REALISING THE VISION OF TECHNOLOGY INTEGRATION: A CASE STUDY OF K-12 PRIVATE SCHOOLS IN THE UNITED ARAB EMIRATES

A Thesis submitted by

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ABSTRACT

Heralded by the release of government policies such as *Vision 2021,* the United Arab Emirates (UAE) has joined the worldwide impetus for the integration of Information and Communications Technologies (ICT) into K-12 education as a central plank of reforms to its economy and education system. This presents challenges for schools in both public and private sectors in the UAE as they strive to adhere to national government and local education authority guidelines and standards for educational innovation, and as they respond to the challenges of the global Covid19 pandemic. Whilst the UAE Government has invested heavily to support technology integration in public schools, private schools must fund their own technology integration initiatives. In a context of strong growth in the private K-12 sector and reported high teacher turnover rates, private school leadership faces particular challenges related to decision-making about investment in suitable technologies and support systems, including teachers' professional development.

This research therefore, sought to study the situation in private K-12 schools and, specifically, the challenges that educators in UAE's private schools face as they integrate technology in response to Vision 2021 by answering these research questions: (i) What is the policy context for technology integration in the UAE private school sector , and what do private sector education policies at system and school levels tell us about the key factors influencing technology integration in schools and curricula? (ii) What are school teachers and administrators' experiences of and perceptions about the integration of technology in UAE private schools, including reported challenges and enablers? (iii) How do UAE K-12 private school teachers learn to integrate technology into their educational practice?

Various theoretical and conceptual frameworks for technology integration in schools were examined to guide this study; however, Kozma's (2003a) framework of innovative pedagogical practices that use technology, adapted to suit the study's geographical and cultural context and to accommodate key findings from current research, was determined to provide the best fit for the elucidation of contributing factors that may influence schools' and educators' capacity to implement desired changes in their classrooms. A blended instrumental-intrinsic approach to case study research (Stake, 2003) was adopted, whereby the researcher was equally interested in

understanding the specific features and characteristics of the case of technology integration in the private K-12 school sector in the UAE and in illuminating issues related to educators' perspectives and experiences of integrating technology into their teaching. Sources of qualitative data for the case study included structured interviews with ten educators from nine K-12 private schools across three UAE Emirates, and selected education policies at international, national and school system levels. Correlation of the findings from the policy analysis with the interview findings supported in-depth analysis of the phenomenon under study (Bowen, 2009).

The findings of this study provide contributions to theoretical, methodological, policy and practice knowledge. The study's conceptual framework makes a contribution to knowledge in the scholarship of technology integration in K-12 education. The findings will inform UAE private sector educators and policy-makers alike, providing guidance regarding critical success factors for effective technology integration in private schools. An implementation framework for technology integration in UAE private sector K-12 schools is presented to guide the implementation of technology integration in existing and new private schools planned for the UAE.

Keywords

Educational change, ICT, innovation, national education policy, private schools, professional development, teachers, technology, technology integration, UAE

CERTIFICATION OF THESIS

This Thesis is entirely the work of Kheder Mahmoud except where otherwise acknowledged. The work is original and has not previously been submitted for any other award, except where acknowledged.

Principal Supervisor: Catherine Arden

Associate Supervisor: Patrick Danaher

Student and supervisors' signatures of endorsement are held at the University.

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I love you all . . .

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LIST OF ABBREVIATIONS AND ACRONYMS

ADEC	Department of Education and Knowledge (UAE)
AP	Advanced Placement
BTEC	Business and Technology Education Council
CAT 4	Cognitive Abilities Test
CCSS	Common Core State Standards
CIS	Council of International Schools
COL	Continuity of Learning
ECIS	Early Childhood Intervention Services
GCC	Gulf Cooperation Council
GCE	General Certificate of Education
GCSE	General Certificate of Secondary Education
IB	International Baccalaureate
ICT	Information and Communications Technology
IGSCE	International General Certificate of Secondary Education
KHDA	The Knowledge and Human Development Authority
MAP	Measure of Academic Progress
NEASC	The New England Association of Schools and Colleges
NGSS	Next Generation Science Standards
OECD	Organisation for Economic Co-operation and Development
PISA	The Programme for International Student Assessment

SAT	Scholastic Aptitude Test
TIMSS	Trends in International Mathematics and Science Study
TOEFL	Test of English as a Foreign Language
UAE	United Arab Emirates
UK	United Kingdom
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organisation

REPORTABLE RESEARCH PUBLICATIONS RELATED TO THIS STUDY

Co-authored Chapter in Edited Research Book:

Mahmoud, K., Arden, C., & Donovan. J. (2020). Realising the vision of technology integration: A case study of K-12 private schools in the United Arab Emirates. In O. Mahdi Abdullah Al-Mahdi (Ed.), *Innovations in educational leadership and continuous teachers' professional development* (pp. 251-294). CSMFL Publications & its authors. DOI:10.46679/isbn978819484832512

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CHAPTER 1: INTRODUCTION AND THE STORY BEHIND THIS RESEARCH

1.1 Introduction

The purpose of this research is to gain a detailed understanding of the challenges faced by private sector K-12 schools in the United Arab Emirates (UAE) when implementing technology integration in response to national government policy directives. Illustrated by the release of government policies such as Vision 2021 (United Arab Emirates, 2010), the UAE has joined the worldwide impetus to introduce education technology into schools (Alsharief, 2018). Based on an analysis of relevant policy in combination with interviews with practising educators, this study, as a case study of technology integration in K-12 private schools in the UAE, sought to shed light on the context for technology integration in the sector via an analysis of relevant policies, and then to explore in depth a selection of the emerging issues as they were experienced by educators. In so doing, the study also sought to contribute to a better understanding of the complexities and dynamics of implementing education technology in K-12 education, with an emphasis on the key roles played by school teachers and administrators.

This chapter provides an introduction to the study, beginning with an insight into my background as a secondary school English teacher in the UAE private school sector and how this shaped my career in education and my journey with education technology. Following this, I describe the background and context, rationale and boundaries of the study and outline how the term “technology integration” is understood for the purposes of this study. The research aim, research questions and anticipated outcomes are then presented, after which I outline my research paradigm,

research design and methodology. The anticipated outcomes and contributions to knowledge are then highlighted. The chapter concludes with an overview of the thesis and definitions of the key terms used.

1.2 My Background

I was born in Tasmania, Australia, and, at the age of seven, my parents decided to move back to Syria, the country of my father's origin. English, my mother tongue, was not taught in all public schools in Syria until Grade 5 back then in the early 1990s, so most teachers and students were not exposed that much to the language. As a native speaker of English, I stood out from the rest of the class, and quite frequently my English teacher asked me to come to the board and help her to teach. At the age of 16, I started to teach English as a private tutor and, at the age of 17, I began my first job as an English teacher in a language centre in Tartous city in Syria. There I was first exposed to using technology to teach English in the form of a tape recorder to teach listening skills.

At the age of 23 in 2011, and after graduating with a Bachelor's degree in English Literature, I moved to the UAE and attained a job as an English teacher in a private school in Sharjah, the third largest Emirate in the UAE. The use of educational technology in that school was still in its infancy, whereby classrooms were equipped with projectors and speakers; some classes contained smartboards and smartpens. In addition, teachers had access to a computer lab, which they could book for their students. Eventually, technology became a part of my daily teaching routine, and I started to enjoy it and developed methods to implement it successfully within the school. My teaching skills and making use of the technology available did not go unnoticed by the school leadership, who soon promoted me to the Head of the

English Department. I was instructed that I would be responsible for leading the English Department staff members to implement the newly acquired education software for teaching and learning English; hence, my journey with education technology began.

The experience of learning my trade as an educator in the UAE and being exposed to their leadership vision of innovation enabled me to recognise the importance of conducting research into educational technology integration in K-12 schools in the UAE, and the potential contribution that such as study could make to more effective technology integration in the UAE private school sector. In a world that has been influenced significantly by Covid-19, now more than ever we are in dire need of being innovative in terms of teaching and learning and in using education technology to complement and in some cases to replace the bricks and mortar schooling system in order to create continuity in learning. As an educator, I firmly believe that education technology integration can lead to the advancement of the teaching and learning process if implemented strategically. At the same time, I firmly believe also that education technology integration can have a major negative impact on the teaching and learning process if done haphazardly, especially if it is used for marketing purposes, to make the school more commercially appealing.

1.3 Background and Context of the Study

The world is said to be on the verge of a fourth industrial revolution that is expected to impact on all disciplines, industries and economies in addition to resulting in exponential changes to the ways that we live our lives and work in every country (Schwab, 2016; World Economic Forum, 2017). According to Schwab (2016):

> [T]he First Industrial Revolution used water and steam power to mechanize production. The Second used electric power to create mass production. The Third used electronics and information technology to automate production. Now a Fourth Industrial Revolution is building on the Third, the digital revolution (para. 2).

An integral part of economic diversification is the important role played by each country's national education system in working towards the achievement of economic and related social reforms (Hvidt, 2013; Ulrichsen, 2016). However, with most education systems around the world being based on models that were developed a century ago, there is a need to address a "growing gap between conventional education systems, the demands of modern life and new labour markets" (World Economic Forum, 2017, p. 7). Therefore, governments, businesses educators and learners all need to embrace change in order to close this gap. The World Economic Forum (2017) estimated that 65% of primary school students will be in professions that do not exist today, "for which their education will fail to prepare them, exacerbating skills gaps and unemployment in the future workforce" (p. 5). Therefore, curricula must emphasise the teaching of linguistic, mathematical and technological literacies that will be a requirement of future job roles, and that will ensure subject knowledge, developing global citizenship values, problem solving, critical thinking, project management and creativity (World Economic Forum, 2017). The rapid pace of technological advancement and globalisation has led to new opportunities, and showcases "the importance of aligning company practices, public policy and education and training systems with the skills needs of today" (World Economic Forum, 2017, p. 7).

The global trends reported above are reflected in education policies and systems in geographical regions, countries and nation states around the world. In the Middle East, the Gulf Cooperation Council (GCC) is increasing its efforts in implementing policies and visions to prepare their countries for a post-petroleum future by creating diversified knowledge economies (Beidas-Strom, et al., 2011). This policy direction is reflected in the UAE's Vision 2021 (United Arab Emirates, 2010), Kuwait's Vision 2035 (New Kuwait 2035 Kuwait National Development Plan, 2017) and Saudi Arabia's Saudi Vision 2030 (Vision 2030, Kingdom of Saudi Arabia, 2016). Embracing technological innovation in education is seen as one of the central platforms of this agenda, with significant implications for curriculum, schools, teachers and other stakeholders in the education enterprise (OECD, 2018).

Examples of education reform initiatives targeting technology integration in UAE schools included the Mohammed Bin Rashid Smart Learning Initiative, launched in 2012, which was posited as potentially "one of the largest tablet initiatives in the world" at the time (Tamim, et al., 2015, p. 20). Key findings from an independent evaluation of the progress of the implementation of Vision 2021 in UAE government schools (Jigsaw Consult, 2016) included that teachers' professional training and development, relationships and collaborations were all important factors in the successful implementation of the UAE technology reforms. Further, the UAE recognises that information and communication technologies (ICT) form the cornerstone of most of its industries such as the e-government and education sectors (Ati, et al., 2010).

Against this backdrop, and as is highlighted in the literature review in Chapter 2, there is consensus among education scholars that the integration of digital technologies into schooling is a "complex process of educational change" (Tondeur,

et al., 2016, p. 555) that has been a feature of the education landscape in recent decades, and one that continues to present challenges for 21st century schools and educators globally. In addition, there is a lack of research into challenges faced by educators in the UAE's private schools as they integrate technology into their practice. On the other hand, there are existing research in the public sector conducted by Jigsaw consult (2016) which will be further explored in chapters 2 and 6. Furthermore, the current Covid-19 pandemic has brought these issues into sharp focus as schools, teachers, students and parents across the globe adapt to new models of teaching and learning that leverage digital technologies to enable continuity of education amidst school closures and other disruptions to daily life (UNESCO, 2020). According to the Organisation for Economic and Cultural Development (OECD, 2019), the impact of integrating ICT into schooling can be considered in terms of:

- the mandate for technology integration with respect to the need for students to develop digital literacies and competencies in order to "flourish in the digital age";
- the impact of ubiquitous digital technologies on how students engage with the school and the curriculum and how they learn; and
- the impact of technology integration on all aspects of schools and educators' work, including how teachers teach (OECD, 2019, p. 3).

The first two points support the rationale for this study's examination of the broader mandate and policy context for technology integration in secondary schooling, whilst the third raises questions about schools' and teachers' readiness to adopt emerging technologies, how teachers best learn to integrate technologies into their teaching and what kinds of school-based organisational and leadership practices serve to support the use of technology for pedagogical innovation (Kozma, 2003a).

There are also important philosophical and political questions about educational technology and technology integration that need to be acknowledged in this study. For example, in a critique of the "dominant ideologies of contemporary society and technology", Selwyn (2014) maintained that "the academic study of educational technology could be described as a blind field—a site of misunderstanding, misrepresentation and misinterpretation of what are profoundly political issues" (pp. 24, 160-161). He also noted what he referred to as "the gulf that persists between the rhetoric of how digital technologies could be used in education and the realities of how digital technologies are actually used" (p. vii). These are questions that were explored in this study in the context of the UAE private school sector, and discussed with reference to the study's findings and their implications, in Chapters 4, 5 and 6.

1.4 The Rationale for this Study

1.4.1 Why the Private School Sector?

As in many countries, education in the UAE comprises both public and private sectors, with the public being operated and funded by the government, whereas the private is operated and funded by individuals or companies. Private schooling in the UAE is a multi-billion-dollar industry as a result of increasing tuition fees (Kamal & Trines, 2018). School tuition fees in Dubai range from USD $675 to USD $32,711 yearly, and, in Dubai alone, private schools achieved more than 2 billion United States dollars in revenues in 2017/18 ($1.28 billion in 2013/14) (Kamal & Trines, 2018, para. 6). The number of private schools in the UAE has been increasing rapidly to accommodate increased numbers of students, and this school building phase is predicted to continue as it was anticipated that the UAE would

need over 100 more private schools by 2020 (Pricewaterhouse Coopers [PwC], 2016). However, this hike in private school numbers at the time of required technology integration in both sectors has the potential to create a gap between public and private schools with respect to the effective integration of technology. Although the UAE government has invested heavily in technology integration in the public sector across the Emirates (Jigsaw Consult, 2016), no government funds have been allocated to support technology integration in the private school sector (Private schools in the UAE, 2017). Private schools are expected to self-fund such initiatives via their tuition fees, which are amongst the highest in the world (Maceda, 2017), thereby leaving them with the choice of areas in which to invest these funds.

Whilst investment in technology integration initiatives by resource-rich countries such as the UAE is relatively high in comparison with other countries (Mohebi, 2019), studies show that it may not be seen as a priority among private school leadership and/or proprietors (Webb, 2019), which in turn impacts negatively on the successful integration of technological innovation in the school. As Head of the English Department in a private school in Sharjah tasked with integrating technology, my two most significant challenges were poor infrastructure and lack of teacher professional development. Both are necessary for the effective use of technology, but, owing to the high teacher turnover rate in my school as in others (Whichschooladvisor.com, 2016), investing in teacher professional development was perceived as a waste of funds. It has been found that lack of professional development leads to teacher resignation and demotivation to use technology (Jigsaw Consult, 2016). This study thus explored the challenges that private sector schools and educators in the UAE face as a result of needing to develop and resource their own plans to implement technology integration in the context of Vision 2021 (UAE Vision

2021, 2010), including how teachers actually learn to integrate technology into their teaching. Whilst studying technology integration in response to Vision 2021 in the private school sector in the UAE could be seen by Western readers as being "elitist" (with private schools seen as being privileged in comparison with public sector schools), it is important to understand the educational context of the country. These considerations, along with particular assumptions about educational technology embedded in key policy documents at national and international levels, are addressed as part of the policy analysis in Chapter 4, and their implications are discussed in Chapter 6.

1.4.2 How is Technology Integration Understood in the Context of this Study?

In today's educational scene, it is very rare not to find some sort of technology being used in the school. However, the terminology used to categorise what technology is being used for is rather confusing; for instance, some schools will go to the extent of classifying emailing staff as evidence of education technology usage rather than classifying it as communications technology. What I argue is education technology is the usage of technology to enhance student learning or to create an alternative learning experience. An example of using technology to create an alternative learning experience is virtual classrooms, which are widely used now as a result of Covid-19 where learners and educators use applications such as Microsoft Teams and Zoom to conduct a learning session that was previously conducted in a classroom setting.

In the scholarly literature reviewed for the study and in the documents released in the UAE, several terms have been used to refer to ICT integration in K-12 education. A broadly used terminology that emerged from my literature search is

"Smart Learning Environments", which is used to describe schools that use ICT. Price (2015, p. 1), examined "contextual factors of effective ICT implementation for smart learning environments"; however, it seems that they also struggled to locate a clear definition: "Increasingly around the world, there is recognition of the opportunity for information and communication technologies (ICT) in education" (Price, 2015, p. 1). However, the "specific use models of technology in education remains broad and ill-defined" (Price, 2015, p. 1). Further, the same issue was identified by Zhang et al., (2016), who stated that "The concept of smart learning environments (SLE) has a developing process, and there is no generally accepted definition by consensus" (p. 1). In the UAE, *smart learning* is described as being concerned with the delivery of "world-leading education technology solutions for the United Arab Emirates education community" (Jigsaw Consult, 2016, p. 9), yet the Abu Dhabi Education Council (ADEC) used the term *e-learning initiative,* which means "to provide students with online means of learning in addition to those that are traditionally taught in classrooms" (ADEC, 2013, para. 1).

The term Information and Communications Technologies (ICT): "ICT refers to technologies that provide access to information through telecommunications" (Christensson, 2010, para. 1). The definition provides a simple and clear explanation of the term "ICT" retrieved from an online dictionary of computer and Internet terms. From my experience, ICT is also used by some schools to refer to the subject of Information and Communications Technologies as a part of their syllabus; however, in this study the term "ICT" is used to refer to software and hardware that are used for educational purposes. These educational purposes have been further categorised by the Program for International Student Attainment (PISA) in their PISA ICT Framework (2019) as: (i) digital content for learning; (ii)

communication and tracking tools and virtual learning environment; and (iii) intelligent tutoring systems. This framework is discussed in more detail in the policy analysis in Chapter 4.

An alternative term to "ICT" that is used in the literature reviewed for this study is "digital technology". Facer and Selwyn (2014) discussed digital technology and how it has become a part of contemporary education, noting that the daily operations of most schools and universities are also "underpinned by software systems that support and structure individual action in a variety of ways" (p. 2), which was also mentioned in the second category of the PISA ICT framework (2019). Selwyn (2014) also used the term "educational technology" to mean "the application of digital technologies to educational settings" (2014, p. 3), making the point that it is also "a knot of social, political, economic and cultural agendas that is riddled with complications, contradictions and conflicts" (p. 6). Highlighting the ethical dimension, Januszewski and Molenda (2008) used a broader definition of educational technology as "the study and ethical practice of facilitating learning and improving performance by creating, using and managing appropriate technological processes and resources" (p. 1). In contrast to the PISA ICT Framework (2019), in both these definitions the authors emphasised issues related to the usage of digital technology in education without specifying the specific nature and/or purpose of that usage.

Two other terms commonly used in the literature reviewed for the study to refer to the use of digital technologies in education were "e-learning" and "blended learning". According to Sangrà et al., (2012): "E-learning can be argued to be a natural extension of disciplines such as educational technology and distance education, although the discussion of the definition and practices of e-learning

focuses on the intersection of education, teaching and learning with ICT" (p. 146). The Department of Education and Early Childhood Development in Victoria, Australia in their eLearning Planning Guide (2009) stated that "eLearning includes the exploration and use of diverse ICT strategies and tools to expand teaching and learning possibilities in ways that lead to improved student learning outcomes" (p. 3). On the other hand, Boulton (2009) stated, "E-Learning is defined as students developing knowledge, skills and understanding, through the use of computer-based technologies" (p. 11). From my literature review, I noticed that there is no one definition for the above; instead, each author or organisation seemed to conceptualise the terminology according to her or his own understanding and requirements. What makes the situation even more confusing is there is no one spelling for "E-Learning" as seen above ("eLearning", "E-Learning", "e-learning").

As a more specific term, by definition, *blended learning* occurs when a student is subject to traditional classroom learning in a specific location in addition to learning through an online medium (Horn & Staker, 2011). Horn and Staker (2011), for example, addressed the rise of blended learning in K-12 schools and portrayed it as the future of education in the United States of America as it offers students a more personalised learning environment where they can learn and progress according to their own pace. However, another variable that can be added to the above is the blending of the usual classroom learning and intelligent tutoring systems as seen in the third category of the PISA ICT framework (2019).

