students to the internet and different e-learning platforms, availability of appropriate tools, computers or laptops and the threat of data breach was also highlighted as challenging factors (Aboagye, Yawson & Appiah 2021)

The next literary aspect which emerged from this analysis of previous studies catered developing an understanding of the importance, need and impact of e-learning on the learning ability of students during Covid19. Most of the studies which were conducted in the year of 2020 and 2021 highlighted Covid19 as a key influencer which pushed many institutions at all levels from pre-school to university level and certification programs to implement a structured program of virtual learning through introducing online classes. Since the pandemic threatened human lives and hence closed down all the operations and activities worldwide while confining people to their homes, therefore, educational institutions were left with no choice but to adhere to the international standards of blended learning amalgamating both physical and online modes of education in both developed and developing countries (Vlasenko 2020). Although a number of institutions had to face challenges related to cost, investment, streamlining, training and availability of online sources along with the requirement of redesigning the curriculum catering for the online learning needs of the students; however, they had to undergo this sudden transition in order to bridge the learning gap of students (Mailizar, Abdulsalam & Suci n.d.).

This aspect was evident in the research findings of Maatuk et al., (2021) who conducted a descriptive analysis of the views, opinions and experiences of students and teachers at the University of Benghazi with a focus on their information technology department. Both students and teachers were given different questionnaires which consisted of four sections including the importance of the use of e-learning during Covid19, advantages, challenges, and hindrances of implementation of e-learning system. The results of the study identified that e-learning contributed to improved innovation and independent learning among students. Not only this but virtual classrooms proved to be a relief for the teachers where their workload and the mandatory requirement of the physical presence of teachers in the institution and class were released. However, the teachers identified a lack of technical support as a key

challenge for them which hindered the efficacy of taking online lectured. Likewise, the training and inculcation of skills relevant to usage of software were also identified as a challenging yet considerable aspect. Overall, students and teachers were satisfied with e-learning platforms.

In brief, extensive literature is present concerning the opportunities and challenges of e-learning; however, the studies have primarily focused on the students at the college and university level which leaves a gap in the literature about the efficacy of e-learning programs and opportunities and challenges at a school level. The prevailing pandemic of Covid19 has further triggered the need for schools at both primary and high levels to implement e-learning programs; however, for effective implementation and strategizing, there is a need to cover the identified research gap which justifies the need for this study.

The rise of e-learning in Dubai started almost a decade but with the emergence of the Covid-19 pandemic, almost the entire education sector changed to e-learning. Not only in Dubai but entire the United Arab Emirates. In the higher education institutes, different colleges and universities started to adopt different platforms such as Blackboard, Moodle, Teams, Google Meet and many more. As the institutions weren't fully ready for the immediate change in the way of providing education, there are many challenges that appeared in providing digital education to the students.

Some researchers conducted research on e-learning in higher education in Dubai by (Gokah, 2022) where they have found out some very interesting results, which are as follows:

- There are many big companies that are working on providing the best possible technologies to the education sector in UAE to provide education to the students in best possible way. The companies include IBM and Polycot, Khalifa University of Science, and many other companies.
- Results from the research state that the overall satisfaction level of the students from the e-learning in Dubai or in general in the UAE is very good and almost all the students are happy with the way they are receiving their education.
- Moreover, the research's results also stated that there is no significant difference between satisfaction levels among postgraduate and understand level e-learners (Gokah n.d.)

Chapter 3

iii Research Methodology

Research methodology is referred to as an explanation of the methods, techniques and tools which are adopted for data collection and analysis to fulfil the pre-defined research objectives and hence attain answers to the respective research questions (Leedy, n.d.). In simple words, research methodology caters for “how” aspects of a research ensuring that the research design is systematic, the collected data is reliable, and results are valid adhering to the nature of the study (Leedy, n.d.). Research methodology further specifies the criteria of data collection highlighting the type of data to be collected and ignored, the target participants, population and sample, techniques which may be opted for data collection and the tools facilitating the analysis of collected data. The selected research choices, methods and techniques must justify the research design to be the best fit for the attainment of research objectives.

There are various frameworks and techniques which facilitate the development of an effective research methodology; however, research onion by Saunders et al., (2018) is one of the most widely adopted methodological frameworks which has been selected in this research. A brief description of research onion as a selected methodological approach is as follows:

iii.1. Research onion

Saunders et al., (2018) developed a research onion framework which consists of six different layers. The layers are research philosophy, research approach, research strategy, research methods, time frame, and data collection and analysis.

iii.1.1. Research philosophy

Research philosophy refers to the world view which is alternatively referred to as research paradigm. The concept is concerned about the perceived nature of reality based on which the paradigms are divided into three categories which are positivism, interpretivism and pragmatism (No Title n.d.)

The positivism paradigm refers to objective research where reality is perceived to be logical, singular, abstract, and rational (Research, n.d.). Therefore, objective research is usually

categorized as quantitative or empirical research. On the contrary, interpretivism is deemed to be based on the existence of multiple realities, encompasses subjective nature, and entails to behavioural aspects of a situation, phenomenon, or circumstance too. Qualitative studies are usually considered as being based on the interpretivism paradigm. The third research paradigm is termed as pragmatism which is a blend of both objective and subjective views of reality allowing the researchers to integrate objective and subjective aspects of a situation or circumstance while planning.

This study aims to explore the opportunities and challenges which are associated to using the e-learning system of education as a teaching medium, from the perspective of teachers in a selected primary school in Dubai. Besides that, the study recommends strategies that teachers and educational institutions can opt to enhance the efficacy of e-learning. Considering the rationale of the study; it is quite clear that the topic is quite broad and may encompass several significant factors and situational instances which may influence the existence of opportunities and challenges of e-learning as a teaching medium. Likewise, the personal experience, views, and opinions of the teachers at the primary school in Dubai may also vary. These two reasons justify the categorization of this research encompassing subjective nature which coheres with the philosophical assumptions of interpretivism. Therefore, this stance of the existence of multiplicative realities authenticates that the study is based on the interpretivism research paradigm (Research, n.d.). The research philosophy of this research is mixed between all the research philosophies. That is because education is a sector that is a combination of multiple different elements, which touches almost each and every part of philosophy.

iii.1.2. Research approach

The research approach is the second layer of research onion which is divided into two categories, i.e., inductive research approach and deductive research approach. The deductive approach is based on testing the existing theories, models, or frameworks and fits the situations where the researchers intend to examine the suitability of a certain phenomenon based on pre-existing theory. Snieder and Larner (2009) identified that the deductive approach is the most appropriate for the positivism paradigm which involves the process of

creating a hypothesis and testing the extent or probability of its acceptability. Previously Kothari (2004) highlighted that the characterization of deductive approach progresses from general to where a general theory is initially established which is further tested to gain specific knowledge.

The inductive approach, on the other hand, is based on the development of new theories, frameworks, and research patterns in the data. This research approach does not include the influence of any other frameworks which inform the researcher about data collection and hence the focus or themes of the research are emerged after the data is collected and analysed. Bryman and Bell (2011) stated that the data which is analysed in inductive research generates new data patterns, but the probability of the data cohering with existing theories is also high. The inductive research approach is generally considered associated with qualitative research where the absence of any theory reduces the chances of biasedness in research especially at the stage of data collection.

This study is focused on exploring the opportunities and challenges associated to e-learning from the perspective of teachers in a primary school of Dubai. Since there can be multiple opportunities and challenges which may vary based on the personal opinions, views and experiences of teachers and studies concerning the views of teachers are also rare which increases the probability of generation of new data streams with a focus on primary school students. Therefore, this study was coherent with the inductive approach of research.

iii.1.3. Research strategy

This is the third layer of the research onion which helps the researcher select the strategy or action plan for data collection to meet the pre-defined research objectives. There are several research strategies which can be opted including ethnography, surveys, interviews, observation, focus group discussion, archival research and many more (Walia, 2021). The selection of an appropriate research strategy depends on certain factors which are the nature of the study, time constraints and personal preferences of the researcher regarding the mode of data collection (Walia 2021)

This study is based on the interpretivism paradigm and encompasses a subjective and exploratory nature which creates a room for the researcher to consider opinions, views, and

experiences of the research participants into account while analysing the data. Considering the nature of the study, interview method seems to be the most appropriate research strategy for this study because it will allow the research participants to elaborate or explain their stance and experiences related to the opportunities and challenges which, in their opinion, are associated with using e-learning as a mode of teaching.

iii.1.4. Research choices

This is the fourth layer of research onion which outlines three research choices which are mono-method, multi-method, and mixed method. Mono-method refers to the case where researcher opts for only one mode of data collection which can either be qualitative or quantitative. For example, a researcher can either opt for interview or survey. Multi-method is the second approach which facilitates the researcher to opt for multiple methods of data collection after selecting either qualitative or quantitative approach. For instance, researchers can opt for interview, observation, and focus group discussions as multiple methods of qualitative data. In addition, the mixed method is the third case where data is collected through mixing both qualitative and quantitative techniques. For instance, researcher has a choice of blending survey, interview, focus groups, observation or any other qualitative and quantitative methods (McLeod n.d.)

This study was based on the views of teachers about the challenges and opportunities of e-learning as a teaching method. Since there was only one group of potential research participants, therefore, the researcher was confined to interviews as a mode of data collection which clarifies that the study opted for mono-method of data collection as a research choice.

iii.1.5. Research time frame

This is the fifth layer of the research onion which explains the possible time frames for the researchers to select from to collect data for the research. Research onion divided this timeframe into two categories which are cross-sectional and longitudinal. The cross-sectional mode of data collection refers to the process where data is collected at one point in time. On the contrary, in a longitudinal mode of data collection, all the information related to the research is collected within different time frames or intervals to make a comparative analysis of the change in data trends.

In this study, the researcher aimed to explore the opportunities and challenges of e-learning from the perspectives of teachers at the primary school, which did not require data collection to be divided in different time intervals. Since the data could be collected at one point in time, therefore, the research encompassed a cross-sectional timeframe of data collection.

The time frame that was required for this research had different phases; the first phases start with planning. Then, the requirements, research type, people to be interviewed and many other things were involved. Then, we had to analyse the data and come up with results, which took around a full term to be completed.

iii.1.6. Data collection and analysis

Data collection and analysis is the last layer of research onion which explains the process of collecting data from the research participants and then analysing it.

The data for this research was collected through conducting interviews with the teachers at the primary school section in the selected school of Dubai. The school was selected based on the personal reference of the researcher. A detailed email containing a copy of the research proposal and a consent form was shared with the school's head requesting the management to allow teachers to participate in the study.

The total number of people who participated in this research was **10 teachers**; however, a participation criterion was pre-determined and shared with the management of the school ensuring the participation of only those teachers who met the criteria. The selection criteria for the research participants included the following points:

- The teachers must be associated with the education industry and have a teaching experience of at least 3 years.
- The teachers must have 3 years of experience teaching the primary school children.
- The teachers must be familiar with the concept and implementation of e-learning as a teaching method.
- The teachers should read the whole research proposal, understand the objectives of this study, and must be interested to participate in the research and hence give their volunteer consent of participation without any pressure from the management of the school or the researcher.

After getting the approval from the management of the selected school along with getting the individual email and contact details of the potential research participants, all the teachers who met the criteria of selection were contacted through individual emails requesting them to reply with a signed copy of the attached consent forms. 10 teachers responded back and showed the willingness of participating in the study who were further contacted to schedule an interview session through Zoom or skype based on their availability for 30 minutes recorded session. A copy of the interview questionnaire was shared with the research participants after scheduling the interviews with them. 2 teachers were reluctant in recorded interviews and had very limited availability for online interviews considering which they were requested to send back their replies to the interview questions in written form.

As mentioned previously, the data was collected through interviews for which interview questions were designed and approved by the university prior to sharing with the research participants. A total of 9 interview questions were designed, a few of which consisted to sub-questions. However, the researcher opted for the probing technique of data collection during the interviews following which several unplanned questions were also asked in the case where the interview participant either shared limited information or provided a very generic response. This probing technique helped the researcher understand their experience and opinion about e-learning in a detailed and improved manner. Each interview session was conducted through Skype or Zoom which consisted of approximately 30 minutes and was recorded using a recording device. However, informed consent from the research participants was mandatory.

The next step was data analysis for which a thematic framework by Braun and Clarke (2016) was used to understand the data patterns which emerged as themes from the interview data. The thematic analysis framework was selected because it consists of multiple steps and has extensively been used in exploratory studies which involve interviews as a primary method of data collection from the research participants. All the interviews were transcribed, assigned distinct codes and analysed following the guidelines of the framework which has further been discussed in the following chapter 4 named “data analysis”.

iii.2. Ethical considerations of the study

Ethical considerations refer to the moral aspects which were considered in this study. First, the anonymity of the research participants was a key ethical consideration following which the names, identity, contact number and email addresses of the teachers were kept confidential. Each interview recording and the transcript was assigned a distinct code to discriminate them from each other. This anonymity also facilitated an unbiased analysis where the personal influence, likes and dislikes of the researcher were not taken into consideration while conducting the analysis.

The second aspect of ethical consideration which was considered was confidentiality of the data. All the data related to research participants and the interviews were stored in a password-protected folder with limited access to the researcher only. Likewise, the data will be discarded after the research results are published. In addition to that, the third ethical aspect incorporated in the study was about taking informed consent from both management of the school and the research participants. Not any teacher was forced to participate in the study and a copy of the signed consent form was requested before scheduling an interview with them as a confirmation to their voluntary participation in the research. Not only this, but all the research participants also had a right to withdraw their response from the study within the time frame of 2 weeks after the interview has been conducted; however, a written intimation email is mandatory for that. Fourth, all the information extracted from the findings of the previous studies in the introduction and literature is correctly referenced as an acknowledgement to their contribution in the field of study related to e-learning and the related aspects especially opportunities and challenges concerning e-learning as a teaching method in the current era of digitization. In brief, the study complied with the key ethical standards which are considered important for any academic research.