"Meaningful technology integration" is another example of terminology used to describe the use of ICT in education. Tondeur et al. (2016) used "meaningful technology integration" to describe "using technology to support 21st century teaching and learning" (p. 556). Bonfigilio-Pavisch (2018) used the term

"meaningful technology integration" in the title of their article, which was about an innovative "pedagogy technology integration model" for use in K-12 schools in Western Australia. However, in her article there was no clear definition; instead, readers needed to read the article carefully to try to ascertain what the author saw as being "meaningful technology integration". Dysart and Weckerle (2015) wrote about "meaningful technology integration" in the context of the professional development of university academics. Dysart et al. (2015) framed their treatment of "meaningful technology integration" with reference to Kohler and Mishra's (2009) Technological, Pedagogical and Content Knowledge (TPACK) framework that they argued could be used as an approach to build instructors' ability to integrate technology with the pedagogical strategies that best serve the content that they are teaching The TPACK framework (Mishra & Koehler 2006) was referred to very frequently in my literature search. Mishra and Koehler (2006) developed TPACK through a series of design experiments in response to the purported lack of theory in the area. Mishra and Koehler (2006) explained that "usage of technology refers to digital computers and computer software, artifacts and mechanisms that are new and not yet a part of the mainstream" (p. 1023). TPACK offered a broad understanding on what technology in education is and laid the foundation for its application in schools. However, I contend that it is essential to categorise technology according to the PISA ICT framework in order to differentiate the types of technology used in K-12 education, and to gain an understanding of why it is used and for what purpose.

Other terms referring specifically to the pedagogical aspects of technology integration were identified as part of the literature review. For example, Gao et al.'s (2009) term *technology-based pedagogies* meant "to apply a wide spectrum of advanced information and communication technologies (ICT) to meet the diverse

learning needs of their students worldwide" (p. 714). Gao et al. (2009) focused on preservice teachers' learning process on how to teach using ICT in their teacher preparation programs. The relevance of this term for this study was to broaden the terminology throughout the study as it is possible that the term "technology-based pedagogies" might be used elsewhere to refer to what practising teachers are doing with integrating technologies into their teaching in K-12 schooling.

Kozma (2003a), on the other hand, used the term "innovative pedagogical practices", stating that "innovative pedagogical practices are embedded in a concentric set of contextual levels that effect and mediate change. Pedagogical practices consist of patterned sets of goals, materials, activities, and people engaged in classroom teaching and learning" (p.11). Kozma (2003a) further explained that these levels are the classroom, community and state, national and international entities, and that the successful implementation of the innovative practices depends on factors such as teachers, students and the school organisation, among others. I chose Kozma's approach and framework to serve as a guide to develop the conceptual framework for my study, which is further explained in detail later in the chapter.

Given the absence of clear definitions and the diversity of terminology that is used to refer to the integration of technology in education, and for the purpose of this study, the term "education technology integration" was used as a broad term to refer to all three categories that were mentioned in the PISA ICT framework (2019).. As Chapter 4 will explicate in detail, embracing technological innovation in education is seen as one of the central platforms of an agenda to reform the UAE education system, with significant implications for curriculum, schools, teachers and other stakeholders in the education enterprise.

1.4.3 Why Consider the Challenges and Enablers that Teachers Face?

UNESCO (2020) asserted that "the main challenge, including for the most advanced education systems, lies in teachers' capacities to use technology effectively in the classroom" (p. i, Foreword). Pedagogy serves as the link between the content and technology, and plays a vital role in motivating students to learn and to monitor their behaviour (Archambault & Crippen, 2009). A crucial role is played by teachers as they integrate the knowledge of the subject matter with the usage of technology in the classroom (Davis, et al., 2010). Hew and Brush (2007) maintained that technology use in the classroom can serve to replace other instructional strategies, leading to the same instructional goal; it can "amplify" in the sense of accomplishing the same task more efficiently and effectively; or it can even serve to create "innovative educational opportunities" (pp. 227-228) that actually transform both pedagogy and learning.

Whilst scholars agree that teachers are central to change, the focus of the research about teachers and technology integration has varied. Some studies (Bradshaw, et al., 2012; DiPietro, et al., 2008; Erstad et al., 2015; Jigsaw Consult, 2016) have focused on the *role* of the teachers in the implementation process. Davis et al. (2010) and DiPietro et al. (2008) considered that teachers' *characteristics* play a major role in their development, as not all teachers are willing to change and adopt the new trends. A meta-analysis of barriers to technology integration in K-12 settings conducted by Hew and Brush (2007) identified teachers' *attitudes* and *beliefs* about technology integration, along with their knowledge and skills in technology-based pedagogies, as two of the main barriers typically faced by schools in the USA and other countries. Tondeur et al.'s (2016) meta-aggregation of empirical studies conducted in nine countries into teachers' perspectives and experiences of technology

integration found that teachers' pedagogical beliefs aligned with their educational practices and may in fact hinder or prevent technology integration. Hew and Brush (2007) maintained that teachers should be given opportunities to participate in professional development in "transformative technology-supported pedagogy" (p. 228) that goes beyond teachers merely learning to operate the technology. However, such a transformation has reportedly created a sense of discomfort and teacher resistance (Archambault & Crippen, 2009; Davis et al., 2010) and demotivation (DiPietro et al., 2008), and many issues have emerged such as a lack of consistent vision, ineffective decision-making and a failure to align context and practice (Twining, Raffaghelli, Albion, & Knezek, 2013).

Collectively, the findings from these studies shine a light on the importance of teacher attributes with respect to change. In my study, I needed to ask educators about their perceptions of success in using ICT, their attempts to distinguish between talking about ICT and actual usage, their perceptions of their role and how it was changing, and their familiarity with and skill in using technology in classrooms. For clarity, "Educators" refers to both school teachers and administrators.

1.4.4 Why Consider System Factors?

Hew and Brush (2007) warned researchers proposing to investigate technology integration in K-12 settings against focusing exclusively on the teacher and on what is happening in the classroom, instead recommending a consideration of school- and district-level administration and leadership and of "other potentially important variables at the school or district level that may be affecting the integration of technology by teachers", including "technology-related policies that exist at the school and system level" (p. 247). Jigsaw Consult (2014), the company that has been evaluating the implementation of Vision 2021 in the public school system, also noted

the significant influence of cultural context, leadership, and provincial and spatial issues on implementation, and Cuban (2001) agreed that both internal and external groups such as school staff members and decision-makers outside the school are needed for effective technology integration in a school. Kozma (2003a) also emphasised the need to take in consideration the implementation of ICT in the schools as a factor in his framework by answering questions such as, "What contextual factors are associated with the use of these innovations?"; "What are the implications of contextual factors for the sustainability and transferability of these innovations?" (p. 218). In addition, Kozma (2003a) also emphasised the importance of ICT policies addressing questions such as "Which local policies related to staff development, student computer fees, facilities access, technical support, and other issues appear to be effective in supporting these innovations" (p. 219). Some of Kozma's (2003a) findings stressed the support of educators and the availability of resources as success factors for pedagogical innovation (p. 224). Furthermore, Kozma (2003a, p. 225) noted a "connection between the innovative pedagogical practices and a local school policy or plan" which had a direct impact on the classroom according to 63% cases of the study. Consequently, although teachers' perspectives of the challenges of technology integration were important in my study, the perspectives of other educators from all levels of the school, in combination with those reflected in relevant policies and school and system levels, were included to afford the opportunity to explore these other factors elucidated in the literature reviewed in Chapter 2.

1.5 The Boundaries of the Study

As the initial and ongoing evaluation of the implementation of the Vision 2021 initiatives was already underway in public schools (Jigsaw Consult, 2016), this study focused on researching the challenges of technology integration in K-12 private schools in the UAE as reflected in relevant education and school-level policies, and as seen from the perspectives of teachers and administrators working in private schools. Specifically, this research focused on the private schools in the Emirates of Dubai, Abu Dhabi and Sharjah as they are the major population centres in the UAE (Worldometer, n.d.). A significant consideration for the study was that the private school sector in the UAE is highly diverse when compared with the public sector. Private schools service the large and diverse population of foreign nationals (expatriates) in the Emirates, which comprises 90% of the total population (World Population Review, 2020). These schools offer many different curricula, with American and British being the most common, according to data extracted from the Department of Education and Knowledge (ADEK) (https://www.adek.gov.ae/) and the Knowledge and Human Development Authority (KHDA) websites (https://www.khda.gov.ae/en/).

Thus, my study included participants' perceptions of the experiences of technology integration , from classroom teachers to administrators along with insights about technology integration from relevant school- and system-level policies, targeting the two most common curricula and inclusive of various school subjects, so that diverse perspectives of the sector's challenges, enablers and priorities for technology integration were obtained. The fact that the private school system in the UAE uses English as its lingua franca, and that all private school educators are expected to be able to speak English, helped to ensure that data

collection was conducted effectively in this language that was common to all participants, no matter whether they were expatriates from the USA, Britain or India or local Arabs employed in these schools. Finally, both male and female educators of different ages and with different levels of experience were recruited for this study, with a view to ensuring maximum diversity of the selection of participants, and to ascertaining any significant differences in the perceptions about and actual use of technology in schools.

1.6 The Research Questions, Research Design and Methods

As was stated above, the aim of the study was to investigate challenges to and enablers of technology integration in UAE private schools, with a particular emphasis on system, teacher and school leadership-related factors. To this end, the study drew on a conceptual framework for technology integration devised by Kozma (2003a) "that positions ICT within layered contexts of classroom (micro), school and community (meso), and national (macro) factors" (p. 218). The work of Kozma (2003a) was motivated by global economic and social changes, conjointly with the "increase of investment" by policy makers to equip and connect schools to the internet (p. 217). This framework was developed from an extensive study of the factors influencing the integration of technologies in K-12 settings in 27 countries, and was shaped to suit the focus and context of this study of technology integration in the UAE private school sector drawing on education policy makers (macro), teacher attributes (micro) and leadership levels (meso) (Kozma, 2003a). Achieving this aim then required the setting of three objectives, each linked with one of three research questions. The first objective was to identify the policy context for

technology integration and how schools in the private sector were responding, addressed in Research Question 1 (RQ1):

1. What is the policy context for technology integration in the UAE private school sector, and what do private sector education policies at system and school levels tell us about the key factors influencing technology integration in schools and curricula?

The second objective was to shed light on the experiences and perceptions of the private school teachers and administrators of the challenges to and the enablers of technology integration in UAE private schools, addressed in Research Question 2 (RQ2):

2. What are school teachers' and administrators' experiences and perceptions of the integration of technology in UAE private schools, including the reported challenges and enablers?

The third objective was to identify the ways in which UAE private school teachers learned to integrate technology into their practice, addressed in Research Question 3 (RQ3):

3. How do UAE K-12 private school teachers learn to integrate technology into their educational practice?

Framed as a qualitative case study in the pragmatist paradigm (Gray, 2014; Stake, 2003, 2005), the study sought to collect both overarching and detailed data to answer the stated research questions. Consistent with this approach, semi-structured interviews were used to explore the perspectives and experiences of technology integration among a purposive sample of private school K-12 educators in the UAE. To provide added context, richness and rigour to the case study, selected education policy documents in the public domain relevant to the study of technology

integration from a selection of UAE government, private sector education peak bodies and private school websites were also subject to content and thematic analysis (Bowen, 2009; Owen, 2014; Peel, 2018) with reference to the macro and meso level factors in Kozma's (2003) technology integration framework. Content and thematic analysis of the qualitative data from the interviews and key policy documents was conducted with reference to the study's conceptual framework to generate answers to the study's three research questions, and how this analysis was conducted is explained as part of the research methodology and methods in Chapter 3.

1.7 Significance and Contributions to Knowledge, Policy and Practice

The purpose of the research was to gain a detailed understanding of the challenges faced by private UAE K-12 schools in implementing technology integration in response to national government policy directives. Specifically, combining the information from all three research questions yielded rich insights into the challenges to and the enablers of technology integration at micro (individual educators), meso (school) and macro (system) levels that in turn can inform knowledge about technology integration on a number of levels. Insights generated via comparisons with findings from public sector evaluations of technology integration in the UAE contribute knowledge that can be used to inform policy and practice in both sectors.

The findings contribute to the broader knowledge base about barriers to technology integration in K-12 settings, and about strategies for addressing these barriers via comparisons with Kozma's (2003a) conceptual framework, and also with the datasets generated by Hew and Brush (2007). The study adds value to the

scholarship of technology integration in K-12 education by illuminating how teachers experience integrating technology, informing school leadership, stakeholders and decision-makers about emerging practices in technology-based teaching and learning, with important implications for teacher professional development and training design. The findings also include recommendations for the development of an implementation framework to support UAE K-12 private school teachers and administrators to plan more effectively and to make decisions regarding technology integration.

Finally, as a culturally responsive and ethical interpretive study of technology integration in the Middle East education context, the study also contributes to methodological and theoretical knowledge through its culturally situated application and interpretation of Kozma's (2003a) framework for technology integration.

1.8 An Overview of the Thesis

The thesis is organised into six chapters, as follows:

Chapter 1: Introduction

Chapter 2: Literature Review and Conceptual Framework

Chapter 3: Research Design and Methods

Chapter 4: Findings for RQ1: Policy Analysis

Chapter 5: Interview Findings (RQ2 and RQ3)

Chapter 6: Conclusions and Recommendations

1.9 Definitions of Key Terms

Conceptual framework. "an end result of bringing together a number of related concepts to explain or predict a given event, or give a broader understanding of the phenomenon of interest – or simply, of a research problem" (Imenda, 2014, p. 189).

Education technology. "Is the study and ethical practice of facilitating learning and improving performance by creating, using and managing appropriate technological processes and resources" (Januszewski & Molenda, 2008, p. 1).

Information and Communications Technologies (ICT). "ICT refers to technologies that provide access to information through telecommunications" (Christensson, 2010, para. 1).

K-12. "[In the United States] relating to education from kindergarten [= the class that prepares children for school] to 12th grade" (Oxford Learning Dictionary, 2020).

Technology integration. "the use of computing devices such as desktop computers, laptops, handheld computers, software, or Internet in K-12 schools for instructional purposes" (Hew & Brush, 2007, p. 225).

1.10 Conclusion

In this chapter, I introduced the aims and purpose of the study, and I briefed the reader about my background as an educator and my interest in, and journey with, the integration of education technology. The background and context of the study were then presented, followed by the rationale for the study's focus and its boundaries that were informed both by key themes drawn from the relevant literature about K-12 technology integration at a global level and by a consideration of factors

in the local UAE context. The research questions were then outlined, followed by an explanation of the research paradigm, design and methodology. Anticipated contributions to knowledge and the significance of the study were highlighted. The chapter concluded with an overview of the thesis and definitions of the key terms used in the thesis. This chapter paves the way to Chapter 2, which presents the literature review and the conceptual framework.

CHAPTER 2: LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

2.1 Introduction

Chapter 1 provided details about the researcher's background, experience and exposure to the integration of education technology in K-12 UAE private schools. This information set the scene for the research problem to be investigated in this study. In particular, it was noted that, whilst technology integration in government schools is currently the focus of research and evaluation, there is limited research into the challenges that educators in UAE's private schools face as they integrate technology in response to the education section of the UAE's National Agenda, UAE Vision 2021 (UAE Vision 2021, 2010). In this chapter, therefore, relevant literature examining K-12 technology integration in other countries is reviewed to shed light on the challenges that have been investigated elsewhere that have important implications for this study. In addition, the findings of a small number of recently completed studies of technology integration in the K-12 school sector in the UAE are also included in the review, providing critical contextual knowledge. Although no single theory of technology integration was found to be suitable to address this study's focus, some relevant theoretical and conceptual frameworks were located and have been included to inform the design of a conceptual framework to guide the research.

2.2 The Structure of this Chapter

The chapter begins with the introduction in section 2.1 followed by section 2.2, the structure of the chapter. Section 2.3 which frames the areas of literature

reviewed for this study. In Section 2.4 I review key theories of technology integration and educational change. After that, Section 2.5 addresses technology integration and K-12 teachers. In the next section, 2.6 is literature on leadership and innovation in technology integration in K-12 settings, with reference to system, institutional and organisational factors. In Section 2.7, I address technology integration and teachers' professional development, followed by Section 2.8, which provides insights from studies conducted in the UAE. In Section 2.9, I unpack the conceptual framework that guides this study, addressing the main changes made in adapting Kozma's (2003a) framework as a conceptual framework for my study. Following this, in the final section, 2.10, I conclude the chapter, and I pave the way to Chapter 3.

2.3 Framing the Literature Review

As was noted in Chapter 1, a plethora of terms is used in the English language to refer to the phenomenon of the integration of technology in education, broadly speaking, and technology integration in K-12 settings more specifically. These include blended learning (Horn & Staker, 2011); e-learning (ADEC, 2013); smart learning (Jigsaw Consult, 2013); technology-based pedagogies (Gao et al., 2009); and innovative pedagogical practices (Kozma, 2003a), to name a few. Hew and Brush (2007) used the umbrella term "technology integration" to refer to "the use of computing devices such as desktop computers, laptops, handheld computers, software, or Internet in K-12 schools for instructional purposes" (p. 225), whereas Tondeur et al. (2016) used "meaningful technology integration" to describe "using technology to support 21st century teaching and learning" (p. 556). These terms were used in search terms to locate scholarly articles in academic databases and journals

and on the Internet, and also to search for relevant grey literature such as key policy documents and reports that needed to inform the research. The inclusion and exclusion criteria for the literature review were as follows:

- include literature on education technology integration in K-12 education published during 2010-2021 plus other seminal literature from pre-2010 such as Kozma (2003a, 2003b, 2008)
- include both scholarly literature, such as peer-reviewed journal articles and monographs, as well as so-called grey literature, such as government policies and reports
- report key findings from selected case studies of technology integration in K-12 from Australia, Singapore, Europe, the United Kingdom, North America and the Gulf countries of the Middle East related specifically to teacher factors, school/organisational and system factors, and education technology leadership innovation.

In the next section, I review technology integration in the context of educational change to identify important perspectives needed to inform the study of technology integration in the UAE private school sector in response to Vision 2021.

2.4 Technology Integration and Educational Change

It was noted in Chapter 1 that the integration of digital technologies into schooling is a "complex process of educational change" (Tondeur, et al., 2016, p. 555) that has been a feature of the education landscape in recent decades, and one that continues to present challenges for 21st century schools and educators globally. These challenges are often referred to in the literature in terms of disruption. According to Millar et al., (2018), "disruption in the context of technology and

innovation is defined as ‘change that makes previous products, services and/or processes ineffective’” (p. 245). The implication is therefore, one of discontinuity – previous technologies and/or ways of working are no longer viable. Disruption can be driven by factors such as cost, quality, customers, regulation and resources (Millar et al, 2018). Millar et al. (2018) explained that disruptive innovation and disruptive technology need to be differentiated. They defined disruptive innovation as “the commercial introduction of product, service, process and/or organisational change that disrupts the activities of existing players in an industry or similar organisational system (e.g. a part of government)” (p. 246) as seen in the prevalence of commercial providers of educational technology in the UAE private K-12 sector. On the other hand, “Disruptive technology can be defined as technology with the *potential* to create disruptive innovation at any of these levels, Industry segment, Industry structure and Social system” (p. 246; *emphasis in original*). Referring specifically to the context of education, disruption was mentioned by Eom and Wen (2006) and Garrison (2003), who focused on the *disruptive impact* of emerging technologies on the teacher’s role, which is further explored in Section 2.5. The importance of this theory lies in highlighting the potentially disruptive impact of education technology integration on the teaching and learning process and on the role of teachers.

Contrasting with the idea of technological disruption is the theory of the diffusion of innovations. Diffusion was defined by Rogers (2003) as “the process by which an innovation is communicated through certain channels over time among the members of a social system” (p. 5), with the key elements being “innovation, communication channels, time, and the social system” (p. 10). Rogers (2003) claimed that interest in the diffusion of innovations is a result of the difficulty in

getting new ideas adopted despite their obvious advantages, and that “a common problem for many individuals and organizations is how to speed up the rate of diffusion of an innovation” (p. 1). Ensminger (2016) applied this concept to educational technology integration, stating that “The integration of technology into the classroom results from the diffusion of technology in the organization”, which occurs in the three separate processes of “adoption, implementation, and integration” (p. 456). Further, Ensminger (2016) mentioned that:

> Failure to resolve cognitive and affective issues or poorly aligning a technology to meet organizational goals during the adoption phase influences an organization’s ability to act in ways that promotes successful implementation. If implementation decisions and actions fail to address key issues related to the dissemination of technology, individuals in the organization will fail to fully integrate technology into their practice (Ensminger, 2016, p. 456).

The importance of this theory lies in what it reveals about education technology integration and how it relates to K-12 education, specifically when it comes to the importance of planning, structure and analysis, and taking into consideration the time variables and the requirement to avoid taking a hasty approach to integrating education technology in schools. This theory has helped to inform my study by showcasing the difficulty in getting new ideas adopted and the importance of time, communication and the social system (Rogers, 2003, p. 5) for the diffusion of innovation.

According to Selwyn (2014), “sociological research is now ably showing that digital technologies in education are not neutral but political; that they are carriers for assumptions and ideas about the future of society; that their design,

promotion and use are all sites in which struggles over power are conducted" (pp. 9-10). Selwyn's critical perspective helped to bring attention to the potential political aspect of technology integration – such as the delivery of a government's agenda – which is something that can be seen in the United Arab Emirates in terms of the UAE government's Vision 2021 (United Arab Emirates, 2010). Consideration of such political aspects is included in this study's policy analysis component in Chapter 5.

Bellamy (1996) used activity theory as a framework to study the relationship between technology and educational change, and raised questions about how technology promotes educational change, such as "Why technology should be a catalyst for change?" (p. 144), and "If technology does promote change, what technology should be placed in schools?" (p. 144). Bellamy suggested that education technology should "support collaboration between communities of learners" (p. 144), and facilitate the "construction of artifacts" and "authentic activities" (p. 144). However, Bellamy stated that it is important to take into consideration not only classroom activities for promoting change but also all aspects of the educational situation such as the activities of educators and educational administrators. These findings raised awareness in my study of the importance of taking into consideration all parties in the teaching and learning process when it comes to education technology integration in K-12 schools.

Another theory of technology integration and educational change proposed that "technology and institutions are evolving together, that is, two evolving phenomena interact causally with one another" (Kapas, 2008, p. 2). Erstad et al. (2015) also took this view, providing a meta-perspective that examined the co-evolution of technology and school systems with a focus on teachers as agents of

change as a result of the emergence of new technologies and educational innovation. Erstad et al. (2015) reflected on the steps undertaken in the past 20 years to establish a balance between technology- and pedagogy-driven changes that might have led to uncertainty from the teacher's position in today's schools in relation to new models of teaching and learning that utilise new technologies. The complexity of educational change and how disruptive educational technology can be, highlighting the need for diffusion of innovation, is further explored in the conceptual framework section.

The next section reviews key perspectives in the literature on technology integration and K-12 teachers, which was a central focus of this study.

2.5 Technology Integration and K-12 Teachers

As was noted in Chapter 1, a key challenge of successful technology integration lies in teachers' capacities to use technology effectively in the classroom. The focus of research into teachers and technology integration has nonetheless varied. Some studies (Bradshaw, et al., 2012; DiPietro, et al., 2008; Erstad, et al.,, 2015; Jigsaw Consult, 2016) have focused on the *role* of the teachers in the implementation process. Common themes in these studies revolved around impacts on teachers' daily practices (Andersson, 2006; Dawson, 2006; Kay & Knaack, 2005; Swain, 2006; Wright & Wilson, 2005). Further studies, such as those conducted by Eom and Wen (2006) and Garrison (2003), focused on the *disruptive impact* of emerging technologies on the teacher's role. They noted that teachers no longer have the upper hand in subject knowledge as in traditional learning where the teacher is a transmitter of knowledge. Instead, their role must be transformed into that of being a facilitator who guides the learning process by providing feedback, and designing courses to stimulate collaboration and interaction.

Within this overarching theme, common subthemes in studies of technology integration in K-12 settings related to the practices of existing teachers (Bradshaw et al., 2012; DiPietro et al., 2008; Erstad et al., 2015; Jigsaw Consult, 2016) focused on teachers' *abilities, attributes and perceptions* of their success in using ICT on a daily basis. A study conducted by Archambault and Crippen (2009), for example, examined a sample of 596 K-12 online teachers in the United States to measure their knowledge in technology, pedagogy and content. The study used the TPACK model to analyse the teachers' perceptions regarding technology-based education, and their findings showed that teachers tend to lack confidence when it comes to technology, whilst feeling rather more comfortable when it comes to content and pedagogy. However, the main limitation of this study was that it addressed only online education, leaving out other methods of integrating technology in education. At the same time, this article added another dimension to my study, which took into consideration the teachers' confidence when it came to integrating technology. Further, a link between the point being made by Archambault and Crippen about teachers' confidence in using technology and Tondeur et al's research on teachers' pedagogical beliefs, is discussed later on in this sub-section

Davis et al., (2010) and DiPietro et al. (2008) considered that teachers' *characteristics* play a major role in their development as not all teachers are willing to change and adopt the new trends. As was reported by Archambault and Crippen (2009), teachers feel that they are prepared for traditional face-to-face teaching and learning, and that is where they see themselves and their careers as teachers. A meta-analysis of barriers to technology integration in K-12 settings conducted by Hew and Brush (2007) identified teachers' *attitudes* and *beliefs* about technology integration

along with their knowledge and skills in technology-based pedagogies as two of the main barriers typically faced by schools in the USA and other countries.

Davis et al., (2010) examined the preservice teachers' understandings of education and of adapting technology in K-12 schools. This study had 51 participants who had to conduct an assignment regarding the usage of technology in teaching and learning. Based on the data gathered from the participants' assignments, the findings stated that schools are in need of teachers who can effectively use and integrate technology in the classroom for the benefit of their students. Furthermore, the study stated that being an excellent teacher does not necessarily guarantee the best usage of the tools available; rather it relies on the teacher's view of technology as an integral part of the learning process. The above findings helped to inform my study about the importance of teachers' skills in integrating technology, and their willingness to utilise what is available in the school accordingly. The main limitation of the study was that it did not take into consideration experienced teachers who learned their profession before the existence of ICT in teaching and learning. However, this study shed light on teachers' skills when integrating education technology, and, by including experienced teachers and identifying their approaches regarding the usage of technology in teaching and learning, this limitation can be avoided.

Teachers' *preparedness or readiness to use emerging technologies in their teaching* was another theme found in the literature reviewed for this study. For example, recent surveys conducted with teachers in participating OECD countries found that fewer than half of teachers surveyed felt prepared when they became teachers to integrate emerging technologies into their teaching, and a little more than half reported having received training in the use of technology for teaching and

learning (OECD, 2019, para. 4). By way of contrast, OECD (2019, para. 16) revealed that, whilst approximately 18% of teachers across the OECD still expressed a high need for professional development in ICT skills for teaching, 86% of teachers surveyed in UAE reported feeling prepared for the use of ICT for teaching. This was supported by a study conducted with teachers at UAE Model Schools (Almekhlafi & Almeqdadi 2010). The study found that, despite reported barriers such as "technical problems, large number of students, lack of professional development training, lack of motivation and financial support, and negative teacher and parent attitudes toward the impact of technology on teaching and learning", these teachers had a "high self-perception of their abilities and competencies to integrate technology successfully in their teaching" (p. 173). This suggested that UAE educators' readiness to use emerging technologies in their teaching may well be a special case in point when compared with teacher readiness in other OECD countries. These findings about the so-called teacher factors were supported by studies conducted in Sweden (Angélli et al., 2019), Malaysia (Ghavifekr et al., 2016), Spain (Gil-Flores et al., 2017) and Australia (Goodwin et al., 2015), all of which pointed to the importance of teachers' characteristics and practices for the successful integration of technologies in teaching and learning.

Tondeur et al.'s (2016) meta-aggregation of empirical studies conducted in nine countries into teachers' perspectives and experiences of technology integration found that teachers' pedagogical beliefs aligned with their educational practices and may in fact hinder or prevent technology integration. Tondeur et al. shed light on the social and cultural perspectives of technology integration, and suggested that:

> …we have to assume that pedagogical beliefs and technology uses in classrooms are different in different parts of the world. Future

> research should consider the relational use of technology in view of teachers' pedagogical beliefs and school cultures…, national and local curricular organizations, and the societal characteristics of educational systems (Tondeur et al, 2016, pp. 570-571).

Further, as was mentioned by Tondeur et al. (2016):

> …some researchers noted that teachers report having few conversations about the role of technology in their classrooms and mention the school culture as a barrier. Interestingly, the findings also demonstrate how students' negative attitudes and poor ICT skills can hinder student-centered technology integration (Tondeur et al, 2016, p. 568).

These findings helped to raise awareness in my study of the importance of taking into consideration the impact of culture and society and teachers' pedagogical beliefs about technology integration on the teaching and learning process. Moreover, my study was situated in a specific cultural context, designed as a case study of technology integration in the UAE K-12 private sector.

Collectively, the findings from these studies shone a light on the importance of teacher attributes and practices with respect to technological and pedagogical change. It is well-accepted that the availability of technology in school classrooms cannot, on its own, "improve the quality of the learning process nor the results of the educational service" (Mohebi, 2019, p. 2). The key role played by teachers as innovators and agents of change was highlighted in the literature, with pedagogy serving as the link between the content and technology (Archambault & Crippen, 2009) as teachers integrate the knowledge of the subject matter with the usage of

technology in the classroom (Davis, Hartshorne, & Ring, 2010). In their article on teachers as agents of change, Erstad et al. (2015) reflected on the steps that had been undertaken in the past 20 years to establish a balance between technology- and pedagogy-driven changes that might have led to uncertainty from the teacher's position in today's schools in relation to new models of teaching and learning that utilise new technologies. In their article, key themes derived from research about digital technologies in schools were used as a frame to analyse teachers' conceptions as part of change processes. Erstad et al. (2015) concluded that it seems essential to prepare teachers to face these challenges in implementing ICT by supporting them through professional development and pedagogical practice. The role of teachers as agents of change and the provision of professional development to support teachers' readiness to integrate technology into their practice are further elaborated in the section outlining the study's conceptual framework.

2.6 Leadership and Innovation in Technology Integration in K-12 Settings: System, Institutional and Organisational Factors

Notwithstanding the strong emphasis in the literature on the role and characteristics of teachers, a variety of system, institutional and organisational factors is considered to be critical influences on the successful implementation of technology integration in K-12 settings (Buabeng-Andoh, 2012; Hew & Brush, 2007; Tondeur et al., 2016). Such factors include resourcing, leadership, subject-matter cultures, assessment practices, teacher workloads, access to professional development, and technology infrastructure and equipment. This was consistent with the findings of a number of studies, including Kozma's (2003a, 2003b, 2003c) series

of studies into the factors influencing the integration of technologies in K-12 settings in 27 countries, Tondeur et al.'s (2016) findings about the importance of "school cultures…national and local curricular organizations, and the societal characteristics of educational systems" (pp. 570-571) and Jigsaw Consult's (2014) evaluation of the implementation of Vision 2021 in the UEA public school system. This section of the chapter synthesises literature on leadership and innovation in technology integration in K-12 settings, focusing on the system, institutional and organisational factors considered important for this study.

In my literature search, I identified a link between technology integration and school leadership. Some researchers concluded that school leadership is a challenge for, or barrier to, technology integration in a school. For example, Hew and Brush (2007) identified leadership as an "Institutional barrier", and they further explained that "school leadership can hinder the integration of technology by teachers" (p. 228). In their study, they reported teachers' feelings that "principals did not understand technology and its relevance to the government's proposed shift to more learner-centered activities", and that, as a consequence, "the impact of technology on the teachers' practices in the classroom was restricted" (p. 228). Conversely, the studies conducted by Tondeur et al. (2017), Hew and Brush (2007), Kozma (2003a) and Buabeng-Andoh (2012) all referred to the importance of having an ICT oriented leadership, and of having a shared vision, highlighting the enabling role of school leadership for technology integration. For example, Kozma (2003a)highlighted the "important role for school vision and for the principal … particularly when it came to policies tied to educational reform", noting that "an important function of local policy was to articulate a vision of ways to use ICT in the school and convert these visions into classroom-based actions" (p. 230). In their

evaluation of technology integration in the UAE's public-school sector, Jigsaw Consult ((2014, pp. 5-6) found that "principals have a central role in leading their schools and motivating their teachers to inspire their students". Davis et al. (2010) found that when seeking to establish a sense of comfort with technology among teachers, school leaders need to ensure access to equipment inside and outside the school and technical support in the implementation.

According to Davis et al. (2010), not all teachers have sufficient access to equipment outside the classroom; rather they tend to rely on whatever the school provides for them inside the school borders. The failure to provide the teachers with the necessary requirements to perform their job can lead to complications and discomfort as the purpose of integrating education technology is to make the teaching and learning process comfortable and flexible whereby all students can reach their teacher at any time or place. Therefore, there should be a clear school policy that provides the teachers with the necessary equipment before taking the decision to integrate education technology. Furthermore, teachers will require technological support from the IT support staff to establish a smooth process when it comes to setting up the platform for the teaching and learning process. Failure to provide the teachers with the necessary technical support can lead to delays in the delivery of teaching and learning as the teachers do not possess the required knowledge to deal with all the technological aspects whether it is their own equipment or that of the students (Eom, 2006). Further, Jigsaw Consult (2016, pp. 5-6) found "technical limitations" relating to limited in-school connectivity and increase in device failure". Such system, institution and organisational factors impacting the successful integration of education technology are further explored in

the outline of the study's conceptual framework at the end of this chapter. In the next section, I address technology integration and teachers' professional development.

2.7 Technology Integration and Teachers' Professional Development

At the interface between teacher and system-wide factors is the issue of teachers' professional development and, specifically, the question of how teachers learn to integrate technology into their practice. Examining challenges from both the United Kingdom and the United States, it is evident that professional development is an essential element of the successful integration of education technology in K-12 schools. Bradshaw, Twining and Walsh (2011) stated that the development and evaluation of a continuous professional development (CPD) program are a significant challenge for many governments worldwide. Their findings revealed opportunities for professional development with respect to teachers' personal use of ICT to gain confidence about their success, and in terms of integrating its use. Hew and Brush (2007) maintained that teachers should be exposed to professional development in "transformative technology-supported pedagogy" (p. 228) that goes beyond teachers merely learning to operate the technology. However, such transformation has reportedly created a sense of discomfort and teacher resistance (Archambault & Crippen, 2009; Davis et al., 2010) and demotivation (DiPietro et al., 2008), and many issues have emerged such as lack of consistent vision, decision-making, and the failure to align context and practice (Twining et al., 2013).

Tondeur et al. (2016) found teachers' professional development to be a central theme in their review of the relationship between technology integration and teachers' pedagogical beliefs. They concluded that, because pedagogical beliefs are

"relatively stable" (p. 566), short-term, one-off professional development events are likely to be ineffective in changing teachers' practices. They recommended that professional development programs should "support teachers learning about the meaningful use of technology in education" (p. 571), based on a nuanced understanding of the important role played by teachers' pedagogical beliefs. Accordingly, the interviews conducted for this study with educators in classroom teaching and administration roles therefore, needed to include questions about professional development and the outcomes, positive and negative, of that professional development implemented in each school, along with an investigation of the school and system-wide factors likely to influence decisions about teachers' professional development for technology integration. Teaching and Learning International Survey (TALIS) reported that 78% of teachers in OECD countries help one another to implement new ideas. Interestingly, however, the OECD also reports that "only 44% of teachers take part in training based on peer learning and networking, despite collaborative learning being identified by teachers as having the most impact on their work" (Schleicher, 2018, p. 19). The importance of teacher professional development, how teachers learn, and the evaluation of professional development programs and how these can support successful technology integration are common challenges that countries worldwide struggle with. These factors are further addressed in the conceptual framework section. In the next section, I provide insights from the UAE on technology integration.

2.8 Insights from the UAE

In many countries, the integration of technology is part of an instructional shift of teaching and learning within the context of school improvement or

governmental reform (Jigsaw Consult, 2016; Pelgrum & Anderson, 1999). Heralded by the release of government policies such as Vision 2021 (United Arab Emirates, 2010), the United Arab Emirates (UAE) has joined the worldwide impetus for the integration of Information Communications and Technologies (ICT) into its K-12 education system as a central plank of reforms to its economy and education system. This presents particular challenges for private schools in the UAE, which are required to adhere to national government and local education authority guidelines and standards but receive less than one per cent of their funding from the government (Kamal & Trines, 2018; OECD, 2012), and also face particular challenges related to decision-making about investment in suitable technologies and support systems, including teachers' professional development, in a context of strong growth in student numbers and reported high teacher turnover rates (Alkhyeli & Van Ewijk, 2018; Höckel, 2015). It has been found also in the UAE that a lack of professional development leads to teacher resignation and demotivation to use technology (Jigsaw Consult, 2016).

The UAE government (MBRSLP Annual Report, 2014) acknowledged the lack of rigorous evaluation of large-scale technology integration in other countries, making it difficult to identify best practice. Consequently, an independent group, Jigsaw Consult (2014, 2016), was engaged to evaluate and monitor the ongoing implementation of Vision 2021 in government schools. Their findings thus far, were very informative for my study that was undertaken in private schools. Comparison was facilitated by using, wherever possible and relevant, the same questions that they used. Their study focused on the detail of the deployment that had taken place and changes in perception, attitude and usage patterns, which fitted with my reported

findings from the literature review. Some of the key findings of Jigsaw Consult (2014) were:

- A majority of teachers believed that teaching quality had increased, and that student attitudes and outcomes had improved as a result of technology integration.
- A majority of teachers also expressed their liking for working with technology.
- However, 92% of teachers believed that their workload had increased, although paradoxically they also believed that they had experienced increased time saving.
- Principals reported better oversight of staff members, direct communication with parents and students, and follow-up of student progress.

Teachers reported increased confidence in using ICT, feeling more effective as teachers, increased enjoyment of their work and increased collaboration (Jigsaw Consult, 2014, pp. 5-6). These results seemed very positive for the implementation of any new program, and it was interesting to see whether private school educators, able to speak more freely as they were not in danger of criticising the government, shared these positive beliefs to the same degree. As they were studying local schools with a relatively high proportion of locals both as teachers and as students, Jigsaw Consult (2014) also reported issues of gender and language, but these factors were minimised in my study design as the schools where I collected data were mainly staffed by expatriates. Nonetheless, both male and female educators were recruited, with a view to ascertaining any gender differences in the perceptions about and the actual use of ICT in schools. Further, there was as an online training program made

available for teachers to learn more about the local culture, however its effectiveness was not analysed in the report (Jigsaw Consult, 2016).

Answers to questions about resources and infrastructure reflected the generous funding and support from the UAE government, although it was acknowledged that there had been significant challenges in integrating technology into pre-existing classroom environments. Similar questions were asked in my study, other than specific questions about resources directly provided by the government. For example, the government embedded one technology support worker in each public school, and the research indicated that this was a much-needed resource. This was not provided to private schools, so at best educators in my study could speculate as to whether such a worker would be of benefit to them.

The report about the second year of implementation of Vision 2021 (MBRSLP, 2015) expressed satisfaction that the positivity about the program had been maintained. It had been anticipated that the initial positivity may have been replaced with pragmatic realism regarding the difficulties faced. However, the government response to the challenges identified in their first report, and pilot programs to identify the best ways of meeting certain challenges, had been successful in ensuring an appropriate pace of change. Nonetheless, 84% of teachers still believed that their workload had increased. Principals reported that not only was more technology being used in their school, but also they personally were now more likely to use ICT in their work, and that they enjoyed doing so. This was another aspect to be added to my study. The significance of these UAE insights and the government's approach to improve education by using education technology is detailed in the conceptual framework section.

2.9 Conceptual Framework: Adapting Kozma's Framework for this Study

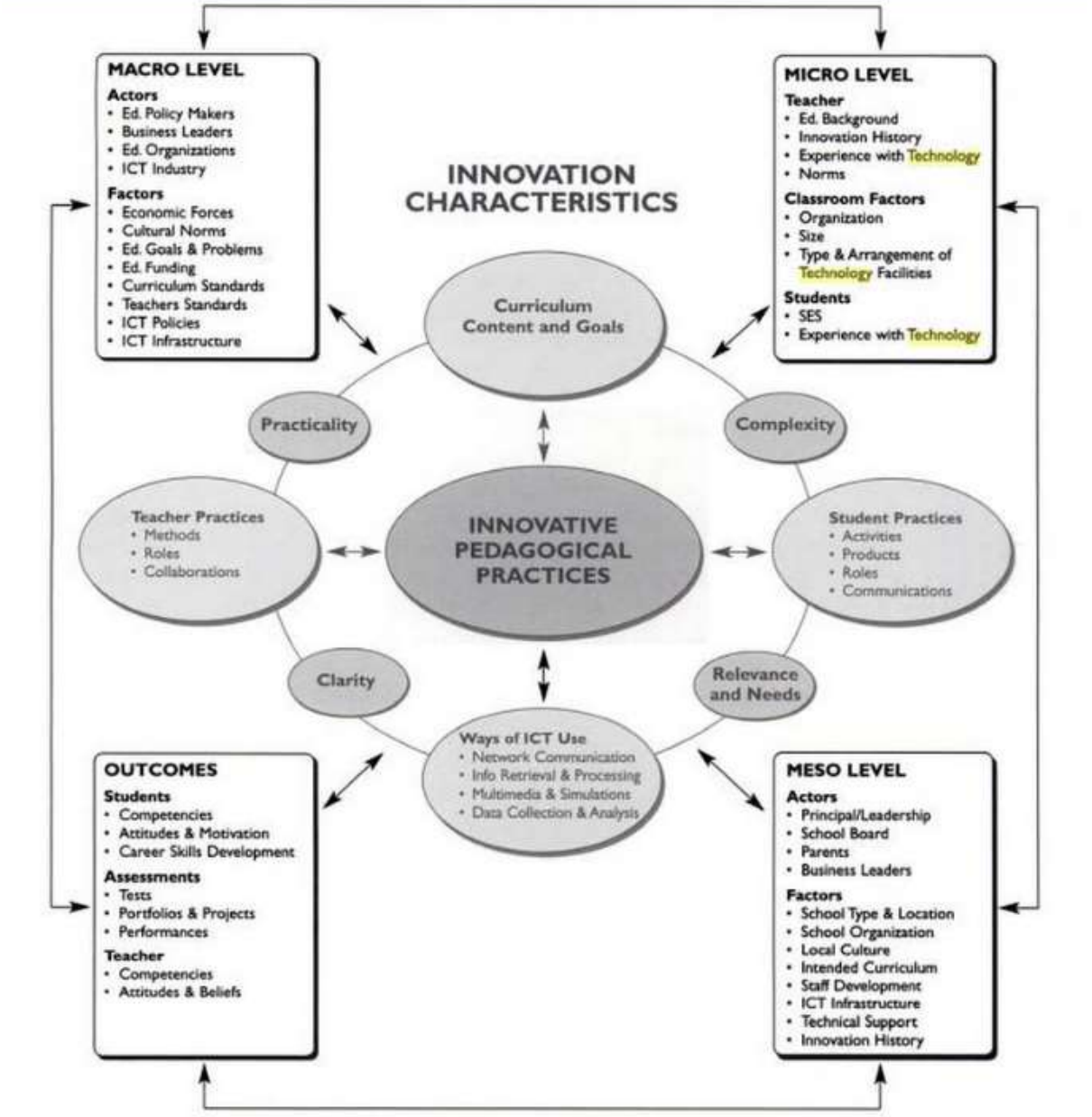
According to Imenda (2014), theoretical and conceptual frameworks serve the same purpose of identifying the variables, providing a general approach and guiding the data collection process. However, there are differences between them conceptually, methodologically and in the scope of their application. A theoretical framework requires an existing theory to be tested (Rocco & Plakhotnik, 2009). However, no single theory of technology integration was found to be suitable for use as a theoretical framework for this study. As stated by Cobb (1994):

> The point is 'to consider what various perspectives might have to offer relative to the problems or issues at hand' (p. 18). There is no basis for claiming that one view or another gives us a better account of how things really are, and so we are free to choose or to mix-and-match in whatever way gains us an advantage in solving problems (Cobb, 1994, p. 18).