Chapter 4

iv Data analysis and discussion of results

iv.1. Introduction to the chapter

This chapter presents an analysis and discussion of the results of the data which was collected through conducting interviews with 10 teachers at the selected school of Dubai in order to fulfil the objectives of the study. The chapter is divided into the different sections containing an overview of the analysis, elaboration and discussion about the results emerging from each theme along with excerpts from the transcripts of the interviews of research participants.

iv.2. Thematic analysis

This study was based on exploring the opportunities and challenges of using e-learning as a teaching method for the primary school students, from the perspective of teachers in the selected school of Dubai. The study was based on the interpretivism paradigm and followed an inductive research approach. The data was collected through conducting recorded interviews with 10 primary school teachers at the selected school in Dubai. The collected data were analysed using the thematic analysis framework by Braun and Clarke (2016). Thematic analysis is a multi-stepped framework which is generally used to analyse the qualitative data. The framework consists of six key steps which are data familiarization, coding, review, theme identification, naming themes and reporting. As a first step, 10 recorded interviews for this research were transcribed. These transcriptions were reviewed multiple times for accuracy assuring that all the information which is written is unbiased and correct. Following the second step, these transcribed documents were coded by assigning a distinctive code to each interview which range from Participant 1 (P1) to Participant 10 (P10). The third step was data review where all the data was reviewed highlighting all the important information for further analysis which led to the fourth step where all the highlighted information was further classified based on similar and different aspects discussed ensuring that all the related data is placed in one class. In the fifth step, this classified data was assigned a thematic name to distinguish the emergence of different themes from the analysed data.

Finally, the sixth step consisted of reporting the interpretation of the collected data. A detailed review of the process of generation of themes is presented in the following table.

Emergence of These

The themes that we have in the below table have emerged from the interviews and their data analysis that they have conducted after the interviews. After the interview data were collected and then analysed, there were many results that we have concluded from the data from we have received. From those results, we have some of the themes mentioned below in the table.

1 – Thematic analysis.

The table consists of three columns which are titled as key information, categorization, and themes. The first column entitled as key information contains all the important information which was highlighted in the transcripts. The second column which is entitled categorization divides this highlighted information based on similarities and differences based on which the third column is formed which is entitled as themes containing names of the themes which emerged from the study.

Thematic analysis		
Key information	Categorization	Themes
<ul style="list-style-type: none"> - 3 years of experience - I have been teaching for the last 7 years - I am working as a teacher in this school for 4 years - 5 years - 6 years 	General details of participants	Theme 1 – Familiarity and experience of teachers with e-learning
<ul style="list-style-type: none"> - We provide state-of-the-art educational quality. - Our students are familiar with the modern mediums of learning - We haven't said goodbye to the traditional classroom setting completely but have introduced a blended approach of learning 	E-learning systems used by teachers	

<ul style="list-style-type: none"> - Management of this school is very active - Invested in high-tech software of learning - Organized several trainings for us - Fusion is one of the most effective e-learning systems which we use in our school - Virtual space to upload all the learning material or links to the related resources online - Access the learning material anytime and anywhere - Pamoja as another e-learning mode of teaching - Take online classes where teachers can share their screens with the students - Multimedia-based presentations - Live interactive sessions 		
<ul style="list-style-type: none"> - E-learning saves time for both teachers and students - Focused towards utilizing that time in taking classes - Extra time of learning - Understand multiple points of views - Online research - Improved educational performance - The interest of students in learning new concepts - Many students referred to google sources, YouTube videos and different e-books 	N/A	<p>Theme 2 – e-learning and educational development of students</p>

<ul style="list-style-type: none"> - Clarified the confusions of those students - E-learning based teaching makes the students technologically smart - Drastic improvement in grades and learning of the concepts - Access these learning resources any time through their iPads, tabs, mobile phones, laptops, or desktop computers by just signing into the classroom 		
<ul style="list-style-type: none"> - I am not there to see what my students are doing - Less active students solved them all correctly which raised my concern - I am not sure whether all students have watched the videos which I shared - I must work extra hours to look for tips and tricks and strategies which I can use with primary level students - When students are in front of me in the classroom, I can see their gestures, body language, eye contact and the response of other students as listeners too - My focus is diverted - I personally prefer classroom-based settings for my course - They have a different cultural origin, views, religions, rituals, cultural aspects and most importantly languages - Communication is a big barrier in the case of e-learning 	<p>Challenges</p>	<p style="text-align: center;">Theme 3 – Opportunities and challenges of e-learning</p>

<ul style="list-style-type: none"> - We, as teachers, are still struggling with the issue of cultural difference - I receive assignments, seeing which, I can say that those students couldn't understand the requirements of the task - They are small kids - Assistance from parents and teachers - Grades of many students decreased during Covid19 when we did not have physical interaction of classroom-based learning at all - In a classroom, we, the teachers can control the learning environment - Many students are unable to upload the task in the online classroom's assessment section - We were used to the blended approach of learning where online classes were held only one or two days a week - Redo the instructions as clear and understandable as possible - I am very concerned about my data - It also frustrates me sometimes 		
<ul style="list-style-type: none"> - Schools need to invest in the latest IT infrastructure - E-library for the students is one of the much-needed systems - Digital library for students - It will save their time and lead them to the most related and up to date information related to their subject and the assigned tasks 	<p>Opportunities</p>	

<ul style="list-style-type: none"> - Improved internet connection - Positive word of mouth in the education market while attaining a distinct competitive advantage - The transition from a conventional and blended approach of learning to a 100% virtual learning environment - The level of pollution will automatically be controlled - E-learning does not require students to be present in the classroom, spend money to get textbooks and notes - Teachers can also easily update the information in the e-learning resource without any restriction - Combining the electronic environment of learning with data analytics tools is a great opportunity in the era of the digital revolution 		
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iv.3. Theme 1 – Familiarity and experience of teachers with e-learning

The first theme which emerged from the interviews was named as familiarity of primary school teachers with e-learning mode of teaching. This theme covered the first three interview questions and was further divided into two sections. The first section consists of a brief elaboration of the details about research participants explaining their experience with e-learning, association with the education industry and the time of employment in the selected school. The second section extends this discussion and explains the extent to which the research participants had familiarity and hands-on experience with different systems of e-learning.

“How familiar you were with online education? I already had knowledge on how we can use Google Meet, Microsoft Teams, and other online education technologies. We were even given training once on how we can use these technologies.”

iv.3.1. General details of research participants

A total of 10 teachers from the selected school of Dubai were interviewed. All the teachers were highly experienced and well versed in different teaching methodologies including e-learning methods of teaching. The experience of teachers ranged from 3 years to 7 years teaching primary school students which means that the research participants had exposure to both conventional and e-learning models of teaching. This familiarity and experience of teachers with both modes of teaching authenticate the ability of teachers to compare both modes of teaching and hence elaborate the opportunities and challenges of e-learning in a more elaborative manner backed by their personal experience in the field. All the teachers who participated in the study were associated with a primary section of the school and were associated with the selected school for at least 1 year.

“For how long have you been teaching in the school? I have been working in the primary schools for over 4 years and in this school, I have completed 2 years now.”

“When did you first start giving Online classes? As mentioned above that we have already been trained on how we can use the online classes, but we have never conducted one. Then, with the emergence of COVID-19, we had to conduct online classes and that e-learning training helped a lot.”

iv.3.2. E-learning systems used by teachers

The second aspect of the first theme exploring the level of familiarity of teachers of the selected school with different systems of e-learning along with the experience of using them consisted of the next two interview questions. The research participants were asked about the usage of e-learning modes in the selected school along with elaborating the systems they have used. All the schoolteachers confirmed the high inclination of the selected school towards using e-learning modes of education. The teachers clearly identified that their school was amongst the pioneer institutions who implemented an e-learning system at all educational levels in the school and hence the teachers were also well versed with the systems

used for teaching. P3 elaborated on the direct interest of school's management in implementing modern tools of learning and teaching pedagogies and stated that:

“Yes, of course! In fact, the principal and management team of the school ensured that we provide state of the art educational quality where our students are familiar with the modern mediums of learning. Our school was one of the pioneer schools which transformed the conventional four-walled classrooms into home-based virtual classrooms. Although we haven't said goodbye to the traditional classroom setting completely but have introduced a blended approach of learning where students experience both traditional as well as e-learning modes of education.

This aspect of high level of interest of school's management in e-learning modes of education was also demonstrated in the interview of P8 who stated that:

“Yes, I would say that the management of this school is very active in researching the modern trends of education from both teaching and learning perspectives. We have been using the e-learning mode of teaching for many years. The school has not only invested in high-tech software of learning but has also organized several trainings for us.”

The teachers further highlighted several e-learning systems being used in the school which included Skype, Zoom, Fusion and Pamuja facilitating the virtual environment of learning. Most of the research participants identified Fusion as one of the most effective e-learning systems which eased the process of learning and development for the students while enabling the teachers to work on the distinguished workspaces dedicated for each class to avoid any work-related confusion or overlapping of the tasks. In the words of P1:

“I would say Fusion is one of the most effective e-learning systems which we use in our school. It is especially effective for younger students because it facilitates the creation of dedicated classroom space for each class. Teachers, students, and parents can access the dedicated classroom and hence get to know the tasks assigned, submitted, feedback and grades. Not only this, but we also have a virtual space to upload all the learning material or links to the related resources online which stay there throughout the session. The students can access the learning material anytime and anywhere.”

P4 further shared the experience of using Pamoja software as a collaborative learning tool triggering game-based learning and stated that:

“The school recently introduced Pamoja as another e-learning mode of teaching and learning which proved to be highly effective especially in the times of Covid19. The system allows the students to take online classes where teachers can share their screens with the students, give multimedia-based presentations as well as connect it with Skype account to conduct live interactive sessions with the students”

The teachers were also well-versed in using Skype and Zoom as e-learning modes of teaching and confirmed that all these systems fostered collaborative learning and teaching experience where students can have access to resources of learning, submit assignments and hence the teachers can assign grades to the tasks and send them back to the students. However, for Skype and Zoom, this grading and feedback of assignments were identified as a challenging aspect. In the words of RP6:

“Although we use Zoom and Skype too for enhanced learning of students; however, I personally think that the systems like Fusion and Pamoja are comparatively effective. Zoom and Skype are easy to use but they can only be used to conduct online sessions which may be identified as a key limitation of these systems. Being a teacher, I prefer to share learning resource links with the students and want them to stay in the repository throughout the session which is not possible through Zoom and Skype.

In brief, it was quite evident through the interviews that all the teachers in the selected school had a high level of understanding with different systems of e-learning due to an increased interest of the school management in implementing modern tools of e-learning.

iv.4. Theme 2 – e-learning and educational development of students

The second theme which emerged from the interviews of the teachers at the selected school in Dubai covered the impact of e-learning on the educational development of students. Considering educational development, two key sub-aspects emerged which were how e-

learning impacted academic results of the primary school students and the extent to which it fostered student engagement level.

Considering the educational development of primary school students, most of the teachers proclaimed that adopting electronic modes of learning as a key teaching method enhanced the learning and academic performance of students. The teachers categorized e-learning as a time-efficient approach where students can easily attend classes from their home which saves the time and cost of travelling. It was further identified that the time which students spend in getting ready for school and travelling can effectively be utilized in learning new concepts or completing the assigned tasks, in the case where students must attend online classes. Considering e-learning as a time-efficient approach, P3 stated that:

“In my opinion, e-learning saves time for both teachers and students. For students, they can give extra time to learning whereas teachers, rather than worrying about reaching school on time, maybe more focused towards utilizing that time in taking classes. This extra time of learning which is provided to the students enables them to look for multiple sources of learning which improve their understanding of the concepts, widens their views about the topic, enables them to understand multiple points of view, research online and hence brainstorm about the related aspects of the topic which ultimately improves academic performance.”

The results from the interviews also identified e-learning as an effective medium for the educational development of students stating that it enables them to look for and have access to a variety of different learning resources. The teachers further identified that traditional medium of learning confines the focus of students towards books and assigned class activities; whereas using virtual modes of learning, the students can access Google and other search engines, different articles, e-books and even newspapers to search about the topic in their free time which adds to their learning progression. This point was reflected in the interview of P10 who said that:

“E-learning definitely increases the interest of students in learning new concepts. I have seen many students taking ownership of their learning and development since the time we have introduced online modes of teaching. Being a science teacher of grade 5, I remember, once I just shared with my students the topic that we had planned to cover in the next class

and asked them to do some research. During the discussion in the next class, many students referred to google sources, YouTube videos and different e-books or science blogs available online. I am sure that if I had asked them to read the next topic from page number x of the book, they would not have done this research.”

The research participants also identified social media as one of the most effective mediums of academic success of students, when discussed within the context of e-learning as a teaching method. The teachers proclaimed that many students even in the primary section of the school have created their accounts on Facebook or YouTube where they have joined different learning groups. Students post their queries and concerns about a topic in a group and get a response from the researchers, scholars, and topic experts worldwide. It not only improves their learning but also instils the skills of critical thinking, brainstorming and independent learning. An increased understanding of the topic broadens their view which ultimately increases the academic grades of students. P1 further explained the effectiveness of social media through sharing the experience and stated that:

“I am an English teacher for the primary section of the school who created a group on Facebook where I share the techniques and tricks of English language, grammatical aspects and many more things. What I noticed was that at the time of the Covid19 lockdown, the students in the group were more active and engaged. For instance, if I shared a rule about the use of three forms of a verb followed by a simple exercise, the students responded with their answers. I also noticed that some students re-shared those posts and commented a lot to help the students who had asked questions. These interactions not only improved the level of understanding of the students themselves but also clarified the confusions of those students who could not understand the concept from the tips which I shared and hence the overall level of understanding of the class was improved which was further reflected in terms of increased academic grades of the students. So, I prefer e-learning as an interactive and engaging source of learning and development of students, even in the junior section.”

Familiarity of students with technology was another key aspect of the educational development of students which was identified by the research participants. The teaching staff

of the school confirmed that e-learning sources increased the technological understanding of students where students became well versed in using high-tech tools and software programs, learnt the skill of online searching and explored different features of the e-learning software. The teachers further identified e-books and online exams as key developments of e-learning as a teaching method that integrated the learning eco-system between instructors and the student's using technology. P8 stated that:

“E-learning based teaching makes the students technologically smart. Each student in the primary school has access to either of the online sources, be it the internet, emails, Google etc. Then why shouldn't we use it for educational purposes? My students showed drastic improvement in grades and learning of the concepts when I started sharing the learning material along with additional links to the online resources in our virtual classroom. We also have a dedicated classroom where I have shared an e-book of Math with videos about different concepts which we learn in the class. My students can access these learning resources any time through their iPads, tabs, mobile phones, laptops, or desktop computers by just signing into the classroom. So, my experience with virtual classroom resulted in improved interaction of students, increased engagement and enhanced level of participation and academic performance of the students.”