In my search for an applicable conceptual framework to guide my research, various frameworks were located such as Bellamy (1996), Garrison and Anderson (2003), and a meta-perspective from Erstad et al. (2015), each of which has been presented in earlier sections of this review. All the above studies referred extensively to the work of Kozma (2003a, 2003b, 2003c), and indeed by far the framework most targeted for this study and the most comprehensive in terms of included factors located was Kozma's conceptual framework of technology integration (2003a) created from his analysis of 174 studies from 28 countries (Kozma, 2003b). Therefore, the study drew on and adapted a conceptual framework originally

developed by Kozma (2003a) based on extensive empirical studies of technology integration in 28 countries and referred to extensively in the literature reviewed for this research. Kozma (2003a) described his conceptual framework as a "framework of the factors that may influence the use of technology in the classroom and its impact on educational outcomes" that drew on theorising in the literature "from comparative education, school improvement and reform, technology and education, evaluation, cultural psychology, and the adoption and diffusion of innovations" (p. 10). Kozma's (2003a) original framework is presented below in Figure 2.1.

Figure 2.1:
Kozma's (2003a, p. 12) Conceptual Framework of Technology Integration

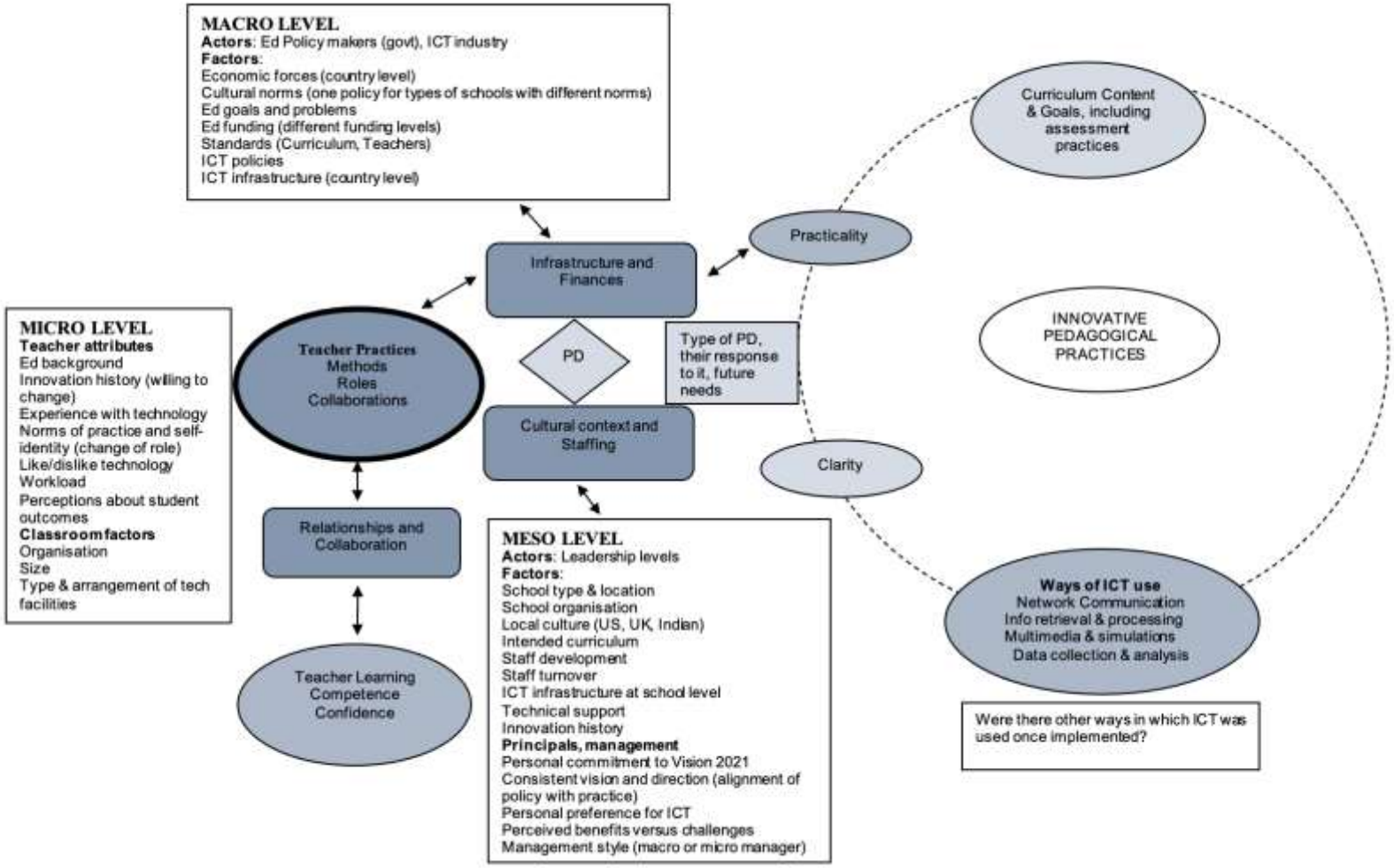


According to Kozma's (2003a) description of his framework, "our framework specifies a set of factors and general relationships that detail and give context to the primary focus of our study: innovative pedagogical practices that use technology" (p. 10). Furthermore, Kozma (2003a) detailed the components of his conceptual framework as follows: "The levels that surround these practices are the

classroom (micro level), the school or local community (meso level), and state, national, and international entities (macro level). At each level there are actors and factors that mediate change" (p. 11).

The findings of the above review of literature led me to conclude that Kozma's (2003a) framework could be adapted to suit this study's context and requirements and serve as a guiding conceptual framework for the research. However, a number of adaptations would need to be made to the framework to suit the specific purpose, focus and scope of my research and its associated limitations. For example, Kozma's framework took the shape of a circle, with the right side focusing on student practices, and the left side focusing on teacher practices. To limit this study appropriately, student practices were not examined. The literature was thus searched to elucidate other modifications that could be made to Kozma's framework to guide the questions to be asked of the educator participants in this study. As a result of gaining these insights about technology integration from international and local studies, various modifications were made to Kozma's framework (2003a) to include all of these aspects. This new framework is shown below in Figure 2.2.

Figure 2.2:
Conceptual Framework (adapted from Kozma, 2003a, p. 12)



The following changes may be noted in comparison with Kozma's (2003a) original framework in Figure 2.1. Whilst Kozma's (2003a) framework focused on both students' and teachers' practices and included student outcomes, the scope of the study was limited to the consideration of factors specifically related to the role, contexts, characteristics and practices of educators, as shown in the conceptual framework for this study in Figure 2.2, adapted from Kozma's (2003a) framework. The right side on student practices was removed, and the left side of the framework on teacher practices was greatly expanded to include infrastructure and finances, professional development, cultural context and staffing (such as the presence of support workers), relationships and collaboration, and teacher learning, competence and confidence. Further, technology integration was seen as more suitable to be at the centre than Kozma's innovative pedagogical practice as the focus of my research is to understand the challenges faced by these teachers when implementing technology integration, not solely on their pedagogical practices. The focus of Kozma's (2003) study was on teachers' innovative pedagogical practices using technology and the contextual factors influencing these practices. My study, on the other hand, is focused on gaining a detailed understanding of the challenges faced by private sector K-12 schools in the United Arab Emirates (UAE) when implementing technology integration in response to national government policy directives. Whilst teachers' pedagogical practices are a consideration for my study (as shown in the Micro level actors and factors), they are not the central focus. The specific factors in the macro, meso and micro boxes have also been modified and expanded to incorporate and elaborate all of the factors elucidated through the literature review. For example, at the Macro level of the framework, specific "Actors" (business leaders and educational organisations) were removed to reflect the study's focus on

factors specifically relevant to the policy context of educational reform using technology integration in the UAE K-12 context. At the Meso level, specific Actors (School Board, Parents and Business Leaders) were removed and Factors added to reflect the study's focus on school leadership, teachers and administrators relevant to the UAE context (Staff Turnover, Personal Commitment to Vision 2021, Consistent Vision and Direction) (Alignment with Policy and Practice). At the Micro level, student-related factors were removed and teacher-related factors such as workload and as "Like/dislike technology" were added. These changes ensured the suitability of the conceptual framework for the purposes of guiding this study's investigation into broader system, school and teacher-related factors influencing technology integration in UAE private K-12 schools, including both the design of the data collection techniques and instruments and the framework for the analysis of data from the educator interviews and the policy analysis components of the study. These are elaborated further in the relevant sections of Chapters 3, 4 and 5.

2.10 Conclusion

In this chapter, I unpacked the literature used to frame this study, theorised about education technology in K-12 education, and highlighted technology integration, teachers and professional development. Further, I provided insights from the UAE, and I concluded with an overview of the conceptual framework, adapting Kozma's (2003a) framework for this study. This chapter paves the way for Chapter 3, which presents the study's research design and methodology.

CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

The previous chapter provided a research literature review; discussed the meaning of technology integration for the purpose of this study; presented theories about technology integration in K-12 education, with reference to teachers, leadership and innovation, and system, institutional and organisational factors; identified existing knowledge gaps; and presented this study's conceptual framework, adapting and updating Kozma's (2003a) framework for this research. This chapter presents the research design and outlines the methodology for conducting this case study of technology integration in the UAE private school sector, paving the way for the policy analysis and for the presentation of the RQ1 findings in Chapter 4.

3.2 The Structure of this Chapter

There are nine sections in this research design and methodology chapter, the first section being the introduction, followed by the structure of the chapter. The third section, Section 3.3, addresses the research design philosophy and the rationale for the selection of the mode and the general design of the research, and highlights the research paradigm used. Section 3.4 addresses the case study design, the study site, and data sources and sampling considerations. Section 3.5 outlines the procedures and instruments used for data collection and analysis in relation to all three RQs. Section 3.6 is devoted to the ethics component, from obtaining institutional approval and participant consent to the completion of the ethics process.

Section 3.7 explicates the strengths and rigour of the study. Finally, Section 3.8 concludes this chapter and provides a transition to Chapter 4.

3.3 The Research Design Philosophy

3.3.1 My Research Assumptions

A world view, described by Creswell (2007) as a paradigm, is the researcher's beliefs about the knowledge that guides and shapes her or his research. According to Creswell (2009), "These worldviews are shaped by the discipline area of the student, the beliefs of advisers and faculty in a student's area, and past research experiences" (p. 6). My research assumptions stem from my seven years of experience as an educator in the UAE. Bounded by my experience as a teacher and head of department, who throughout my career adopted pragmatic teaching methods, and as a research student using a qualitative emphasis in my research, my philosophical path and methodology for this study were consistent with the detailed planning that informed the conduct of the research.

According to Guba and Lincoln (1994), research methods issues are secondary to questions of paradigms, and the paradigm guides the investigator in the selection of methods. Many years of experience in teaching (some in middle management positions) gave me the chance to observe teachers in my department as they attempted to integrate technology in response to the school's directives and to government policy. This research situated the researcher not only in the world of classroom teachers and administrators, but also in the education technology and professional development world of those same classroom teachers and administrators, which was explored through the interviews. I sought to interpret how teachers learned to integrate education technology in their classrooms, in addition to

their experiences and the challenges that they faced, from a pragmatic orientation or world view. From my experience as an interviewer, I came to know more of the field of education technology integration, based on what the participants shared about their views and experiences with education technology in their schools. And, from my experience as a pragmatist researcher, I have realised that, by following Morgan (2018), I have found the pragmatist paradigm to be sufficient for my research purposes in my doctoral study, without needing to refer specifically or separately to epistemology and ontology.

3.3.2 The Pragmatist Research Paradigm

Pragmatist epistemology does not view knowledge as reality (Rorty 1980). Rather, it is constructed with a purpose to manage one's existence more effectively and to take part in the world (Goldkuhl 2012):

> As a new paradigm, it replaces the older philosophy of knowledge approach (e.g., Guba & Lincoln, 2005; Lincoln & Guba, 2011), which understands social research in terms of ontology, epistemology, and methodology. This claim to be a new paradigm rests on demonstrating the broader value of pragmatism as a philosophical system, along with its immediate practicality for issues such as research design (p. 1045).

That being said, I contend that the pragmatist paradigm supports my years of experience in education technology integration in the classroom, and my observations of other teachers' experiences in education technology integration. I acknowledge that my personal knowledge is limited; however, I am able to acquire new knowledge through research and literature reviews.

Pragmatism is based on the proposition that researchers should use the philosophical and/or methodological approach that works best for the specific research problem that is being investigated (Legg & Hookway, 2021; Tashakkori & Teddlie, 1998). This is consistent with Creswell (2009), who stated that pragmatist research is not subjected to quantitative or qualitative methods only; the door is open to various methods, different worldviews, different assumptions and different ways of conducting data collection and analysis. My literature review gave rise to research questions that were cohesive and consistent, and my pragmatist stance was highlighted in focusing my research questions on the participating classroom teachers' and administrators' experiences and perspectives of technology integration in their roles, including their perceptions of what they did in practice.. Pragmatism allowed me to incorporate different methods into the one study to obtain the data required to answer the RQs most effectively about these different aspects, and then to follow that same emphasis on actual practice in my data analysis. Furthermore, a pragmatist (or instrumental) approach to exploring technology integration was supported by Dede (2008), who considered Kozma's (2003a) pragmatist research approach as most appropriate for this task.

3.3.3 The Qualitative Research Orientation

In most research studies, a researcher needs to decide which data collection approaches are most appropriate to the study from the perspectives of quantitative, qualitative or mixed methods to answer the research questions. The quantitative approach has two main strengths: "First, it can be administered and evaluated quickly"; and "Second, numerical data obtained through this approach facilitates comparisons between organizations or groups, as well as allowing determination of the extent of agreement or disagreement between respondents" (Choy, 2014, p. 101).

However, those strengths can be weaknesses at the same time owing to the "characteristics of people and communities" (Choy, 2014, p. 102). Furthermore, Dudwick et al., (2006) stated that effective quantitative research usually requires a large sample size, and a lack of resources can render this type of research impossible, particularly for doctoral students such as myself, who are not part of a larger, funded research program.

On the other hand, the strengths of qualitative methods lie in the "ability to probe for underlying values, beliefs, and assumptions", and in the fact "that the inquiry is broad and open-ended, allowing the participants to raise issues that matter most to them" (Choy, 2014, p. 102). This approach was found to be particularly suitable for my research for a number of reasons. Firstly, modifications made in the macro, meso and micro boxes in the study's conceptual framework in Figure 2.3 to incorporate and elaborate all of the factors elucidated through the literature review resulted in the formulation of questions for the interviews with qualitative characteristics, allowing both closed questions targeting particular factors from the framework and in-depth responses to open questions. Secondly, one of the characteristics of qualitative research is to "aid problem solving" (Eyisi, 2016, p. 92). In my study, it was always the intention to look into the challenges of education technology integration in UAE K-12 private schools by collecting data from participants in their natural settings, enabling them to raise issues and problems of particular concern to them. Thirdly, I understand education technology integration as being an active process of interpretation, and that teachers are more than passive recipients of directives and policies in engaging in that integration. The methods used in qualitative research to collect data provide a full description of the research

and the participants – methods such as open-ended questions and in-depth interviews, which I found to be suitable for this research (Eyisi, 2016).

Although consideration was given to conducting a mixed methods study, combining qualitative and quantitative methods as recommended by Hew and Brush (2007) for studies of education technology integration, a number of challenges and limitations were identified that precluded a mixed methods design for this doctoral study. Firstly, similar challenges to those identified above by Woolcock (2006) for quantitative research in terms of the requirement for larger sample sizes and greater resources also apply to mixed methods studies. Other challenges reported in the literature included that mixed methods studies require significant expertise, and can be best conducted by a team of researchers trained in both qualitative and quantitative methods, and that studies with sequential designs can take a considerable length of time to complete (Creswell, 2012). For these reasons, a qualitative research design was adopted as the most suitable approach for this study.

3.4 Case Study Design

One of the most common approaches to qualitative inquiry is case studies (Stake, 2003), and case study research is often described as qualitative inquiry (Creswell, 2014; Denzin & Lincoln, 2011). According to Creswell (2014), Merriam (2009) and Stake (2005), case study research is a versatile form of qualitative inquiry appropriate for a comprehensive and in-depth investigation of a complex issue where the boundary between the context and the issue is unclear and contains many variables. Furthermore, there are three particularly popular types of case study: intrinsic ("intrinsic case study if it is undertaken because, first and last, the researcher wants better understanding of this particular case" [Stake, 2005 p. 136]);

instrumental (“instrumental case study if a particular case is examined mainly to provide insight into an issue or to redraw a generalization” [p. 137]); and collective (“a researcher may jointly study a number of cases in order to investigate a phenomenon, population, or general condition” [p. 138]). My case study research design was reached through careful consideration of my research aims and questions, my conceptual framework, the considerable research options available along with their relative benefits and limitations, the timeframe of the study, logistical challenges and data collection challenges.

This study’s research design was determined to be a single site, blended intrinsic-instrumental case study of technology integration in the K-12 private school sector in the United Arab Emirates that incorporated policy analysis and semi-structured interviews with educators in K-12 private schools in purposively selected Emirates to illuminate the case. Intrinsic case study design, as mentioned by Stake (1995), suggested that researchers who have an interest in the case should use this approach to understand the case better (p. 3). Instrumental case study design, also as mentioned by Stake (1995), is used to achieve something other than just understanding of a particular situation as it provides insight into an issue or helps to refine a theory. The rationale behind combining the two case study designs was that, as an educator, I was interested in what challenges were faced in education technology integration in the K-12 education sector generally, and at the same time I would like to provide insight into these challenges for K-12 private schools in the UAE as the particular case.. This case study of the private school sector in the UAE can be seen as a “specific, unique, bounded system” (Stake, 2003, p.136), as it is specific/unique to the UAE's private sector (American and British curricula), and bounded, meaning that “the case is separated out for research in terms of time, place,

or some physical boundaries" (Cresswell, 2002, p. 485). In this case the UAE private sector K-12 school system has defined boundaries and is easily distinguished from the public sector K-12 system.

Stake (2005) also noted that it is common in case study research to make comparisons with other cases investigating the same phenomena. In this study, comparisons were made with the case of technology integration in the UAE public K-12 sector, drawing primarily on the findings of a 2014 evaluation of the implementation of technology integration in the context of Vision 2021 in UAE government schools conducted by an independent, international group, Jigsaw Consult, as was outlined in Chapter 1. The main methods used by Jigsaw Consult (2014) to collect data in their research were an online teacher survey with 605 responses, 35 individual interviews and 27 group interviews with a total of 165 participants from 123 schools in a mixed methods study. However, as was presented by Creswell and Clark (2011), I found that a smaller qualitative approach fitted well with the purpose and parameters of this study. It also suited both my circumstances as a single, doctoral researcher and the limitations that this placed on data collection, and my character as a researcher who was focused on finding solutions to the problems that might occur and that have occurred (Patton, 1990).