In brief, the teachers at the selected school who participated in this research confirmed the efficacy of e-learning as a key tool for enhanced learning, educational development, the improved academic performance of the students. It was further highlighted that students in the primary section of the school are equally indulged in using e-learning platforms as the previous research have evidenced for high school, college and university going students. Social media, e-books, online searching, article reading, joining different groups are all the activities in which the students at primary school were found involved in as evidenced by the teachers. Therefore, in accordance with the reviews and experiences of the selected teachers, it is ascertained that e-learning is a key educational developmental tool for the primary school students which engages them and provides them an interactive platform of learning.

iv.5. Theme 3 – Opportunities and challenges of e-learning

The third theme which emerged from the literature was related to identifying the key opportunities as well as the challenges which were associated to the use of e-learning as a key teaching methodology. The teachers gave a diversified response and shared their teaching journey while discussing the efficacy of e-learning linking the challenges they faced to the potential opportunities of improvement of the entire system of e-learning. A detailed analysis of the challenges and relative opportunities as being identified by the teachers at the selected school are discussed in the following sections.

iv.5.1. Challenges of e-learning as a teaching method

The teachers who were interviewed were more inclined towards identifying opportunities; however, during the interviews, a significant number of challenging aspects within the context of primary school students were also discussed. The first key challenge which most of the teachers from the selected school identified was that an e-learning environment provides students with a direct control over their learning patterns. This independence and direct control of students may be effective for the students in the higher educational levels; however, poses challenges for the students of the primary section. The teachers further elaborated that in the traditional classroom, teachers decide the topics from the pre-set curriculum, design different strategies, decide multiple activities and identify all the related learning resources ensuring that all students participate in all activities. In the case of e-learning, teachers lose their control and are uncertain whether the students read through all the provided material or remain confined to what interests them. The teachers also identified that for primary students, they had recorded a higher probability of less active students, not participating in the online discussions which, later, impacts their performance in the exams. Therefore, for primary school students, teachers preferred a blend of both physical and online classrooms where the learning activities should be conducted in the physical classroom setting, familiarizing the teachers about the level of understanding of all students. Considering this challenge, P2 shared the experience and stated that:

“In the times of Covid19, I was able to identify challenges of the e-learning environment. As a math teacher, I think, these challenges double up because I am not there to see what

my students are doing. For example, if I have delivered a lecture related to multiplication, uploaded more videos from YouTube on the class link and asked the students to solve a set of questions given in the assessment section. It happens that some of the less active students solved them all correctly which raised my concern, because, in class, I had to sit with them individually and sometimes repeat the concept. So, there are chances that they took help from maybe their siblings or parents. Besides that, I am not sure whether all students have watched the videos which I shared related to the topic. On the other hand, in a physical classroom setting, I have more control over the learning of my students and know about the extent to which they learnt and grasped a concept.”

Another teacher revealed a similar notion and proclaimed that teachers have limited control over the e-learning environment; however, for junior primary section students, teachers need to have more control ensuring that all students understand the concepts, take interest in lectures, and participate actively in all the activities, discussions and presentations. In the words of P4:

“Teaching presentation skills is one of the most important parts of English communication course. I have to work extra hours to look for tips and tricks and strategies which I can use with primary level students. When students are in front of me in the classroom, I can see their gestures, body language, eye contact and the response of other students as listeners too. It has become challenging in an online learning environment. My focus is diverted, sometimes because of external activities and say hustle and bustle around the students. Likewise, controlling the responses of other students is also challenging, so I personally prefer classroom-based settings for my course. E-learning might be useful for other subjects, but when it is about teaching a skill to the students, physical interaction between students and teachers is compulsory.”

Another key challenging aspect which the selected at the selected primary school of UAE identified, related to e-learning was managing cultural differences among the students. The teachers quite explicitly identified the education industry as a global phenomenon where multi-culturalism in Dubai was also reflected in the schools, colleges, and universities of the region. It was further highlighted that schools in the UAE had a non-discriminatory policy of admission and teaching in the classroom, therefore, each classroom had students belonging

to different cultural origins, speaking a variety of languages, and having distinct yet diversified views about a topic. However, managing this cultural diversity was identified as a critical challenge for the teachers especially in the primary section of the school. P3 further stated during the interview that:

“I am the class teacher of grade 5, the students who are at a very critical stage of growth and development. Most of the students that I have in my class belong to India, Pakistan, China, Africa, and a few are natives too. They have different cultural origins, views, religions, rituals, cultural aspects and most importantly languages. Being a teacher, I consider myself as a responsible person to ensure that all students attain their due importance and representation in the classroom. However, communication is a big barrier in the case of e-learning where sometimes, I am uncertain whether the students who are not well versed in language have understood the concept or not.”

This aspect of cultural difference as a challenging construct of e-learning has repeatedly been highlighted by different teachers where they shared their personal experiences with the students proclaiming that the intensity of this challenge is quite high when considered for the students of the junior and primary sections of the school. In the words of P8:

“E-learning has definitely revolutionized the education industry; however, we, as teachers, are still struggling with the issue of cultural difference. I am not talking about discrimination here, but the fact that cultural differences do act as a communication barrier between students and teachers. Let me give you an example. I teach junior classes up to grade 5 and have students from different cultures and countries. When I teach them a concept in the classroom, I have face-to-face interaction with them. I could see if they understood it or not. I can also judge their level of knowledge and understanding through their participation rate in the class. But during the online classes, sometimes, I receive assignments, seeing which, I can say that those students couldn't understand the requirements of the task. They are small kids, and we cannot expect them to be perfect in communication especially through online modes. They definitely need some assistance from parents and teachers too.”

P6 also contributed to this challenging aspect of cultural management and highlighted that e-learning may increase the chances of miscommunication, disrupt the interaction between

students and teachers and hence this lack of communicative ability of students may impact their participation and engagement in the class. The research participant further stated that:

“Ineffective communication is the most considerable aspect of cultural differences among students in the classroom. Sometimes, students do not understand the questions stated in the assignment. Not only this, but I also personally explain the assignments by the end of the class; however, the students with less lingual proficiency misunderstand the instructions. Controlling it is quite difficult in an online learning environment. I noticed that the grades of many students decreased during Covid19 when we did not have physical interaction of classroom-based learning at all. It created communication problems. I am currently doing my research on different strategies which I can opt-in combatting this issue and hoping for the best.”

The next key challenge which the research participants highlighted was the participation of parents or guardians of the students in the e-learning environment. The teachers stressed upon the fact that relying merely on online learning cannot be successful for young primary school students without the active participation of their parents, elder siblings, or guardians. It was further identified that students need assistance and help from someone in the family in logging into the system every time, ensuring their attendance in the classroom, understanding, completing, and submitting the assignments and most importantly reacting to the constructive feedback of the assessment given by the teacher. P1 further explained this challenging aspect of e-learning and stated that:

“Active participation of parents is quite important in an e-learning environment. As I mentioned previously that in a classroom, we, the teachers can control the learning environment. However, at home, some assistance needs to be there. I have seen that sometimes students from the junior classes accidentally press a button and leave the lecture session. In such a case, they need to reconnect to the class. Sometimes, many students are unable to upload the task in the online classroom’s assessment section, for which they need parents or elder brothers and sisters. Managing internet connection’s stability during the class is another area which junior students cannot handle themselves.”

Many teachers also compared the level of required assistance for primary school students with the students at high school and college stating that students in higher grades of

academics are independent. They possess the capacity and capability to stay connected to the class, manage classroom schedules, understand tasks, and solve the majority of the technical issues which they might face during the e-learning class lecture. The junior students might not be able to manage technical issues, therefore, parents or someone from the family should always be there for the immediate help of the students. P10 shared personal experience of such challenges and stated that:

“I can remember a lot of funny events where students got distracted during the class and their parents had to remind them to focus on what I was saying. For example, there is one student in my class who is very active, and it becomes very difficult to ensure his focus on studies even in the physical classroom setting. A few days back, I noticed that during the lecture, that students got disappeared from the screen’s view. I announced his name multiple times, but I was unable to see him but the empty chair. Thank God, the parents heard my announcement and called the student from another room. After that, the mother had to sit with the students in the whole lecture. So, instances like this happen a lot in e-learning environments which are out of our control. Therefore, the presence and involvement of parents are quite important.”