3.5 Data Collection and Analysis

Within the single case study design, I used Crotty's (1998) methods question "What methods will be used?" (p. 3) to determine my research methods. Methods, as defined by Crotty, are "the techniques or procedures used to gather and analyse data related to some RQs or hypotheses" (p. 3). There are many methods available to researchers, such as participant observation, statistical analysis,

questionnaires, life histories, interviews and document analysis. To answer the first research question and to provide added context, richness and rigour to the study, selected education policy documents in the public domain relevant to the study of technology integration from a selection of UAE government, private sector education peak bodies and private school websites were subjected to analysis (Bowen, 2009; Owen, 2014) with reference to the macro and meso level factors in Kozma's (2003a) technology integration framework. As was noted by prominent social science researchers, "Document analysis is often used in combination with other qualitative research methods as a means of triangulation—'the combination of methodologies in the study of the same phenomenon' (Denzin, 1970, p. 291)" (Bowen, 2009, p. 28), and affords a richer analysis of the phenomenon (Owen, 2014). According to Pal (2005, p. 227):

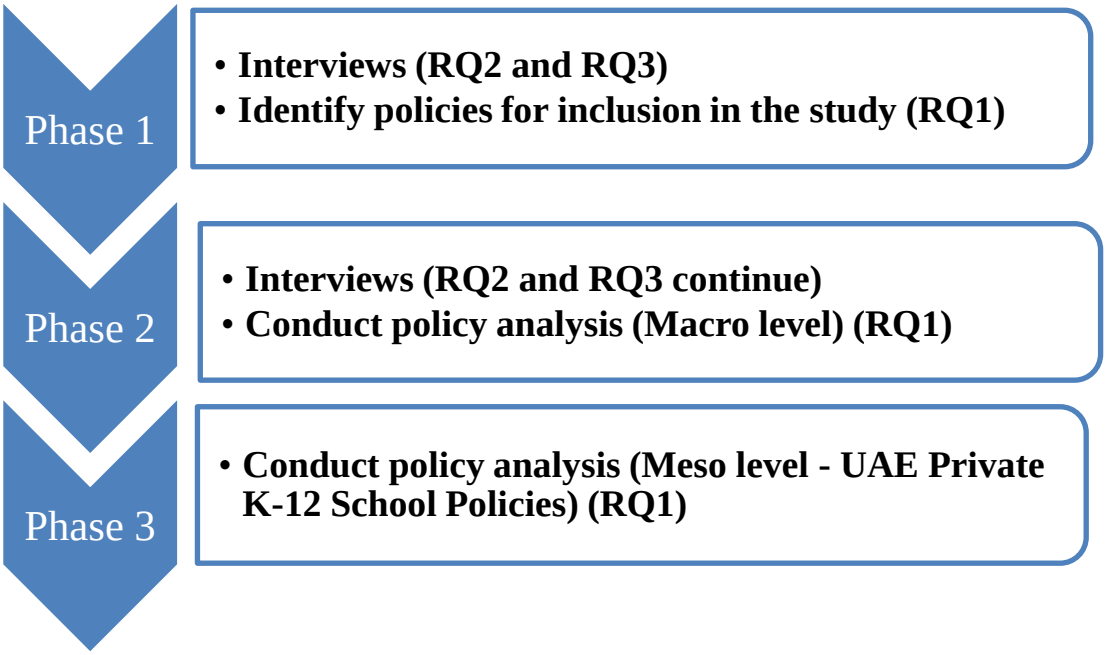
> The case study method contributes to policy analysis in two ways. First, it provides a vehicle for fully contextualized problem definition. Second, case studies can illuminate policy-relevant questions (more as research than analysis) and can eventually inform more practical advice down the road.

Consistent with the research paradigm and design, this research used semi-structured interviews with a purposive sample of private school K-12 educators to explore their perspectives and experiences of technology integration in their context to answer the second and third research questions. I therefore, determined that a combination of interviews with educators and policy analysis would suit the purpose of the study

In this research, three phases of data collection were conducted to explore more deeply the challenges faced by schools at different levels of implementation.

First, semi-structured individual interviews were conducted with a purposive sample of ten private school educators. Following the interviews, two distinct phases of policy analysis were conducted: (i) identification and analysis of high-level policies at international and national levels; and (ii) analysis of a purposive sample of private sector K-12 school level policies and performance data. The phases of the study are illustrated in Figure 3.1.

Figure 3.1:
The Three Data Collection Phases of the Study



3.5.1 Semi-Structured Interviews with K-12 Private School Educators

For the first phase of data collection, purposive sampling was used initially to select the actual schools from which the educators would be recruited for the interviews. This was to be achieved by listing UAE private schools according to Emirate and curriculum, which was conducted by utilising search engines such as Google and local education bodies' directories such as ADEK and KHDA. It is

worth mentioning that some small groups of schools offered other curricula such as International Baccalaureate, French, German and Australian. However, only the two major curricula offered (American and British) in all the most populous Emirates (Abu Dhabi, Dubai and Sharjah) were considered in this study. Following ethics approval, educators in private schools in these Emirates were contacted via LinkedIn, with school names typed into the LinkedIn search bar, and the results displayed were of those classroom teachers and administrators who currently worked in that particular school. If the educator were an already existing contact, she or he was sent an invitation message via LinkedIn and, if not, a connection request was sent – also via LinkedIn – with a short message inquiring if she or he would be willing to participate in my research. Upon reply, more details about the study were shared, including a Participant Information Sheet, a Consent Form and a list of interview questions. If the participants responded advising that they were willing to move ahead with an interview, we agreed on a suitable date and time, and a link to the GoToMeeting platform was sent. The sampling criteria for inclusion in the interviews, was that the participant works in either Dubai, Abu Dhabi or Sharjah, in either the American or British Curricula and is a classroom teacher or an administrator. These educators were identified for inclusion based on our school search and if the educators have opted to make their employment in these schools' public on LinkedIn as they were identified via LinkedIn search engine. A minimum of ten administrators/classroom teachers was considered an adequate sample, due to the limited time/resources available for the researcher and the difficulty of locating educators that fall in the above sample criteria and have made public accounts on LinkedIn and were willing to participate. Although, a 50/50 ratio of classroom teachers/administrators was hoped but was not possible. Other sampling criteria e.g.

(gender, curricula and Emirate, age and level of experience) will be explained in Chapter 5.

Owing to challenges in recruiting an adequate sample of interviewees, the eligibility criteria were expanded to include private school educators from the fourth most populated Emirate, Al Ain. One variable that was not factored into the selection of schools was whether or not the school had commenced technology integration. It was anticipated that most would have commenced; however, should the sampling have located schools that had not done so, insights as to why they had not done so would add richness to the investigation of barriers to implementation. In actuality, all the participating schools had commenced the process of technology integration.

In the selected Emirates, the intent was to interview a minimum of ten administrators/classroom teachers taking into consideration their gender, Emirate and curricula. The question of "How many is enough?" is best decided by consideration of the types of data to be collected. According to Baker and Edwards (2012), "a small number of cases, or subjects, may be extremely valuable and represent adequate numbers for a research project. This is especially true for studying hidden or hard to access populations" (p. 8), which was the case when I attempted to recruit participants in the UAE from Australia using online methods, taking into consideration the limited timeframe to collect and analyse the data. These limitations and constraints resulted in all ten participants being recruited via LinkedIn rather than through direct contact with schools, with details of their private school educator status and Emirate verified at the start of the interview. The intended or hoped for ratio of teachers v administrators in my sample was a 50/50 in order to have an even response rate.

DeJonckheere and Vaughn (2019), “Semistructured interviews are an effective method for data collection when the researcher wants: (1) to collect qualitative, open-ended data; (2) to explore participant thoughts, feelings and beliefs about a particular topic; and (3) to delve deeply into personal and sometimes sensitive issues” (pp. 2, 3). Key constructs from the study’s conceptual framework presented in Chapter 2 informed the design of a semi-structured interview protocol (Table 3.1), with a combination of multiple-choice responses and open-ended questions being used to explore perspectives and experiences of technology integration among the ten private school K-12 educators, including both administrators and classroom teachers. I chose a combination of open and closed questions to gain an in-depth insight into the schools and the experiences of the educator. The reasons as to why each of the below questions was included were to gain detailed information about the school’s and educators’ journeys with education technology, including challenges, solutions, beliefs about technology integration and professional development strategies. In addition, the sequencing of the questions was designed to build up the momentum towards inquiring about professional development by stimulating the interviewees to recall their experiences and factors that might influence the successful integration of technology. Table 3.1 contains the interview questions used to collect data from classroom teachers and school administrators in UAE K-12 private schools about their perspectives on and experiences of technology integration. Further, the questions in Table 3.1 mapped to the constructs presented in chapter 2 and which questions were used from the Jigsaw Consult research and why are further explored in chapter 5. I also drew on the questions used in the Jigsaw Consult research (2014) to inform the design of the interviews. For example, Q5 in Table 3.1 was drawn from questions 22-29 and Q8

from questions 10, 11 and 12 of the survey used for the Jigsaw Consult evaluation (Jigsaw Consult, 2014, pp. 72,74 & 75). I included these questions in my study as it aligns with the aim and purpose of the study and for comparison purposes.

Table 3.1:
Interview Questions with Response Options

<table>
<tr><th>No.</th><th colspan="3">Interview Questions</th></tr>
<tr><td>1.</td><td colspan="3">Please provide your overall rating for your school in terms of the progress of integrating technology in the context of Vision 2021:
1 = not started
2 = low level, just starting out
3 = underway, average progress made
4 = quite good, a few issues still to resolve
5 = very good, fully implemented
6 = NA (Not applicable).</td></tr>
<tr><td>2.</td><td colspan="3">Can you explain how you integrate technology on a day-to-day basis in your role as an administrator/teacher?</td></tr>
<tr><td>3.</td><td colspan="3">What challenges to the integration of technology have you faced in your school?</td></tr>
<tr><td></td><td>1. Lack of funds</td><td>9. Workload issues, lack of time</td><td>17. Parental objections</td></tr>
<tr><td></td><td>2. Insufficient training</td><td>10. Staff unwillingness, resistance to change</td><td>18. Unsuited to some subjects</td></tr>
<tr><td></td><td>3. Persistent technical difficulties</td><td>11. Classroom spaces unsuited to ICT use</td><td>19. Assessment practices not changed to match changes made as a result of education technology integration</td></tr>
<tr><td></td><td>4. Feeling of isolation</td><td>12. Staff turnover</td><td>20. Access to technology resources</td></tr>
<tr><td></td><td>5. Teacher’s lack of confidence in using technology</td><td>13. Lack of encouragement from management</td><td>21. Quality of resources available</td></tr>
<tr><td></td><td>6. Lack of a clear vision as to what to do</td><td>14. Lack of infrastructure</td><td>22. Concerns about class behaviour</td></tr>
<tr><td></td><td>7. Lack of technical support</td><td>15. Concerns over student outcomes</td><td>23. Concerns about privacy and Internet safety</td></tr>
<tr><td></td><td>8. Lack of pedagogical knowledge for ICT use</td><td>16. Local culture not ICT-driven</td><td>24. Timetabling not conducive to ICT use</td></tr>
<tr><td></td><td></td><td></td><td>25. Student resistance to change</td></tr>
<tr><td></td><td colspan="3">Are there any others that you would like to add?</td></tr>
<tr><td>4.</td><td colspan="3">From your experience, what are some solutions to these challenges?</td></tr>
<tr><td></td><td>1. Work together to achieve a shared vision</td><td>9. Use student technology helpers</td><td>17. Redesign classroom layouts</td></tr>
<tr><td></td><td>2. Create a whole school implementation plan</td><td>10. Timetable larger blocks of time</td><td>18. New assessment practices to suit ICT use</td></tr>
</table>

3. Staged implementation (by years/subjects)	11. Professional development in ICT use	19. Clarify alignment with required curriculum
4. Convenient technology (e.g., wireless Internet)	12. Professional development in ICT pedagogy	20. Open sharing of ideas within subjects
5. Put technology in classrooms, not laboratories	13. Encouragement and incentive from management	21. Select and pay for high quality resources
6. Teacher collaboration to share load and time	14. Redirect funds to improve infrastructure	22. Meetings with parents and students
7. Reduce other workload types for teachers	15. Institute buddy system for teachers	23. Best practice in privacy and Internet safety
8. Hire more technical support staff	16. Plan and adopt school-wide behaviour rules	24. Technology implementation committee

Are there any others that you would like to add?

5. What are your beliefs about the quality of teaching and learning once technology has been integrated into the classroom?
6. How did you feel when technology integration was introduced to the school?
7. For which subject/s do you think the technology integration is most effective? Why? *(Administrator)*
   How easy do you find it to integrate technology? *(Teacher)*
8. For which subject/s do you think that technology integration is least effective? Why? *(Administrator)*
   8a..What is your perspective on the availability of the resources available to you? *(Teacher)*
   8b. What is your perspective on the suitability of the resources available to you? *(Teacher)*
9. International research has found that most teachers need to learn specifically about: (1) how to use technology devices; (2) how to align technology use with the curriculum; (3) the different ways that technologies can be used; (4) the pedagogies that maximise the benefits of using technology; and (5) ways of maintaining classroom management in technology integrated classrooms. Most, but not all, teacher learning is accomplished through professional development. Which of the following professional development strategies (select as many as appropriate) would you suggest?

1. Active learning	5. Peer coaching	9. Team teaching
2. General coaching	6. Study groups	10. Teaching portfolios
3. Collaboration	7. Live lesson observation	
4. Teacher learning communities	8. Mentoring	

Are there any others that you would like to add?

The interviews were conducted online during 2019 using GoToMeeting, and they were recorded and transcribed by the researcher using Happy Scribe

software. I started each interview by reiterating the purpose of the study and the interview, re-checking the interviewee's informed consent and establishing that the technology was working properly, before commencing by asking Question 1. I also checked with each interviewee prior to the interview about demographic details including their role in the school, their curriculum areas and their years of teaching experience (the details that are presented in Chapter 5). After that, I worked through the sequence of questions in Table 3.1 with each interviewee. When answering the multiple-choice questions Q3, Q4 and Q9, the participants were shown the response options via share screen functionality on GoToMeeting and made their selections accordingly. Although the transcribing software was not perfect, it was able to capture the majority of the text, then the researcher listened to the recordings and checked and corrected the transcriptions more quickly than starting from a blank screen. The interview was piloted with one teacher in order to test the research questions and protocol, and to identify any issues with my interviewing technique. Minor changes were made to the interview protocol as a result of a critical reflection on my interview technique, including taking care not to agree or disagree with the views about technology integration being expressed by the interviewee. However, these improvements were not deemed by the researcher's supervisors to preclude the pilot interview data from inclusion in the main study as the improvements made to the interview technique were not seen to detract from the quality of the data obtained from the first interview.

3.5.2 Policy Analysis Phase

Beginning concurrently with and continuing post-completion of the interviews, as illustrated in Figure 3.1, education policy documents in the public domain at international, national and system levels relevant to the study of

technology integration in UAE K-12 private schools were identified and subjected to initial review to determine their relevance to and importance for the study. The included policies were then subjected to content analysis (Bowen, 2009; Owen, 2014) with reference to the macro and meso level factors in the study's conceptual framework to explore what these policies revealed about international, national and system-wide factors impacting on technology integration in response to the UAE government's mandate for reform of the education system, in answer to the first research question (Figure 3.1). Table 3.2 maps these different levels of policy to components of the study's conceptual framework.

Table 3.2:
Education Policies at Different Levels Mapped to Components of the Study's Conceptual Framework

Conceptual Framework Elements	Policy Analysis
MACRO LEVEL	
Actors: Education policymakers (government) **Factors:** Economic forces Educational goals and problems standards and curricula Funding and Infrastructure	**Macro Level 1:** International education policies and curricula **Macro Level 2:** UAE national education policy, including policies regulating schools in the private sector
MESO LEVEL	
Actors: Leadership levels **Factors:** School type and location Intended curriculum School organisation and culture ICT policies, infrastructure	Private sector K-12 school level policies and performance data

As shown in Table 3.2, macro level policies are high level, strategic education policies produced by governments and peak education bodies. A distinction was made between Macro Level 1 (International) and Macro Level 2 (National) level policies. For example, the PISA ICT Framework (PISA, 2019) was an example of a key international level policy, whilst Vision 2021 (UAE Vision 2021, 2010) was an example of a key national level policy. Also shown in Table 3.2, to align with factors in the conceptual framework, school level documents that reflected the schools' policies, practices and performance related to technology integration and innovation were classified as "Meso" level policies. This Meso level policy analysis of publicly available information relevant to technology integration included school performance data in the public domain obtained from regulatory authorities, along with analysis of information about fees, staffing, curricula, and ICT policies and practices obtained via a purposive sample of K-12 private schools' websites. To correspond with the sampling of educators for the ten interviews, a purposive sample of 18 UAE private schools was selected according to their location (Abu Dhabi, Dubai and Sharjah), curricula (American and British) and tuition fees (high, medium, low). Further details sampling in relation to the policy analysis are outlined in Chapter 4.

The following section provides an outline of the approach taken to data analysis in the study, with the specific details of procedures used for the policy analysis provided in Chapter 4, and the procedures used to analyse the interview transcripts in Chapter 5.

3.5.3 Data Analysis

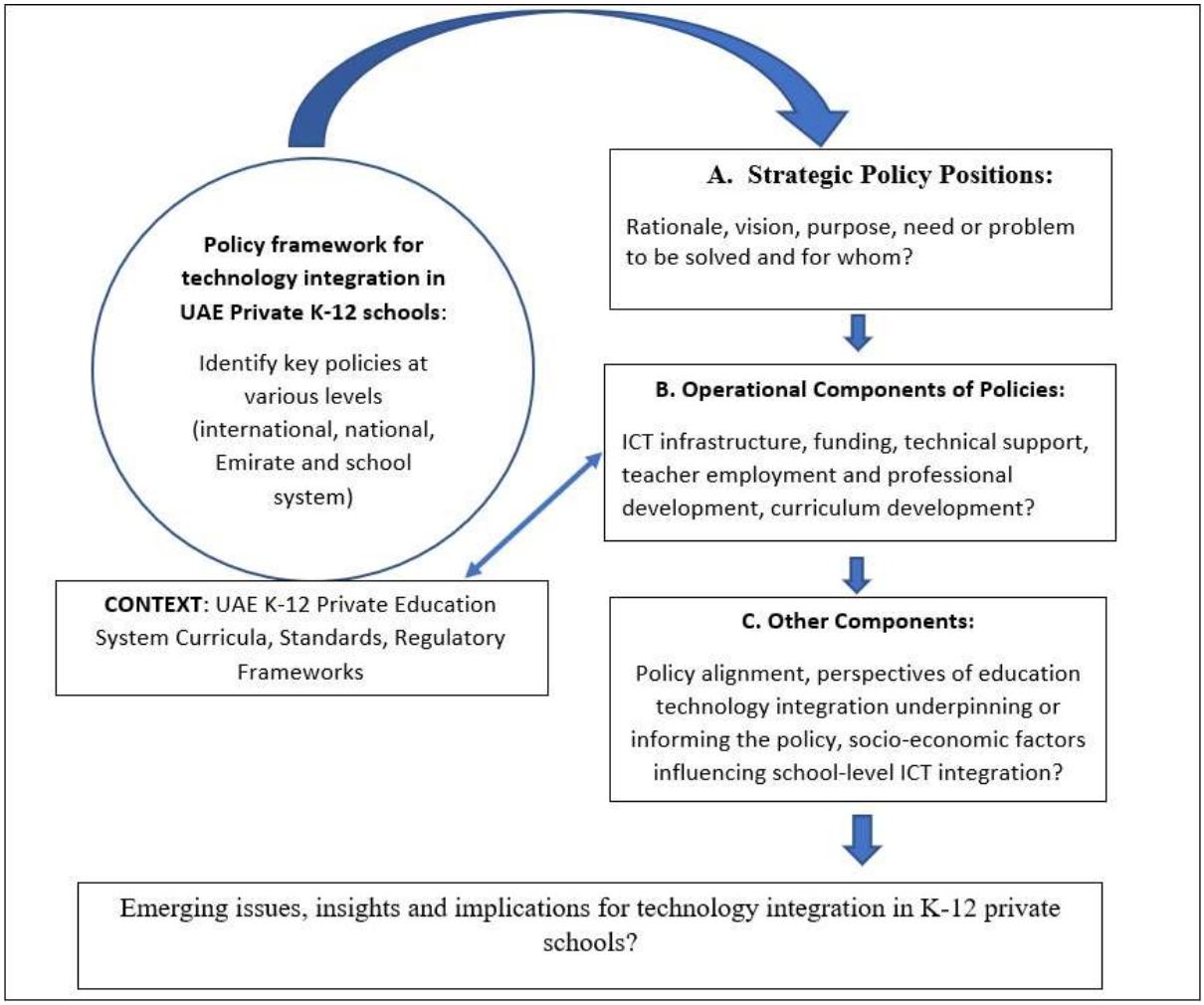
According to Peel (2020), "Key to the process [of data analysis] is researcher awareness that begins with understanding and maintaining the

philosophical assumptions that frame a study and determining the research methods selected for collecting and analysing the data" (p. 3). The philosophical assumptions underpinning this study have been aligned with pragmatism and a pragmatist orientation to the study's research design. A qualitative case study design has been presented and the sampling considerations and data collection methods and instruments outlined. Consistent with this pragmatic approach, procedures for analysing data in this study used both content and thematic analysis, drawing on the work of Peel (2020), Braun and Clark (2006), Bowen (2009) and Owen (2014), with the data collected from the interviews and policy documents analysed qualitatively in accordance with the key elements in the study's conceptual framework.

Policy Analysis Component

To guide the policy analysis component, I drew on a framework developed by Kozma (2008) for "Comparative Analysis of ICT Policy" to create a similar framework that also aligned with elements in the study's conceptual framework. The framework guiding this analysis, adapted from Kozma (2008) and Alghamdi and Holland (2020), is illustrated in Figure 3.2.

Figure 3.2:
Policy Analysis Framework (adapted from Kozma [2008] and Alghamdi and Holland [2020])



Kozma (2008) suggested four policy rationales that can potentially facilitate an analysis of the vision or purpose of ICT policy, and five operational elements that can be used for analysis of ICT programs. As illustrated in Figure 3.2, for the purpose of my study, I focused on: (A) strategic policy positions: rationale, vision, purpose, need or problem to be solved and for whom; (B) relevant Operational Components of policies: ICT infrastructure, funding, technical support, teacher employment and professional development, curriculum development; and (C) other components: policy alignment, particular understandings of technology integration

reflected in policy and socio-economic factors impacting on technology integration at the school level. To reflect the context of the study, also included are key components of the UAE private K-12 sector, including regulatory frameworks, performance standards and curricula. This framework was used to guide the review and analysis of selected policies that had implications for the integration of education technology into private K-12 UAE schools to generate insights about emerging issues and their implications for technology integration in UAE K-12 private schools in answer to RQ1: What is the policy context for technology integration in UAE K-12 private schools , and what do private sector education policies at system and school levels tell us about the key factors influencing technology integration in schools and curricula?. Further details of the policy analysis procedures and findings are reported in Chapter 4.

3.5.4 Interviews with Educators

The transcripts of the ten interviews conducted with private school educators were initially subject to content analysis using Word Document and Excel templates (Appendix 1) that were developed by the researcher to code, sort, store and capture information. Content and thematic analysis of the ten interview transcripts was then completed with reference to relevant factors at different levels of the conceptual framework using Word document templates (Appendix 2) that were developed by the researcher. Content analysis is defined as "the study of the content with reference to the meanings, contexts and intentions contained in messages" (Prasad, 2008, p. 174). Thematic analysis was defined by Braun and Clark (2006) as "a flexible and useful research tool, which can potentially provide a rich and detailed, yet complex, account of the data" (p. 5). The difference between them is that content analysis uses a descriptive approach in both coding of the data and its

interpretation of quantitative counts of the codes (Morgan, 1993), whereas thematic analysis provides a qualitative and detailed account of data (Braun & Clarke, 2006). In my study, the initial plan was to use NVivo for the thematic analysis, but, as a result of the relatively small sample size of interviewees, I decided to use Word documents and Excel files to create templates, tables and data maps to help in coding the data and in generating themes. Content analysis of interview transcripts was conducted initially to identify relevant factors in the study's conceptual and analytical frameworks. This was followed by thematic analysis in which key themes were generated from the patterns in the data relevant to RQs 1 and 2 and to factors in the conceptual framework that could be addressed through the interpretations of those patterns. For my thematic analysis, the data were coded using Excel and Word documents.

Data analysis also included interpreting the data in relation to the curriculum, Emirate, gender and position (classroom teacher or administration) of respondents, linking to factors in the conceptual framework and themes in the literature, and comparing the findings with those from the evaluation of technology integration in the UAE K-12 public sector schools conducted by Jigsaw Consult (2016). Finally, a process of data triangulation followed in which the themes that emerged from the interviews with educators in answer to RQ2 and RQ3 were further explored with reference to the findings of the policy analysis in answer to RQ1 to elicit further insights about the challenges and enablers of technology integration in UAE private sector K-12 schools in RQ2 and RQ3. Details of the data analysis frameworks and procedures followed for each component of the study are presented in Chapters 4 and 5. The specific ethical procedures followed and considerations

guiding the collection and reporting of data are presented in the next section on research ethics.

3.6 Research Ethics

This study was designed in accordance with the University of Southern Queensland ethical procedures for research involving human participants (Human Research Ethics Procedure, 2020). The main aspects of research ethics related to this research included obtaining participant consent and the usage of pseudonyms to assure confidentiality and the non-disclosure of any personal information. Each of these aspects is explained in the following subsections.

3.6.1 Ethics Approval

Ethics approval for this research was obtained prior to commencing data collection in accordance with the requirements of the Australian National Statement on Ethical Conduct in Human Research (2018). The application was submitted to the USQ Human Research Ethics Committee for review and approval. The ethics application included the research proposal, the participant invitation document, the participant information document (see Appendices 4 and 7) and the participant consent form (see Appendix 5). The ethics application was approved by USQ (approval number HI8REA129), with the approval letter appearing as Appendix 7 to this thesis.

3.6.2 Participant Consent to Participate in this Study

Following ethics approval, I obtained informed participant consent prior to conducting the interviews. Participants were first approached via LinkedIn with the invitation message, inviting them to participate in the study by replying to the

invitation via LinkedIn to express their interest. Upon approval to participate, the participant was sent an information document that contained the research project title, the contact details of the research team and a description of the study providing an overview of what the study was about. Further, the information document indicated that, should the participants be willing to be interviewed, they would need to sign a consent form prior to the interview that would need to be returned to the interviewer, that their participation was completely voluntary and that, if they chose not to participate in or to withdraw from the study, their relationship with USQ would not be affected. The participation information document and the participant consent form informed participants of the purpose of the study, their voluntary status and how their identity and the names of the school and of the Emirate would be kept anonymous, and that the data would be accessed only by the research team. The participant confidentiality procedures are detailed in the subsections below, including participant pseudonyms and data storage. Participants were advised that the interview duration would be around 30 minutes via a secured online platform where the interview would be audio recorded and transcribed. This participant consent form was willingly signed and returned by all participants; however, to maintain confidentiality, copies of these signed forms were not included in this thesis.

3.6.3 The Study Data Collection Period

I received my formal ethics approval on 28 June 2018, after which I began to seek participants' consent to participate. Once all required consent forms had been obtained, the interviews took place online at times and dates convenient to and suggested by the participants. The interviews commenced in October 2019 and concluded in February 2020.

3.6.4 The Management of Study Risks

In every conducted research project, a number of risks are to be taken into consideration and managed in accordance with the ethical conduct required. For the purpose of achieving rigour and credibility in this study, the potential risks were acknowledged through low-risk research design and participant confidentiality.

This research was classified by the USQ Human Research Ethics Committee as low risk as it included only adults, none of whom was considered to be from a high-risk or marginalised group. The study topic explored participants' experiences with education technology integration in their schools, which were referred to anonymously throughout the study with no reference to the participant's name, school or Emirate. One potential risk was to maintain the confidentiality of participant data. To manage this risk, I advised participants that only the research team would have access to their details as those details were stored on the university server using OneDrive, in accordance with the university's data management procedures. Further, none of their personal details would appear in the study as pseudonyms were used to replace their real names using a random name generator to assign male/female names. I did initially refer to participants as Participants A, B, etc., but this sounded rather clinical. Accordingly, I decided to replace that approach with real world names to give voice to the participants, and also to make the thesis more relatable for the reader. The usage of pseudonyms provided a more personal approach when discussing the data, yet prevented the reader from making any connection with the identity of the participants that would potentially breach the conditions of the study's ethics approval. The pseudonyms are presented in Table 5.4. The pseudonym gender (male/female) was consistent with actual participant genders, as the random name generator allowed gender as a condition in the name

generation. All the data in digital form (recordings and transcripts) were stored securely on a password protected hard-drive and in a password protected OneDrive document as they were collected. At the completion of my study, all the identifiable digital data will be deleted and only the anonymised transcriptions will remain as the data set and will be stored for the required five years.

3.6.5 Ethics Completion

All aspects of my ethics approval (H18REA129) were followed in this study. My data collection was successfully completed within the approved dates, and no ethical issues arose. Further, I formally confirmed the completion of the data collection by submitting to the USQ ethics office a milestone report for which I received approval on 22 July 2020. At the time of finalising this thesis for examination, no ethical issues or complications related to this research had been brought to my attention, and I foresee the same situation continuing. The risks associated with this research were managed appropriately, and all ethical aspects were followed; therefore, the chances of any risk arising from this study in the future are minimal.

3.7 The Strengths and Rigour of this Study

This section discusses the strengths and rigour of my study design, highlighting the strategies used in the analysis and interpretation of the data collected. The subsections detail how the study design avoided research bias and delivered results that were credible, transferrable, dependable and confirmable. Further, thematic analysis, data triangulation and rich description were used to analyse the textual data, affording the study additional strength and rigour. In this study, wherever possible, using questions validated by the Jigsaw Consult (2014)

investigation of technology integration in the UAE K-12 public education sector contributed to the rigour of the study.

3.7.1 Avoiding Research Bias

According to Regoniel (2013), there are five types of research bias: personal convenience in collecting data; favouring one's own standpoint; inadequately prepared questionnaires; faulty data collection procedures; and unverified information. These types of bias were avoided by selecting respondents randomly; adhering to what the data showed with no manipulation and actively searching for disconfirming data; sound preparation of interview protocols; ensuring that the respondents were ready and that the interview was finished in a reasonable amount of time; and the usage of triangulation to validate the data (Regoniel, 2013). Conducting a critical reflection on my interview technique in collaboration with my supervisors after the first interview also contributed to avoiding researcher bias.

3.7.2 Credibility

Credibility can be defined by five aspects: the researcher's presence; the nature of the interaction between researcher and participants; the triangulation of data (which is addressed in detail in Section 3.8.7); the interpretation of perceptions; and the use of rich, thick descriptions (Merriam, 1998, p. 151) (which is addressed in detail in Section 3.8.8).

My research presence and interactions with the participants in my role as researcher are detailed in this subsection. The duration of the initial interaction with each participant during the recruitment process was brief, mostly depending on the participant response to the invitation messages, volunteering to participate, reading the information document and signing/returning the consent form, and there was no

connection between the participant and the researcher prior to the study. The nature of the interviews being online, and according to the participants' time and ability to be interviewed in any quiet place, helped in creating a relaxed and comfortable atmosphere where the participants were given enough time to answer each question accordingly, and were asked once ready to move on to the next question if they had concluded with no interruption. Some probing questions asked were needed in order for the researcher to obtain a more detailed understanding of the interviewees' responses, mindful of wanting to avoid any biases or attempts to lead participants. Further, the participants were emailed the interview questions prior to the interview, allowing them adequate time to think about their responses, and establishing an even deeper level of comfort and preparedness for the interview by eliminating the element of surprise as they were given enough time to prepare and to think about their answers in relation to their experiences as educators. In my study, the limitations of my presence and my interactions with their participants were helped by the fact that all participants were qualified classroom teachers or administrators with many years of experience in education.

For the interpretation of perceptions, Patton (1999) stated that "human perception is highly selective" (p. 1199). Patton detailed that what people perceive is influenced by several factors; amongst them are biases, which were detailed in Section 3.8.1. Further, Patton explained that, although every person is equipped with functioning senses, that does not necessarily make them skilled observers nor ensures their ability to "report with accuracy, validity, and reliability the nature of that situation" (p. 1200). The usage of technology to record the interviews and to transcribe them further gave me the ability to visit and revisit constantly to verify and report with accuracy my observations and interpretations.

3.7.3 Transferability

Transferability refers to the potential for extrapolation. It relies on the reasoning that findings can be generalised or transferred to other settings or groups (Elo et al., 2015, p. 2). The question of the extent to which the findings of case study research are able to be generalised beyond the local context to other, comparable settings is contested (Stake, 2005). Stake argued that the conduct of a rigorous and reflexive instrumental case study affords "naturalistic generalisation" (Stake, 2005, p. 425) of the findings, whereby readers will be the ultimate judge of the transferability of the findings to other, comparable contexts.

As I mentioned earlier, the framework developed was heavily influenced by Kozma's (2003a) framework, which was based on international data, making the findings of this study potentially transferable to other schools and educational organisations on an international basis. To enhance the transferability of my findings, I aimed to provide relevant details to enable comparison with other cases (Lincoln & Guba, 1985), such as the findings of Jigsaw Consult's (2014) evaluation of technology integration in response to Vision 2021, which was a case of technology integration that informed this study. Further, authors may offer suggestions and evidence about transferability, but it is up to the judgement of the reader if the results are transferable or not (Graneheim & Lundman, 2004). Elo et al. (2014) stated that it is "also valuable to give clear descriptions of the culture, context, selection, and characteristics of participants" (p. 6), which is something that I provided in detail in the previous chapters, and also in the presentation of the findings in Chapters 4 and 5.

3.7.4 Dependability

Dependability refers to the stability of data over time and under different conditions (Elo et al., 2014, p. 4). For that reason, the principles and criteria related to participant selection needed to be mentioned in detail in order for the results to be transferable to other studies and contexts (Elo et al., 2014). The main question was therefore, "Would the findings of an inquiry be repeated if it were replicated with the same or similar participants in the same context?" (Lincoln & Guba, 1985; Polit & Beck, 2012., as cited in Elo et al., 2014, p. 4).

My research design and its implementation produced trustworthy results through content and thematic analysis of interview transcripts, policy analysis and triangulation, as is discussed later in this section, which have together enhanced the dependability of my study. My study's design was developed to clarify data as required, adding document analysis to confirm the results of the interviews. This approach enhanced confidence in the stability of these data and their interpretation over time and in varied conditions, thereby maximising the study's dependability.

3.7.5 Confirmability

Confirmability "refers to the objectivity, that is, the potential for congruence between two or more independent people about the data's accuracy, relevance, or meaning" (Elo et al., 2014, p. 2). Further, confirmability of findings means that the data collected are accurate and as provided by the participant, and that the interpretations of the data are not invented by the researcher (Polit & Beck, 2012).

To enhance confirmability, I provide in Chapter 5 examples of quotations from all participants, keeping in consideration the importance of not relying on any one participant's responses more than those of other participants, which helped to

confirm the connection between the data and the results, as well as the richness of the data**.**

3.7.6 Rich Description

By definition, "the term 'rich data' describes the notion that qualitative data and their subsequent representation in text should reveal the complexities and the richness of what is being studied" (Given, 2008, p. 794). The findings of my study were presented in a descriptive form whereby rich description was used to convey those findings (Creswell, 2003, p. 196). The findings of the content and thematic analysis of the qualitative data from the interviews and the key policy documents were then correlated and further interpreted to "afford a richer analysis of the phenomenon" (Bowen, 2009, p. 28) under investigation. In combination, the data collected from all the sources helped to paint a rich picture, and thereby to generate a finely nuanced representation, of the teacher, school and system-wide factors impacting on the integration of technology in a purposive sample of ten UAE K-12 private schools in response to the national government's mandate for reform of the education system.

3.7.7 Data Triangulation

Triangulation refers to the use of multiple methods or data sources in research to develop a comprehensive understanding of phenomena (Patton, 1999). Further, good research practice "obligates the researcher to triangulate, that is, to use multiple methods, data sources, and researchers to enhance the validity of the research findings" (Mathison, 1988, p. 13). However, "A researcher's limited budget, short timeframe, and narrow training will affect the amount of triangulation that is practical. Combinations of interview, observation, and document analysis are

expected in much fieldwork" (Patton, 1999, p. 1192). Nonetheless, it is still possible to achieve triangulation by "combining different kinds of qualitative methods, mixing purposeful samples, and including multiple perspectives" (Patton, 1999, p. 1193).

According to Patton (1999, p. 1193), there are four kinds of triangulation: (i) checking the consistency of findings generated by different data collection methods (that is, methods triangulation); (ii) examining the consistency of different data sources within the same method (that is, triangulation of sources); (iii) using multiple analysts to review findings (that is, analyst triangulation); and (iv) using multiple perspectives or theories to interpret the data (that is, theory/perspective triangulation). Patton (1999) suggested that by combining two or more of these methods the researcher will be able to overcome the scepticism that is usually associated with single methods (p. 1193).

In my research, I collected, analysed and compared policy documents collected on three levels (school, national and international) where possible. Further, I compared the data collected from the interviews and cross analysed those data in relation to curricula, Emirate and position, thereby "combining different kinds of qualitative methods, mixing purposeful samples, and including multiple perspectives" (Patton, 1999, p. 1193). To generate further insights, I then compared the interview findings with the findings of the policy analysis. Finally, a cross-case comparison between my findings about challenges of technology integration in the private sector and the findings of the Jigsaw Consult (2016) evaluation of technology integration in the public school sector was completed. The insights generated by these comparisons and correlations are reported as part of the discussion in Chapter 6.

3.8 Conclusion

In summary, this chapter described the research design in order to address the three RQs of this study and to expand theoretical and conceptual knowledge to assist in addressing research gaps in the literature. The study design followed the protocol of ethical research practices detailed in the data collection section and in accordance with the timeframe. The risks and limitations were managed, and trustworthiness was discussed thoroughly in order to achieve strength and rigour. All the above steps supported my findings and contributions to knowledge, and pave the way for the next chapter that details the findings of the policy analysis in answer to RQ1.

CHAPTER 4: FINDINGS FOR RQ1 POLICY ANALYSIS

4.1 Introduction to the Chapter

The previous chapter addressed the research design and methodology for this study, unpacking the research design philosophy, the rationale for the selection of the mode and general design of the research, the research paradigm, the case study design, the study site, the participant selection, the procedures and instruments used for data collection and analysis, the ethics process, and the strengths and rigour of the study. This chapter outlines the data collection, analysis and findings for the policy analysis component of the research in answer to the first research question: "What is the policy context for technology integration in the UAE private school sector , and what do private sector education policies at system and school levels tell us about the key factors influencing technology integration in schools and curricula?", The macro-level policies at international and national levels are highlighted, in addition to the UAE private education sector policy context and UAE private K-12 school policies at the meso level. Key policy recommendations made in these reports are analysed and commented on, before presenting a summary of the findings linked to RQ1. The findings contribute to understanding the challenges and issues facing private sector K-12 schools in the UAE in responding to the Vision 2021 mandate for technology integration linked to RQ1, paving the way for the interview questionnaire analysis and presentation of the interview findings in answer to RQ2 and RQ3 in Chapter 5.

4.2 The Structure of the Chapter

There are six sections in this chapter, the first section being an introduction to the chapter, followed by this outline of the structure of the chapter. The third section, Section 4.3, presents an overview of the UAE education system and policy context for K-12 technology integration, including both public and private sector K-12 schools. Section 4.4 addresses the policy analysis aim and approach, outlining the purpose of the policy analysis component, what it was intended to achieve and how it contributes to understanding the challenges and issues facing private sector K-12 schools in the UAE in responding to the Vision 2021 mandate for technology integration linked to RQ1. It also includes the questions guiding the analysis and a description of the procedures used to identify, source and analyse key policies with reference to the policy analysis framework presented in Chapter 3. Section 4.5 outlines the policy analysis findings. Finally, Section 4.6 concludes the chapter and provides a transition to Chapter 5 in which the findings of the interviews with educators are presented.

4.3 The Private K-12 Education System and Policy Context for K-12 Technology Integration

4.3.1 Overview of the UAE Private Sector Education System

The UAE is a federation of seven autonomous states, called “Emirates”, comprising the larger Emirates of Abu Dhabi and Dubai and the smaller Emirates of Ajman, Fujairah, Ras Al Khaimah, Sharjah and Umm Al Quwain (Kamal & Trines, 2018). As was explained in Chapter 1, education in the UAE comprises both public and private sectors, the public sector being operated and funded by the government, and the private sector being primarily operated and funded by individuals or

companies under the purview of government regulations and requirements. The administration of the UAE's education system is managed by the UAE Ministry of Education (MOE). However, the "Emirates also have their own regulatory authorities, such as Dubai's KHDA, the Dubai Education Council, or Abu Dhabi's Department of Education and Knowledge (ADEK)" (Kamal & Trines, 2018, para. 6).

The UAE private school sector is "dominated by for-profit international schools…which undergo quality audits, most notably in Dubai, where KHDA's Dubai School Inspection Bureau conducts annual site visits" (Kamal & Trines, 2018, para. 5). With the exception of Qatar, the UAE has the largest private education sector of the Gulf countries, offering primarily British, American and Indian curricula to meet the education needs of increasing numbers of children of expatriate residents (Ridge, Sharmi, & Kippels, 2016). According to Clark (2014), there are more than 9000 schools worldwide teaching a curriculum that is different from the host country's national curriculum. The two most commonly used of these curricula are the English National Curriculum and the United States National Curriculum with a combined 4605 schools between them worldwide (Clark, 2014). In addition, they are the most common curricula in the UAE according to data extracted from the ADEK (https://www.adek.gov.ae/) and KHDA (https://www.khda.gov.ae/en/) websites. A significant consideration for the study was that the private school sector in the UAE is highly diverse when compared with the public sector. Private schools service the large and diverse population of foreign nationals (expatriates) in the Emirates, which comprises 88% of the total population (United Nations, 2015). A further difference between the private schools and public schools is their respective language of instruction. English is the common language of instruction for all

subjects (other than Arabic) taught across all curricula in the private sector, whereas in the public sector the main language of instruction is Arabic.

As was noted in Chapter 1, the number of private schools in the Emirates has been increasing rapidly to accommodate increased numbers of students (Ridge et al., 2016), and this school building phase is predicted to continue as it was anticipated that the UAE would need over 100 more private schools by 2020 (Pricewaterhouse Coopers [PwC], 2016). It was also noted that this hike in private school numbers at the time of required technology integration in both sectors has the potential to create a gap between public and private schools, including with respect to the effective integration of technology (Ridge et al., 2016). For example, although the UAE government has invested heavily in technology integration in the public sector across the Emirates (Jigsaw Consult, 2016), no government funds have been allocated to support technology integration in the private school sector (Private schools in the UAE, 2017), with private schools expected to self-fund such initiatives via their tuition fees. This is potentially problematic as technology integration may not be seen as a priority among private school leadership and/or proprietors (Webb, 2019), which potentially impacts negatively on the successful integration of technological innovation in the school.

4.3.2 The Policy Context for Technology Integration in the UAE

As was outlined in Chapter 1, recent efforts by the GCC to create diversified knowledge economies in the Gulf States have initiated a so-called "paradigm shift" that puts pressure on all aspects of a country's education with substantial implications for "changes in education policy – the visions that organize structures, programs and practices in the education system" (Beidas et. al., 2011;

UNESCO, 2011, p. 20). Embracing technological innovation in education is seen as one of the central platforms of this agenda, with significant implications for curriculum, schools, teachers and other stakeholders in the education enterprise (OECD, 2018).