In addition to these challenges, there were multiple other aspects which the teachers identified as critical to the efficacy of the e-learning environment. These challenges included the cost required for the setup, teacher’s training, designing of curriculum, technical expertise of teachers, students and parents, up-gradation of software and data security issues. Considering the cost is an important determinant of the e-learning environment, the teachers from the selected school highlighted that school must bear an additional cost of implementing e-learning software, setting it up for each class, maintaining it and protecting it against any security breaches. The teachers further highlighted that the increasing trend of e-learning mandated it for the schools to employ technical staff who can train both students and teachers about using the software and systems, resolve any technical issues and ensure that any reported bugs and potential security threats are resolved as a priority. P9 stated that:

“Although this school had implemented e-learning software many years ago. The students and teachers know how to use the system. But we were used to the blended approach of learning where online classes were held only one or two days a week. However, due to the

pandemic, the school had to make an immediate decision of eradicating physical classroom classes and rely on virtual classes only. The teachers had to redesign their curriculum again in coherence with the e-learning environment. I personally had to revisit every activity and redo the instructions as clear and understand as possible. The principal hired three more technical trainers who had to assist us during the class with any technical issues. It definitely added to the expenses of the school.”

The teachers were highly concerned about data security threats which were multiplied due to their sole reliance on the e-learning environment. The teachers highlighted that software systems had all the personal and confidential data of both teachers and students. For some teachers, the system was also connected to Skype or Zoom for meetings and sessions. Therefore, the chances of any bugs and breaches of confidential information were quite high. P4 further elaborated on this aspect and stated that:

“I am very concerned about my data. Although I am very careful and do not share my login credentials with anyone; however, logging out and logging in repeatedly on the system is a very complex job. Sometimes, I forget to log out of the system after the lecture. Anyone can accidentally or intentionally may have access to my data in that case. Therefore, I must be very alert all the time. It also frustrates me sometimes, but we have no choice but to cope with the changing global trends of the education industry. E-learning is one of them.”

Considering the challenges of e-learning, the teachers were further asked to share if they had taken any steps on their own to combat these challenges. The positive response to this question was quite limited. Most of the teachers responded that they were still working on it. However, there were a few teachers who shared the steps which they had taken. One of the research participants identified redoing of course instructions as a strategy to provide a more detailed explanation to the students to understand the assignments to avoid any misunderstandings. In the words of P9:

“Yes, as I mentioned previously that students usually misunderstood the assignments. To avoid that, I started to redo all the instructions, created their bullet points, and provided detailed step-by-step guidelines to my students. Students just had to follow the instructions for each step, and I noticed a drastic improvement in their level of understandability.”

Another participant identified a similar strategy of discussing each assignment with the students during the online classes along with giving them two chances of submitting the tasks.

In the words of P2:

“In the times of the pandemic, when we had to switch to online modes of learning only, I noticed that students of primary classes were unable to complete the tasks as allocated. Previously, in the classroom setting, I used to open the task for the next task and discuss it with all the students along with encouraging them to ask questions. I started doing the same in an online session by sharing the screen with students. I started guiding the students about the task, answered their questions and alleviated their concerns. Not only this, to further make the process easier for them, I started giving them two chances of submitting the assignment. The students submit a task, I review it and provide them feedback to improve it providing students with another chance to submit an improvised version of the task. Although it has increased my workload; however, the learning and understandability of students about the tasks have been improved considerably.”

A few teachers preferred to rely on management to find the solutions to the identified challenges and stated that they fulfilled their responsibility by highlighting the issues in front of the principal and the strategies to resolve these issues are under review. Since majority of the teachers opted for this approach of relying on management’s decision, therefore, it is ascertained that most of the teachers were not inclined towards providing a self-created solution to the students to combat the challenges which they faced due to e-learning. This attitude may also raise concerns about the extent to which management allows the participation and independent decision making of the teachers in the school. There might be the possibility that teachers are instructed to report all the issues to the management first or the management may have opted an autocratic approach of managing the responsibilities of teachers. However, these are all the assumptions which identify the need for further research to be conducted about the indulgence of management of the primary school in resolving the challenges related to e-learning and providing constructive assistance and support to the teachers in this regard.

iv.5.2. Opportunities related to e-learning

The next aspect which was identified as a third theme was related to understanding the opportunities identified by the teachers which were associated with e-learning as a teaching method for the primary school students. The teachers were asked three questions related to opportunities along with asking them to provide recommendations to the school's management to unleash and utilize those opportunities for improved learning and educational development of students.

The first opportunity for an improved e-learning experience of both students and teachers which the teachers suggested was related to the implementation of the concept of e-library. The teachers identified that although e-learning provides students with additional and unlimited sources of learning which they can access on the internet, social media applications and other search engines. However, for primary classes, searching for the right information may be a challenging job. In such a case, schools must consider developing a generic and one specific e-library for the students where the e-books, links and resources related to each subject can be classified easing the process of searching for the students. The teachers further recommended to *“Classify the data based on the topics where under one topic, we can insert links to maximum possible learning resources for the students”*, said P5 during the interview.

This aspect was further explained in detail by another teacher. In the words of P10:

“When I see the continuously changing trends of digitization in the modern era, I feel like the schools need to invest in the latest IT infrastructure and keep on updating their systems through introducing new systems, software programs and e-learning solutions. Introducing the concept of e-library for the students is one of the much-needed systems for improved learning of the students. This system has already been implemented at the college and university level providing access to the students to most of the learning resources at one place which is a time-saving approach; however, the implementation of this system in the schools of UAE is something, I have not heard of yet, so I count it as an opportunity to enhance the e-learning environment.”

Another teacher referred to the need for an electronic library for the students in the following words. In the words of RP4:

“I think, there can be a digital library for students, so the students have access to all the information at one place which is needed to complete the assigned tasks. These resources can be electronic books, magazines, articles, videos, tutorials, or excerpts from the latest research related to the topics we teach them in the classroom. I think it will save their time and lead them to the most related and up to date information related to their subject and the assigned tasks.”

Another recommendation which the teacher identified as an opportunity for the school to improve the e-learning environment was sharing the burden of internet cost with parents and teachers. The teachers quite clearly proclaimed that the days in which students are required to attend classes from home, the school saves administrative costs. However, having a good internet connection for all the children at home adds to the current costs for the parents. Likewise, teachers must invest in a good internet connection too. School management can share this cost with parents and teachers through providing internet allowance on monthly basis. RP7 explained this opportunity to improve to e-learning as follows:

“Improved internet connection. Sometimes, I faced the issue of a broken internet connection during the class, so I had to upgrade my existing internet package to ensure a streamlined class. This is an additional burden for me and so will it be for the parents. The schools can share this burden by providing internet allowance to teachers and students to ensure an uninterrupted online environment of learning. I consider it as an opportunity for the schools to spread positive word of mouth in the education market while attaining a distinct competitive advantage where the school implementing this solution will be marketed as a facilitator in the market. It will also improve the credibility of the school.”