This paradigm shift is reflected in the policy directions in GCC countries in recent years, as illustrated in Kuwait's Vision 2035 (New Kuwait 2035 Kuwait National Development Plan, 2017), Saudi Arabia's Saudi Vision 2030 (Vision 2030 Kingdom of Saudi Arabia, 2016) and UAE's Vision 2021 (United Arab Emirates, 2010). In UAE, the Ministry of Education (MOE) oversees education in six of the seven emirates, with the exception being the Abu Dhabi Educational Council (ADEC) controlling education in Abu Dhabi. The Knowledge and Human Development Authority (KHDA) in Dubai and Sharjah Education Zone (SEZ) are other key entities addressing the education reform (Warner & Burton, 2017). The National Agenda aims for all schools, universities and students to be equipped with Smart systems and devices as a basis for all teaching and learning methods (First Rate Education System, n.d.). Both KHDA and ADEC have launched their own approaches to meet the UAE Vision 2021, whereas, as yet, the SEZ has not. ADEC selected *e-learning* and *blended learning* (ADEC's e-Learning initiative, 2013), whereas the Mohammed Bin Rashid *Smart Learning* Program (MBRSLP) was launched in Dubai. Both initiatives are aligned with UAE's Vision 2021 to become a knowledge-based economy through the integration of technology in education. This strategic policy position for the UAE education system is underpinned by a focus on innovation with an emphasis on emerging technologies, as illustrated in this recent development:

> In March 2019, Sheikh Mohammed bin Rashid, the Prime Minister of the UAE and Ruler of Dubai[,] announced that a new generation of schools will be built in the UAE at a cost of AED1.5 billion. These schools will include laboratories for machine learning and artificial intelligence ("AI") … This aligns with both the UAE's national strategy on innovation and the UAE's national strategy for AI (which was the first of its kind in the region and[,] indeed, the world), where education has been identified as a priority sector (Al Tamimi & Co., 2019, para. 2).

As was noted by Kozma (2008), "such strategic policies can provide a rationale, a set of goals and a vision for how education systems might be with the introduction of ICT and how students, teachers, parents, and the general population might benefit from its use in schools" (p. 2). Further, Kozma (2008) stressed that, "without a strategic rationale to guide the national the use of technology in education, ICT policy is only operational" (p. 2). More specifically,

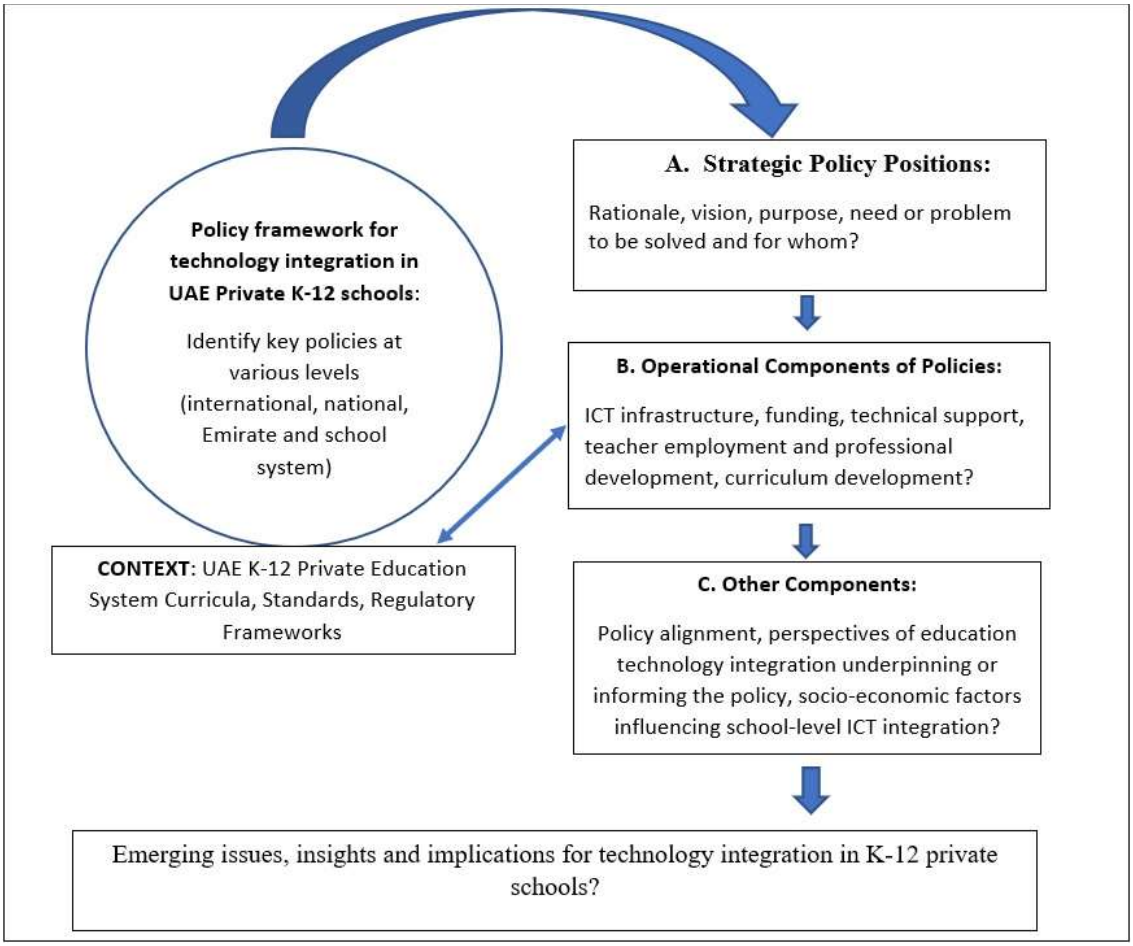
> …without the guidance of national policies and the resources of corollary programs, it is less likely that individual school and classroom innovations will be sustained. Nor is it likely individual effects will accrue across the country to have an overall impact on the educational system (Kozma, 2008, p. 8).

4.4 Policy Analysis Aim and Approach

The purpose of the policy analysis component of the study was to provide an analysis of 20 years of key policy reports on the international and UAE national levels addressing the challenges and enablers in integrating technology into K-12

education in the UAE. In undertaking this analysis, I aimed to achieve detailed insight into the driving forces of education technology integration in terms of why schools would want to use technology in their schools, what challenges they face while integrating technology and what the barriers and enablers are. In Chapter 3, I presented and explained the framework used to guide the analysis of policy documents, based on a framework developed by Kozma (2008) and applied by Alghamdi and Holland (2020). For ease of reference, this framework is presented again below in Figure 4.1.

Figure 4.1:
Policy Analysis Framework (adapted from Kozma [2008] and Alghamdi and Holland [2020])



Emanating from this framework is the following series of key questions that were used to guide the policy analysis to answer RQ1:

A: Strategic Policy Positions:

i. What is the rationale for ICT integration? What are the broad vision and purpose of the policy? What needs are to be addressed and/or problems to be solved and for whom?

B: Operational Components of Policies:

ii. What are the key factors influencing the successful integration of educational technology in K-12 schools – and, in particular, private schools in the UAE?

C: Other Components:

iii. Alignment: To what extent and in which ways are policies for ICT integration in different jurisdictions in alignment or not aligned?

Perspectives of education technology integration underpinning or informing the policy; socio-economic factors influencing school-level ICT integration:

iv. What are the implications for implementing technology integration in UAE private schools, and for whom?

v. What insights do the findings offer in relation to RQ2 and RQ3?

These questions also addressed the key factors that influence ICT integration in a UAE private school setting, alignment to different jurisdictions and whether there are particular understandings of technology integration reflected in the policies. Further, these questions helped to provide insights into potential implications for technology integration that can add to insights generated in

interviews with UAE private school educators in response to RQ2 about technology in UAE private schools, including reported challenges and enablers, and to RQ3.

4.4.1 Selection of Policies for Analysis

The first step in the analysis was to identify key policies at various levels (international, national and school system) for in-depth analysis. To build on the information about the policy analysis approach provided in Chapter 3, I identified key policies for analysis and categorised them with reference to my conceptual framework (macro and meso levels) by conducting a rigorous policy document search using Google, Google Scholar and UAE governmental websites using search terms such as “education technology”, “UAE”, “OECD”, “PISA”, “international education” and “education policies”. Most of the challenges faced when locating these documents revolved around confirming their relevance to the study and, as was noted in Chapter 2, making sense of the plethora of terms used in the world to describe ICT integration in education. The decision to include or exclude particular policy documents was based on their relevance to the study’s focus, purpose, context and conceptual framework and, in particular, addressing the factors at the macro and meso levels of the framework. As was mentioned earlier, I initially explored policies from the last 20 years, as a benchmark for being current. When determining relevance, I considered their relevance and perceived importance to the UAE education system’s mandate for innovation and reform in the country’s education system, and with a focus on technology integration and technological innovation. I also searched for policy documents that targeted American and British curricula, UAE K-12 policy documents and international level documents that addressed ICT integration in K-12 settings. These documents were then organised in different folders based on the respective level (international, national and school system) to

help to streamline the data analysis process. The documents obtained were categorised according to these three levels to help to generate a holistic perspective of the policy documents, and of how international policies can influence and impact on national level policies and in turn on the decision-making process all the way down to the school level.

The policies and related UAE education policy documents subjected to analysis are presented in Table 4.1.

Table 4.1:
Education Policies Subjected to Analysis Mapped to the Study's Conceptual Framework

Policy document level mapped to conceptual framework	**Key policies relevant to technology integration in UAE K-12 private sector schools**
International education policies and curricula (macro level 1)	A) Strategic Policy Positions - Key International Policy Documents Transforming Our World: The 2030 Agenda for Sustainable Development (UN) (General Assembly, 2015). PISA 2021 ICT Framework (PISA, 2019). Better Skills, Better Jobs, Better Lives: A Strategic Approach to Skills Policies for The United Arab Emirates (Höckel, 2015). B) Operational Components - International Education Policies, Procedures and Standards AdvancED Policies and Procedures for Accreditation and Certification Updated June 29, 2018 (AdvancED, 2018). AdvancEd Performance Standards for School Systems (AdvancED, 2017). Standards for British Schools Overseas. 2016 Department for Education (Department for Education, 2016). New England Association of Schools and Colleges. Accreditation Handbook 2019 (New England Association of Schools and Colleges, 2019).

Policy document level mapped to conceptual framework	Key policies relevant to technology integration in UAE K-12 private sector schools
UAE national education policy, including policies regulating schools in the private sector (macro level 2)	A) Strategic Policy Positions - Key UAE Education Policies UAE Vision 2021 (United Arab Emirates, 2010). Ministry of Education Strategic Plan 2017-2021 (United Arab Emirates Ministry of Education, 2020). Education 2020 Strategy (United Arab Emirates Ministry of Education, 2020). From Goals to Reality: UAE and the 2030 Agenda for Sustainable Development (Sustainable Development Goals, 2017). B) Operational Components - UAE National Education Standards and Regulatory Frameworks Teaching Licensing System (Educational Profession Licensure, 2018). Teacher Standards for the UAE (National Qualifications Authority, 2015). UAE School Inspection Framework (United Arab Emirates, Department of Education, 2019).
Private sector K-12 school level policies and performance data (meso level)	UAE Private Schools A) Strategic level - School level ICT, professional development and staffing policies B) Operational Components School curricula, performance data

As is shown in Table 4.1, “Macro” level policies were relevant government education policies at international level such as those high level government and international education body policies promoting technology integration as part of global and regional education reforms. These Macro Level 1 policies fell into two categories: Category A included selected key international education policy

documents that aligned with “Strategic Policy Positions” in the policy analysis framework in Figure 4.1, identifying the policy rationale, vision, purpose and need or problem to be solved and for whom. Category B policies were international education system policies and associated procedures and standards that directly regulated the delivery of education to the UAE private sector schools in the study’s sample, aligning with the “Operational Components” in the policy analysis framework in Figure 4.1.

Also included at this level were a number of key documents at international levels directly targeting the UAE private sector schooling system, including the AdvancED Policies and the Procedures for Accreditation and Certification Updated June 29, 2018 (AdvancED, 2018), and the related AdvancEd performance standards (AdvancEd, 2017), along with international level documents outlining the requirements for schools in relation to their British and American curricula, the Standards for British schools overseas: 2016 Department for Education (Department for Education, 2016) (British curriculum) and the New England Association of Schools and Colleges (Accreditation Handbook, 2019). The rationale behind selecting these documents was that I had targeted the two most popular curricula in UAE (American and British), and these curriculum documents contained the standards against which the performance of schools that follow American or British curricula should be measured.

Macro Level 2 policies were key UAE national education policies outlining the UAE’s strategic policy positions (Category A), as well as key UAE private sector education system policies regulating quality standards, curricular frameworks and funding arrangements potentially influencing technology integration efforts at the school level (Category B). Examples of relevant system policies Macro Level 2

(Category A) subjected to analysis included UAE Vision 2021 (United Arab Emirates, 2010), Ministry of Education Strategic Plan 2017-2021 (United Arab Emirates Ministry of Education, 2020) and Education 2020 Strategy (United Arab Emirates Ministry of Education, 2020). The rationale behind selecting these documents was that they contained the overarching policies, goals and vision for all UAE schools (private and public) that need to be followed.

Education system policies specifically targeting private sector schools (such as those related to international curriculum frameworks and school performance data) were also included here. These aligned with "Operational Components of the Policies" linked to the contextual elements of the Policy Analysis Framework in Figure 4.1. Examples of relevant system policies subjected to analysis included the UAE's *Teaching Licensing System* (Teacher standards for the UAE, 2015), "launched in line with the vision of the UAE in order to develop a Knowledge Economy and to ensure a high quality of education along with the best standards of education" (Teaching Licensing system, 2018, para. 1), and the *Teacher Standards for the UAE,* developed "to ensure teachers, as different career stages, can demonstrate professional competence that align[s] with the aspiration of the UAE Vision 2021 and international best practices" (National Qualifications Authority, 2015, n.p.).

Details of the procedures followed for analysis are provided in the following subsection.

4.4.2 Description of Policy Analysis Process

The policy analysis template in Appendix 6 was used as a tool to complete an initial content analysis of the contents of each of the policies at each of the levels with reference to "Strategic Policy Positions", and then in relation to "Operational

Components". The policy analysis template included five columns to illustrate the title of each policy document, level (macro/meso), type/purpose/focus/target audience, key messages and implications, and mapped the content of each of the policy to "factors" and "actors" at the macro and meso levels of the study's conceptual framework presented in Chapter 2. After this initial content analysis, I began to compare the strategic policy positions and Operational Components at the different levels to identify possible relationships between the policies at these different levels (see "Other Components - iii alignment" in Table 4.1). I made note of the key relationships between the policies, how one appeared to influence another, or not, and anything in particular that I noticed about the similarities and differences between policies at different levels. Some of the insights that I started to develop at this point included that international level policies might not align with the national level policies, leaving the school at odds about how to navigate through education technology integration given its international curricula (American or British) and its national agenda (UAE). In order to manage this challenge, I made note of any discrepancies in policies and the potential impact that they may have had on education technology integration in schools.

Following the comparison of the strategic policy positions and Operational Components at the different levels, I completed a deeper reading of key policies, seeking to identify whether there was a particular understanding of education technology and technology integration that was reflected in specific policies, and I noted key insights and any related issues and potential challenges. For example, I realised that the PISA ICT framework (2019) document provided me with some critical insights into the different ways that technology integration can be viewed and categorised in contrast to broadly used terminology in other policies that evokes

more general understandings and potentially misunderstandings of education technology and technology integration, such as “E-learning”, for example. This step became an important means to help me in developing my understanding of the possible challenges and enablers in technology integration that were emerging from my successive analysis of the interviews with educators.

After that, I undertook a more in-depth analysis of the UAE National Education Standards and Regulatory Frameworks (Macro Level 2) (B) in order to identify and examine policies related to ICT integration and the policies and procedures that the school needs to follow to integrate ICT to achieve the UAE government vision. After that, I analysed the private sector K-12 school level policies and performance data (meso level), including making note of any potential differences that might have been related to particular contextual and/or socio-economic factors, such as the particular Emirate in which a school is located and/or the level of tuition fees charged by the school. The importance of this step is to provide details and insights about how the schools operate and align to the UAE government vision.

The remaining sections of this chapter focus on presenting the findings of the policy analysis component of the study.

4.5 Policy Analysis Findings

In this section, I present the policy analysis findings in response to RQ1, using the questions for policy analysis presented in Section 4.4.2 as a guide.

4.5.1 Macro-level Policies

As illustrated in Table 4.1, the policies subject to analysis at the "Macro" level of the policy analysis framework were divided into two levels: Level 1, being international level education policies and curricula; and Level 2, being UAE national education policy, including policies regulating schools in the UAE private school sector. Policies at these international and national levels were categorised in the framework as being either strategic policy positions (Group A) or Operational Components (Group B). The findings of the analysis of Macro Level policies are now presented, beginning with an analysis of the strategic policy positions at the international level (Macro Level 1A), followed by analysis of strategic policy positions at the national level (Macro Level 2A). Following this, the analysis of Operational Components (Group B) policies and policy documents at international (Level 1B) is presented, followed by the national level (Level 2B). Presentation of the findings has been organised in this way to enable relationships between policies at different levels to be more easily highlighted.

Macro 1 Policies: A: Strategic Policy Positions - International Policies: The Global Context of K-12 Education Technology Integration.

The above-named international documents of the United Nations (UN) and the OECD were found to be relevant as the UAE is a member of both the UN and the OECD, with one of the OECD policies specifically targeted at innovation and skill development in the UAE's education and training system (Höckel, 2015).

Policy 1: Transforming Our World: The 2030 Agenda for Sustainable Development (UN) (General Assembly, 2015).

The world is a very small place when it comes to what leads to prosperity and the betterment of humankind through universal access to education. According to the United Nations General Assembly's (2015) "Agenda 2030" policy document,

"this Agenda is a plan of action for people, planet and prosperity. It also seeks to strengthen universal peace in larger freedom" (p. 1). The "Agenda 2030" document highlighted the achievements and developments made in the past few years whereby hundreds of millions of people emerged from extreme poverty, and that access to education for both boys and girls has increased significantly (p. 5). Of the 17 Sustainable Development Goals listed in this policy, the goal most relevant to this study is Goal 4:

> Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all:
>
> 4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.
>
> 4.C By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States (United Nations General Assembly's, 2015, p. 5).

As was noted above, there was a "plan of action for people, planet and prosperity. It also seeks to strengthen universal peace in larger freedom" (p. 1). However, the statement of "We are determined to take the bold and transformative steps which are urgently needed to shift the world on to a sustainable and resilient path" (p. 1) was the underpinning theme that drives countries like the UAE to strive for innovation and transformation to become a more sustainable economy. The

Agenda 2030 document went on to emphasise that "technological innovations" and "global interconnectedness" present opportunities to "accelerate human progress" (2015, p. 5) further.

Policy 2: PISA 2021 ICT Framework (PISA, 2019).

The UN's position on the importance of ICT for human development, including education, was supported by the Programme for International Student Assessment (PISA) 2021 ICT Framework (PISA, 2019). This framework provided an in-depth strategy to document "how students access and use ICT resources in and outside of school, and to identify how teachers, schools and education systems integrate ICT into pedagogical practices and learning environments" (p. 4). Further, the framework:

> … allows for an exploration of how system-level factors influence schools' and students' experiences with ICT, how the availability and use of ICT interact with various teaching practices, and how these associations correlate with students' performance in mathematics, reading and science, and with other outcomes, such as students' ICT skills and well-being (p. 4; emphasis in original).

In their 2021 ICT Framework, PISA noted that ICT plays an important role in all aspects of our daily lives, transforming people's work, professional life, how people interact and how governments provide public services to its citizens, and therefore, significantly affect education (PISA, 2019). The PISA ICT framework (2019), in addition to the data collected for this study, stressed the influence of contextual factors on "both access to and use of ICT resources, and on students' outcomes" (p. 6). They listed the following "general background characteristics of the education system, schools and students' households":

- the level of economic development of a country;
- students' grade level in secondary school;
- the integration of ICT literacy in the curricula;
- whether the school is public or private;
- the socio-economic and cultural background of students and parents;
- and even teachers' qualifications. (p. 6)

Further, PISA (2019) noted that these factors are likely to affect "the degree of access to ICT resources, and how they are used", and "are also likely to affect the relationship between access to and use of ICT, on the one hand, and student outcomes, on the other" (p. 7). In addition to the above contextual factors, there are country-level factors that affect ICT integration such as the "ICT infrastructure in the country" and the "availability of ICT for learning related purposes" (PISA, 2019, p. 15) that affect the schools and that impact on the teaching and learning process. Therefore, a detailed estimation budget for ICT integration is needed in order to map out the funds required to achieve the governmental directives as private schools are self-funded entities in comparison with the public schools that rely heavily on governmental funding.