The third opportunity associated with e-learning which the teachers identified was a chance for Dubai school regulatory authorities and the Ministry of Education to introduce a paperless mode of education through implementing a 100% virtual learning environment. The teachers identified it as an eco-friendly approach stating that it will reduce the consumption of papers and contribute to environmental protection. In the words of P5:

“I think, this is the perfect time for our schools to transition from the conventional and blended approach of learning to a 100% virtual learning environment. I mean, it is environmentally friendly. I was doing research a few days ago where I read that if we

introduce the distance learning method which is e-learning, we will be able to reduce the level of consumption of energy to 90%. Not only this, but we will also be able to control 85% of the carbon dioxide emission. We will not have to cut trees, invest in manufacturing the paper and the level of pollution will automatically be controlled.”

Another teacher extended the focus from the efficacy of e-learning as an eco-friendly approach stating that a paperless mode of study will eradicate the need for textbooks which is a very cost-effective opportunity for parents and students. In the words of RP1:

“Well, e-learning does not require students to be present in the classroom, spend money to get textbooks and notes. Everything can be available online even the books and the learning material. So why not avail this opportunity. It will be good for the environment and will save the cost of buying books and travelling for the students. Teachers can also easily update the information in the e-learning resource without any restriction. The same upgraded material can be utilized by the students in the junior section later rather than requiring them to buy the textbooks from the markets leaving no usage of the previous version of the books and notes.”

The last opportunity for e-learning as a teaching method was identified within the context of utilizing data analytics to further improve the e-learning environment. The teachers identified data as a new oil for all industries which could be applied to the education industry. The teachers suggested for the schools make use of student academic progression data to understand the efficacy of different sessions and teaching approaches. It was proclaimed that doing so will certainly highlight the areas of improvement in the existing learning and education management systems for the schools which is a great opportunity to improve the environment of e-learning for the schools. The research participants P3 stated that:

“I think, combining the electronic environment of learning with data analytics tools is a great opportunity in the era of the digital revolution. The businesses have done that, we, the schools can do it. For example, if we conducted a training about communication skills with the students and gave them assessment tasks. We can use their grades and data from the records related to their grades pre-training and post-training to determine the efficacy of the online training. Not only this, if we have information related to the dropout rate of students, we can use data analytics to identify reasons for dropping out. It will not only

ease the process of problem identification for the schools, but also enable the management and teachers to devise effective and improved strategies to combat these issues. However, it is just a suggestion from my side based on my experience as a teacher, rest its application depends on the school's management or the regulatory authorities.”

In brief, the teachers quite constructively participated in explaining their thought related to the challenges and opportunities which they perceived related to the e-learning environment as a teaching method. The number of opportunities identified by the teachers was quite diverse and unique, whereas the challenges identified by most of the teachers overlapped with each other and had many similarities. The identification of data analytics and using it for improving e-learning was identified by only two research participants which means that majority of the teachers may not have an idea about how data analytics works or may work for the improvement of the education industry.

Chapter 5

5. Ethical considerations, limitations, and conclusion

5.1. Introduction to the chapter

This study aimed at exploring the challenges and opportunities of using e-learning as a mode of teaching from the perspective of teachers at the primary school. There have been several research papers which have undertaken the impact and efficacy of e-learning considering the viewpoint of teachers, students, and parents; however, most of the studies have considered high school, college, or university levels of education. Since the prevailing era of technological revolution has triggered the interest of educational institutions at all levels including the junior and primary sections of the school to incorporate the latest technology and introduce the concept of e-learning or virtual learning, therefore, it is very important to understand the efficacy of e-learning on the educational development of primary school students. This stance and the identified gap as being discussed in detail in the first chapter justifies the selection of a primary school for this research. Considering the rationale of the study, 10 teachers from the selected primary school of UAE were interviewed and the data were analysed using thematic analysis by Braun and Clarke (2016) to attain the research objectives.

This chapter extends the discussion about the research and presents a concluding stance of this research by highlighting the ethical considerations, limitations, future scope, and final remarks of the researcher about the study about the opportunities and challenges which are associated with e-learning in a primary school of UAE from the perspective of teachers.

5.2. Limitations and future scope of the study

Every study encompasses certain limitations based on which the future scope of the studies is also determined. Limitations of a study are defined as all constraints of the study either limiting the focus, population, sample or data collection approaches of a study (Shipman 2016). Usually, these limitations are attributed to the rationale and methodology of the respective study. However, these limitations provide an opportunity for the future researchers

to design an effective rationale and focus of their studies (Price & Murnan 2004). The limitations along with an explanation of the future scope of the study are as follows:

- First, the study aimed at exploring the opportunities and challenges associated to e-learning as a teaching method from the perspectives of teachers only. It is also known that students and parents are also key influencers of the success and challenges of the e-learning environment especially within the context of primary school students. However, this study was confined to undertaking the views and opinions of teachers of the primary classes only which is one of the key limitations of the study. Based on this limitation, it is ascertained that future researchers can further extend the scope of their research and consider the views and opinions of both parents and students as well.
- Second, this study opted for interpretivism paradigm, exploratory and qualitative research approach and case study research strategy following which only one primary school of Dubai was selected. This confinement to one school also limits the level of generalizability of the research results leaving a room for improvement for future researchers. Future studies can extend the focus by collecting the data from subjected research participants from different schools of Dubai to diversify the opportunities and challenges associated with e-learning. This diversification of data may also enhance the reliability and generalization of the research results. Likewise, future researchers may also consider opting for a mixed-method approach where both surveys with parents and students and interviews with teachers or vice versa can be conducted to take into consideration the opinions and perspectives of these stakeholders of the concept of e-learning.
- Third, this study did not include Covid19 as a key influencer of e-learning; however, this mention of the pandemic was included in the themes as identified by the teachers at the respective school. Future studies can explore the opportunities and challenges of e-learning with a specific focus on the pandemic of Covid19. Likewise, the findings from the themes of this study regarding the opportunities and challenges can also be used as individual variables testing the efficacy of each identified opportunity and challenge on the effectiveness of e-learning as a teaching method. In addition, since the existing research papers concerning primary school students are quite rare where this study added

to the identified research gap; therefore, there is a need for future researchers to consider this literary gap and focus their research on primary school students.

6.1. Conclusion

This study aimed to explore the opportunities and challenges which are associated to using the e-learning system of education as a teaching medium, from the perspective of teachers in a selected primary school in Dubai. The study was based on the interpretivism paradigm and followed an inductive research approach. The data was collected through conducting recorded interviews with 10 primary school teachers at the selected school in Dubai. This familiarity and experience of teachers with both modes of teaching authenticate the ability of teachers to compare both modes of teaching and hence elaborate the opportunities and challenges of e-learning in a more elaborative manner backed by their personal experience in the field. All the teachers who participated in the study were associated to the primary section of the school and were associated to the selected school for at least 1 year. The collected data were analysed using the thematic analysis framework by Braun and Clarke (2016) following which three key themes emerged enabling the researcher to attain the pre-defined research objectives and hence find answers to the research questions.

It is quite evident from the results of the study that e-learning has become one of the most preferred and common teaching approaches in Dubai for the last many years; however, the prevalence of the prolonged-time period due to the pandemic of Covid19 further intensified the need for the school to introduce virtual learning to bridge the broken educational gap. It was further reflected from the results of the study that e-learning is equally effective for primary school students in terms of improving their educational development, academic progress, participation, and level of engagement in the e-learning class. Likewise, the research participants also identified social media as one of the most effective mediums of academic success of students, when discussed within the context of e-learning as a teaching method. The teachers proclaimed that many students even in the primary section of the school have created their accounts on Facebook or YouTube where they have joined different learning groups. Students post their queries and concerns about a topic in a group and get a response from the researchers, scholars, and topic experts worldwide. It not only improves

their learning but also instils the skills of critical thinking, brainstorming and independent learning. An increased understanding of the topic broadens their view which ultimately increases the academic grades of students.

However, despite all these benefits, the teachers have also identified certain challenges which included the required assistance from teachers, cultural differences, communication barriers and lack of understanding of students of the given instructions about a task. The teachers also recommended certain opportunities for the management of schools along with calling for the need for them to collaborate with educational regulatory authorities to unleash the opportunities and attain them to their full potential for the benefit of students and teachers in an e-learning environment. Although most of the teachers highlighted the need for a blended approach to learning; however, it was also reflected from their responses that e-learning facilitates paperless learning which is eco-friendly, cost-effective, and time-efficient. Likewise, the teachers, quite clearly proclaimed that the days in which students are required to attend classes from home, the school saves administrative costs. However, having a good internet connection for all the children at home adds to the current costs for the parents. Likewise, teachers must invest in a good internet connection too. School management can share this cost with parents and teachers through providing internet allowance on monthly basis.

These opportunities identified by the teachers were quite diverse and unique, whereas the challenges identified by most of the teachers overlapped with each other and had many similarities. However, it is quite evident from the limitations of the study that these findings were based on the reviews, experiences, and opinions of teachers of only one school in Dubai and hence cannot be applied to the entire education industry of the region. In addition to that, the existing studies concerning the impact of e-learning on primary school students are quite rare, therefore, there is a need to conduct more studies in this domain to make a generalized conclusion about the opportunities and challenging aspects which are attributed to the e-learning environment.

References

- Aboagye, E., Yawson, J. A. & Appiah, K. N. (2021). COVID-19 and E-learning: The challenges of students in tertiary institutions. *Social Education Research*, pp. 1–8.
- Abou El-Seoud, M. S. (2014). E-learning and students' motivation: A research study on the effect of e-learning on higher education. *International journal of emerging technologies in learning*.
- Ali, M., Hossain, S. K. & Ahmed, T. (2021). Effectiveness of E-learning for university students: Evidence from Bangladesh. *Asian Journal of Empirical Research*, pp. 352–360.
- Aljawarneh, S. (n.d.). E-learning tools and technologies in education. *A Perspective. LINC Proceedings*.
- Brame, C. J. (2022). No Title. *Active Learning. vanderbilt*, vol. 01(ue 01), p. 20.
- E.D.U.P.E.D.I.A. (2018). RAT Model.
- Edges, T. (n.d.). RAT MODEL.
- ElSaheli-Elhage, R. (2020). Access to Students and Parents and Levels of Preparedness of Educators during the COVID-19 Emergency Transition to e-Learning. *International Journal on Studies in Education*, vol. 3(2), pp. 61–69.
- Erisen, Y. (n.d.). COGNITIVE LEARNING THEORIES. *LEARNING AND TEACHING : THEORIES, APPROACHES AND MODELS*, vol. 2022(01), p. 1.
- Gautam, P. (n.d.). *Advantages and disadvantages of online learning*. E-Learning Industry.
- Gokah, T. K. (n.d.). *E-Learning in higher education – opportunities & challenges for Dubai*. Dubai - Papers: University of Wollongong in.
- Goyal, S. (2012). E-Learning: Future of education. *Journal of Education and Learning*, pp. 239–242.
- Hambulo, F. & nd. (n.d.). The Contribution of Behavioral Theories of Learning to Education. *Zambia Journal of Education*, vol. 2022(01), p. 1.
- Harandi. (2015). Effects of e-learning on Students' Motivation. *Procedia—Social and Behavioral Sciences*, pp. 423–430.
- Hubackova, S. (2014). History and Perspectives of Elearning. *Procedia - Social and Behavioral Sciences*.
- Kimmons, R. (n.d.). RAT Model.
- Kong, S. C. (2018). Parents' perceptions of e-learning in school education: Implications for the partnership between schools and parents. *Technology, Pedagogy and Education*, pp. 15–31.
- Lara, J. A., Aljawarneh, S. & Pamplona, S. (2020). Special issue on the current trends in E-learning Assessment. *Journal of Computing in Higher Education*, pp. 1–8.
- Mailizar, A., Abdulsalam, M. & Suci, B. (n.d.). Secondary school mathematics teachers' views on e-learning implementation barriers during the COVID-19 pandemic: The case of Indonesia. *Eurasia Journal of Mathematics, Science & Technology Education*, pp. 1–9.
- McLeod, D. S. (n.d.). Research Qualitative Vs Quantitative.
- Mukhtar, K., Javed, K., Arooj, M. & Sethi, A. (n.d.). Advantages, Limitations and Recommendations for online learning during COVID-19 pandemic era. *Pakistan journal of medical sciences*, p. 27.
- No Title. (n.d.) [online]. Available at: <https://research-methodology.net/research->

philosophy/.

Price, J. H. & Murnan, J. (2004). Research limitations and the necessity of reporting them. *American Journal of Health Education*, p. 66.

Report, E. M. (2021). No Title.

Selim, H. M. (n.d.). E-learning critical success factors: an exploratory investigation of student perceptions. *International Journal of Technology Marketing*, pp. 157–182.

Shahmoradi, L. (n.d.). The challenges of E-learning system: Higher educational institutions perspective. *Journal of education and health promotion*, p. 7.

Shipman, M. D. (2016). The limitations of social research [online]. Available at: s.l.:Routledge.

Somayeh, M. (2016). The effectiveness of E-learning in learning: A review of the literature. *International journal of medical research & health sciences*, pp. 86–91.

Toro, U. & Joshi, M. J. (2013). A review of literature on knowledge management using ICT in higher education. *International Journal of Computer Technology and Applications*, p. 62.

Vlasenko, K. (2020). Personal e-learning environment of a mathematics teacher. *Universal Journal of Educational Research*, pp. 3527–3535.

Walia, A. (2021). Research Strategy.

Wang, Z. (n.d.). A Framework for Interaction and Cognitive Engagement in Connectivist Learning Contexts. *The International Review of Research in Open and Distance Learning*.

Yengin, I., Karahoca, A. & Karahoca, D. (2011). E-learning success model for instructors' satisfactions in perspective of interaction and usability outcomes. *Procedia Computer Science*, pp. 1396–1403.

Zare, S., R., S., M. & Mansouri, V. (2016). The impact of e-learning on university student's academic achievement and creativity. *Journal of Technical Education and Training*.

Appendix

Interview questions

1. Can you please introduce yourself, your teaching experience and association with the education industry?
 - a. What level/class do you currently teach?
 - b. How many years have you been teaching; and in this school?
2. Do you use e-learning modes in your school?
3. What specific systems do you use to support your e-learning?
4. How, in your opinion, e-learning fostered learning and educational development of students?
 - a. Did you see any improvement in their academic results?
 - b. What did you notice about the participation of students during the online classes?
5. How has your experience been with e-learning modes of education If we consider ease of interaction with students and their engagement.
6. What challenges do you face while teaching the young students in the primary section during the virtual classes?
7. What opportunities do you think are present related to e-learning to improve the learning and development of students?
 - a. Have you utilized or did research on utilizing any such opportunities?
8. What measures have you taken to resolve these challenges of e-learning?
9. What strategies would you suggest to educationists, management, and regulatory authorities to take to enhance the learning experience of students with e-learning modes.