The PISA ICT Framework (2019) focused specifically on ICT integration in education, and recognised that "specific ICT-related policies and practices" at national, system and school levels can impact on the use of educational technology resources such as "specific funding for ICT resources in schools, principals' attitudes towards ICT use as an instructional tool, and guidelines and support for teachers in using ICT in the classroom" (p. 7). PISA (2019) utilised its wide presence in countries all around the world to create this framework, by using its connections in more than 50 countries to distribute a questionnaire that focused on "different school

actors, such as students, teachers and principals, and on system-level variations in policies across countries" and on "key dimensions of ICT availability and use in and outside of school". The PISA ICT Framework (2019) outlined the following categories of ICT resources for learning, drawing on Bundsgaard and Hansen's (2011) terminology:

- Digital content for learning, which includes online courses, digital books and multimedia resources (for the most part, it fits into "semantic learning material" in Bundsgaard and Hansen's [2011] terminology)
- Communication and tracking tools, which facilitate communication among schools, parents and students (and as such could be considered as "functional learning materials")
- Virtual learning environment and intelligent tutoring systems aimed at helping students to practise particular skills, which fall into the "didacticised learning materials" category as described by Bundsgaard and Hansen (2011, as cited in PISA, 2019, p. 22).

Policy 3: Better Skills, Better Jobs, Better Lives: A Strategic Approach to Skills Policies for the United Arab Emirates (Höckel, 2015) (OECD document).

In Better Skills, Better Jobs, Better Lives (Höckel, 2015), the United Arab Emirates (UAE) was identified by PISA as "one of the most rapidly improving education systems in the world" (p. 3). For reporting purposes, this document was an OECD document that "situates the United Arab Emirates in the global context, and puts forward international evidence and research, policy lessons and practical examples to guide the country's future skills policy development" (p. 3). However, their students were not performing as well; instead, they were "well below the levels expected in advanced economies" (p. 3). Höckel (2015) mentioned that:

> In 21st century economies, knowledge and skills have become the global currency, and it is essential that a high value is placed on education and training so that a world-class education system can be built. This "currency" of knowledge and skills can only be developed through sustained effort and investment in people (Höckel, 2015, p. 3).

The problem to be solved here, as articulated by Höckel (2015), was that the "future prosperity of the United Arab Emirates and other countries will depend, to a large extent, on the country's success in strategically developing and optimally using its skills potential" (p. 7). Further, Höckel shed light on who was to solve this problem and how to do so through investment in skills development, which has significant implications for the country's education system, and moreover on why it was essential for the UAE government: "The modern world is a knowledge-based global economy; without adequate investment in skills people languish on the margins of society, and technological advances do not translate into sustainable economic and social progress" (Höckel, 2015, p. 18). Further, the same concern was shared in the PISA (2019) document, stating that "The increasing importance of digital technologies in education systems and the pressing need to equip students with digital competencies raise major policy concerns for governments" (p. 3). However, PISA (2019) and Höckel (2015) agreed that teachers need to change and acquire strong technological skills in order to use technology in their teaching as "education systems are increasingly embedding digital competencies in their curricula" (PISA, 2019, p. 3). Therefore, teachers' skills need to be developed in order to carry out the visions and goals of creating a knowledge-based economy

where the citizens of the country are able to use ICT as a tool to advance the country to new heights.

It is difficult to argue against the importance of the availability of financial resources and human resources in supporting ICT integration in a country's education system. According to PISA (2019), "A good starting point from which to examine education systems' relative positions would be to document expenditures on education-related ICT resources" (p. 16). Further, the school will need to "document the rules, recommendations and administrative processes guiding the allocation of funding to ICT resources (including the level at which decisions are made, the degree of autonomy schools enjoy and whether budgetary items are constrained" (p. 17). This sort of documentation would help to provide an estimate for ICT access throughout the school and provide "important insights into the overall ICT education environment in schools" (p. 18). In relation to the human resources aspect, relevant information includes:

> …the qualification requirements for teachers in terms of ICT competencies and using ICT to teach, regulations and guidelines regarding the availability of an ICT co-ordinator or support system in school, and information about the overall share of teachers with a specific ICT (for teaching) qualification [in addition to] continuing professional development training aimed at building teachers' skills regarding ICT use for educational purposes (p. 18).

Strategic policy positions and standards governing the UAE education system at the national level are analysed in the next subsection. Some of the UN's sustainable development goals (United Nations, 2015) could be seen in the "Better Skills, Better Jobs, Better Lives" document (Höckel, 2015), such as "ensuring

quality education", "promoting lifelong learning opportunities", "increasing technical and vocational skills" and "increasing the supply of qualified teachers".

Macro 2 Policies A: Strategic Policy Positions - UAE National Policies: The Mandate for Technology Integration in UAE K-12 Education.

Policy 1: UAE Vision 2021 (United Arab Emirates, 2010).

The regional call for education policy reform in GCC countries outlined in Section 4.3.2 was enacted in the UAE though the UAE Vision 2021 (UAE, 2010), supplemented in 2014 with a plan for achieving this vision (Jigsaw Consult, 2016). Vision 2021 included "aspirations for citizenship, a spirit of entrepreneurship, enhanced educational attainment, and a knowledge-based economy driven by innovation, research, science and technology" (United Arab Emirates, Department of Education, 2019, UAE School Inspection Framework, p. 7). The UAE Vision 2021 set out the National Agenda for the UAE "to be among the most innovative nations in the world" (p. 12). This *UAE National Agenda 2021* (UAE Vision 2021, 2010) aimed to develop a "First-Rate Education" to "nurture well-rounded citizens" by "equipping our youth with essential skills and knowledge for the modern world" (pp. 23, 24). The long-term mission was to elevate the UAE's education system to meet international standards, as measured by tests such as PISA (Jigsaw Consult, 2016; Ministry of Education Strategic Plan 2017-2021, 2020). Further. the policy makes reference to a number of achievement scores on international tests, to support the rationale for the policy.

Policy 2: From Goals to Reality: UAE and the 2030 Agenda for Sustainable Development (Sustainable Development Goals, 2017).

In response to the Agenda 2030 (General Assembly, 2015), the UAE government created a document to respond to the stated goals and to turn them into reality; hence the title of the document "From goals to reality: UAE and the 2030

agenda for sustainable development". In that document, the UAE government re-stated the importance of education in the UAE, and how the national agenda, Vision 2021, emphasised "the development of a first-rate education system" and aimed to transform the education system. UAE did not simply propose its aspiration to revamp its education system in documents; rather its "Spending on education consistently represents the largest share of the Federal budget. In 2017, AED 10.2 billion (US$ 2.8 billion) was allocated to education which is in addition to the significant spending on education by the local Emirates" (From goals to reality, p. 43). In the "From Goals to reality" document, the UAE government weighed in on the importance of education for securing a better future and stated its intention to integrate the SDG4 goals by stating that:

> A quality education is the foundation for the population to secure a decent future and for sustainable development: Participants agreed that quality of education and improving learning and skills must be a long-term priority for the GCC, with a continued need to integrate SDG4 goals and indicators into national policies, turning intent into action (p. 45).

Policy 3: Ministry of Education Strategic Plan 2017-2021 (United Arab Emirates Ministry of Education, 2020a).

The above reality was soon echoed in the Ministry of Education's strategic plan (2017), which set out the objectives of "Ensure quality, efficiency and good governance of educational and institutional performance, Strengthen the capacity for scientific research and innovation in accordance with the quality, Establish a culture of innovation in an institutional working environment" (para. 4), amongst other objectives. Not only were objectives set, but also a vision of "Innovative education

for a knowledge, pioneering, and global society" (para. 1), and a mission articulated to

> Develop an innovative Education System for a knowledge and global competitive society, that includes all age groups to meet future labor market demand, by ensuring quality of the Ministry of Education outputs, and provision of best services for internal and external customers. (United Arab Emirates Ministry of Education, 2020a, para. 2).

Policy 4: Education 2020 Strategy (United Arab Emirates Ministry of Education, 2020b).

This policy strategy is a "series of ambitious five-year plans designed to bring significant qualitative improvement in the education system, especially in the way teachers teach and students learn" (para. 2). This initiative was all a part of the "UAE's effort to fulfil the Sustainable Developments Goals for quality education" (para. 1). One of the main areas of focus has been to "transform K-12 programmes, to ensure that students are fully prepared to attend universities around the world and compete in the global marketplace" (para. 2).

The above steps were very significant owing to the UAE Ministry of Education's setting the bar high by creating a roadmap to creating a knowledge-based economy. However, the results and hiccups, if any, along the way are something to look forward to in the coming years, and they can potentially be seen as a roadmap that can be utilised by other countries that would like to follow in the UAE's footsteps, which is further echoed and interpreted by UAE private schools in the next subsection.

The key policies at international and national levels analysed in the above subsections provide an overarching umbrella that links to the international curriculum documents that were adapted by the schools that focused on international and national education system policies, frameworks and standards. These international and national level regulatory frameworks, standards and curricula are now analysed to examine key factors influencing the successful integration of educational technology in K-12 schools – and, in particular, private schools in the UAE, along with their relationships to the perspectives reflected at the strategic level in key national policies.

Macro 1 Policies B: International Education Policies – Regulatory Frameworks, Standards and Curricula.

For this subsection, key policy documents at international levels directly targeting the UAE private sector schooling system at Macro Level 1B (Operational Component) were subject to analysis, including the AdvancED Policies and the Procedures for Accreditation and Certification Updated June 29, 2018 (AdvancED, 2018), and the related AdvancEd performance standards (AdvancEd, 2017), along with international level documents outlining the requirements for schools in relation to their British and American curricula, the Standards for British schools overseas: 2016 Department for Education (Department for Education, 2016) (British curriculum) and the New England Association of Schools and Colleges (Accreditation Handbook, 2019). The purpose of this step was to identify the standards and policies that related to ICT integration and any alignment or misalignment with the UAE government vision articulated in the analysis of strategic, national level policies in the previous subsection.

An example of the policy analysis conducted was of the “Standards for British schools overseas 2016” document issued by the UK Department of

Education, which mapped to the meso level addressing standards, curriculum, teachers and cultural norms. One of the key messages identified was that "(a) the proprietor ensures that a written policy on the curriculum, supported by appropriate plans and schemes of work, which provides for the matters specified in sub-paragraph (2)[,] is drawn up and implemented effectively" (p. 7). Further, a notable implication was mentioned in the following statement: "We recognise that schools in different countries may have to produce and implement policies, or take action, in accordance with local regulations. It is not the purpose of these standards to ensure compliance with local regulation" (p. 6). This statement was a notable implication of this policy, as it clearly stated that it did not necessarily align with local regulations nor was its purpose to do so; rather the alignment was left for the school to establish. In addition, there was barely any mention of or emphasis on ICT integration in the curriculum document.

Further, the American standards (AdvancED, 2018) stressed that "The institution or system must comply with all applicable governmental requirements, including any requirements for governmental approval, recognition, or accreditation" (p. 3). Additionally, the AdvancED performance standards included "Standard 3.5: The system integrates digital resources into teaching, learning, and operations to improve professional practice, student performance, and organizational effectiveness" (p. 5), which was a standard that aligned with the UAE vision (as is noted in the following subsection).

Another American curriculum accreditation body was the New England Association of Schools and Colleges that stated in their Accreditation Handbook (2019) that "The Standards for Accreditation are a research-based set of practices and concepts that provide guidance to schools on all aspects of the education —

academic, civic, and social — of the young people under their care" (p. 7). The importance of this accreditation body lay in the strategic partnership formed with the Knowledge and Human Development Authority (KHDA) to "establish and implement an accreditation process appropriate to US schools in Dubai, and to offer students and their parents a curriculum where academic standards and attainment are benchmarked against international norms" ("Synchronized inspection", 2014, p. 2), making it an unprecedented attempt to align the American standards to the national agenda: "KHDA has set forth a number of requirements that cover the basic elements. These requirements cover a range of areas such as curriculum standards, assessment, staffing and personnel, and graduation requirements" (p. 2). This strategic alliance was an excellent example of an attempt to align the American standards with the UAE agenda, and it has been described as unprecedented as there have not been any previous attempts to align local standards with other (American and/or British) standards. This step served as a potential roadmap to achieve both the American standards and the UAE government's directive in creating a knowledge-based economy and to aid the UAE in creating a "first-rate education system" (UAE Vision, 2021, p. 23). Moreover, the UAE government policy in the private sector is heavily dependent on the cooperation of several policy actors over which it has little direct control (such as the British and American schools in the UAE).

When it came to the American and British curricula, alignment with the national agenda from my research was not something that was emphasised enough owing to the nature of the documents, their goals and what they would want to achieve. The importance of this step lies in how the schools planned to achieve this alignment, as the American and British curricula were not based on the UAE national agenda; rather they were based on American and British standards that

might not necessarily take into consideration nor align with the UAE standards. For instance, the AdvancEd Performance Standards for School Systems (2017) were based on "rigorous research and best practices" (p. 2), and Standards for British Schools Overseas (2019) were designed "to help British schools overseas [to] understand the Department standards required to be met under the British Government's voluntary inspection scheme" (p. 4). It is clear that neither document was looking towards alignment with the UAE government vision, as (as was noted above) it was openly stated in the Standards for British Schools Overseas (2019) that: "It is not the purpose of these standards to ensure compliance with local regulation" (p. 6). The importance of this step lies in identifying any discrepancies in standards and goals and its potential implication for how the school operates – in particular, with respect to policies and strategies for supporting technology integration. In the next subsection, the findings of the analysis of Group B policies (Operational Components) at the UAE National level (Macro Level 2) are presented.

Macro 2 Policies B Operational Components - UAE National Education Standards and Regulatory Frameworks.

In this subsection, I address the Operational Components of UAE national level ICT policy, such as funding, infrastructure, human resources, teacher training and professional development, and curriculum-related aspects. The importance of this step lies in highlighting the Operational Components of ICT and its impact on the teaching and learning process.

Policy 1: Teaching Licensing System (Educational Profession Licensure System, 2018).

In 2019, the UAE launched the Teaching Licensing system to accommodate the UAE vision of creating a knowledge-based economy, and to improve the quality of education (Educational Profession Licensure, 2018, Teaching Licensing System).

One of the goals of this initiative was to licence all teachers according "to the high standards in pedagogy and subject matter specialization" (para. 1). Accordingly, the licence became a core requirement for teachers and education professionals to operative their profession in the UAE by the end of 2020. This course of action was designed to lead to the improvement and advancement of education, and to guarantee a "high-performance in the education system, and [to] equip UAE teachers with a high level of know-how and competence in order to compete globally" (Educational Profession Licensure, 2018, Teaching Licensing System, p. 4).

Such initiatives are designed to evaluate the level of teacher competencies in line with the education standards and governmental aspirations. Further, they provide direction for the UAE education system to measure and improve the abilities of the teachers to instil the governmental issued core skills in the next generations, making them able to achieve the future goals of the UAE.

Policy 2: Teacher Standards for the UAE (National Qualifications Authority, 2015).

The UAE government developed the teacher standards for the UAE (2015) to "ensure teachers, at different career stages, can demonstrate professional competences that align with the aspiration of the UAE **V**ision 2021 and international best practices" (pp 4, 8, 10, 11). These standards aimed to:

> 1. Establish and maintain positive professional relationships with colleagues, ii. Demonstrate knowledge of pedagogical approaches. (Integrate knowledge of learning technologies into teaching and learning experiences and related activities). 2. Optimise the use of available resources and learning technologies. (Integrate learning technologies into teaching and learning experiences and related activities). 3. Reflect on own practice. 4. Engage in professional

> growth activities aligned to professional development plan (National Qualifications Authority, 2015, Teacher Standards for the UAE, pp. 4, 8, 10, 11).

From the above standards, the UAE's intent to recruit and guarantee teachers' ability to engage and use education technology in teaching and learning to carry out the government's vision was very notable. Such standards were intended to serve as a teacher quality benchmark and a tool to recommend further professional development to help current and future teachers to integrate education technology in their schools. The achievement of these objectives depended, particularly in the UAE private school sector, upon the government's capacity to deliver and maintain such plans.

As was noted in the UAE Vision 2021 policy, the UAE was endeavouring to promote a "culture of innovation in schools", which was defined as "Innovation is the generation of new and creative ideas and the use of new or improved approaches" (United Arab Emirates, Department of Education, 2019, UAE School Inspection Framework, p. 12). According to the UAE Department of Education (2019), innovation "is one of the most effective drivers of economic growth in the modern era for stimulating entrepreneurship and enterprise" (p. 12). The UAE Department of Education (2019) disclosed in detail what it considered innovation to be:

> … innovations in the way schools are owned, organised and managed; in curriculum design models; in teaching and learning approaches, such as the ways in which learning technologies are used; classroom design including virtual spaces; assessment; timetabling; partnerships to promote effective learning and engagement in the economy; and

> the ways in which teachers and leaders are recruited, trained, developed and rewarded (United Arab Emirates, Department of Education, 2019, UAE School Inspection Framework, p. 12).

Policy 3: UAE School Inspection Framework (United Arab Emirates, Department of Education, 2019).

In the UAE School Inspection Framework (Department of Education, 2019), a special focus was on innovation and on how schools can promote it. The inspection teams were tasked with examining "the school's vision and interpretation of innovation as found in selected indicators and elements of the inspection framework. Inspectors will seek to understand how it is defined, designed and expressed in the school" (p. 12). Some of the indicators that were found to be relevant to this study were:

> 1.3.4 Innovation, enterprise, enquiry, research, critical thinking and use of learning technologies. 2.3.2 Work ethic, innovation, enterprise and entrepreneurship. 3.1.5 Teaching to develop critical thinking, problem-solving, innovation and independent learning skills. 6. Leadership and management (6.1.4 Capacity to innovate and improve). 6.5 Management, staffing, facilities and resources (6.5.2 Sufficiency, deployment and development of suitably qualified staff to optimise student achievements). 6.5.4 The relevance and range of resources for effective teaching and learning (Department of Education, 2019, p. 108).

This long list seems to highlight both the centrality of ICT in contributing to achieving this kind of innovation and also the complexity and diversity of considerations for schools in seeking to implement such innovation.

To answer the question of "How does school inspection contribute to that vision?" and to achieve a world-class education system, "the UAE must apply a high-quality evaluation system to measure reliably the quality of school performance and to support school improvements and students' outcomes, through rigorous and regular school inspections" (United Arab Emirates, Department of Education, 2019, UAE School Inspection Framework, p. 7). Moreover, school inspection should play a part in evaluating the integration of ICT in the teaching and learning process, by examining the funds made available for integration, what ICT is used in the school and how it is used, and whether the teachers are able to cope with and use the ICT effectively to achieve the Vision 2021 goals.

From the above inspection framework, it is evident that the UAE's short- and long-term goals revolve around innovation and the usage of technology to elevate the country to new heights. The inspection framework clearly is looking towards schools using technology in the school for operational and academic purposes and for the teachers to integrate it within their teaching to help the students to learn how to use technology, and hence to create for the long run a knowledge-based economy that is capable of using technology to innovate. The successful implementation of these frameworks depends on recruiting and retaining quality teachers, in particular in private sector UAE schools where the majority of teachers are expatriates.

In the following subsection, I address the meso-level policies in UAE private K-12 schools.

4.5.2 Meso-level Policies: UAE Private K-12 School Policies and Performance Data.

The final section of this policy analysis is devoted to analysis of strategic (Group A) and operational level policies (Group B) at the level of the school, which is the meso level in the policy analysis framework in Figure 4.1, linked to meso level factors in the study's conceptual framework in Figure 2.3. Table 4. 2 lists the details of the schools whose website information was analysed, including the Emirate in which the school was located, the curriculum that the school followed and the private tuition fee, which was categorised further as a low, medium or high fee as seen in the fee range bracket.

Table 4.2:
UAE Private School Sample Selection

Emirate		**Curriculum**		**Tuition Fee**	
Sharjah	American	British	Low (9 - 23K)	Medium (14 - 44K)	High (26 - 67k)
Dubai	American	British	Low (9 - 23k)	Medium (17 - 42k)	High (12 - 88K)
Abu Dhabi	American	British	Low (16 - 30k)	Medium (26 - 52K)	High (47 - 85k)

These schools were selected based on three criteria: (i) Emirate (Sharjah, Abu Dhabi and Dubai); (ii) curriculum (American, British); and (iii) tuition fees, which were shared on their websites (Low, Medium and High), thereby creating the below combinations:

- Sharjah/American/Low fee, Sharjah/American/Medium fee and Sharjah/American/High fee. (Total of 3 schools.)

- Sharjah/British/Low fee, Sharjah/British/Medium fee and Sharjah/British/High fee. (Total of 3 schools.)
- Abu Dhabi/American/Low fee, Abu Dhabi/American/Medium fee and Abu Dhabi/American/High fee. (Total of 3 schools.)
- Abu Dhabi/British/Low fee, Abu Dhabi/British/Medium fee and Abu Dhabi/British/High fee. (Total of 3 schools.)
- Dubai/American/Low fee, Dubai/American/Medium fee and Dubai/American/High fee. (Total of 3 schools.)
- Dubai/British/Low fee, Dubai/British/Medium fee and Dubai/British/High fee. (Total of 3 schools.)

The available information elicited from the schools' websites relevant to ICT integration was analysed in the following subsubsections, presented according to the above list, grouped first by policy type and then by Emirate. In terms of policy type, the policies have been organised into the following groups for analysis:

1. Curriculum and ICT Integration Policies
2. Staffing and Professional Development Policies
3. School Performance Data.

This grouping reflects Operational Components of UAE national level ICT policy in the Policy Analysis Framework in Figure 4.1, (such as funding, infrastructure, human resources, teacher training and professional development, and curriculum-related aspects) and answers the question linked to RQ1: What do private sector education policies at system and school levels tell us about the key factors influencing technology integration in schools and curricula?

Curriculum and ICT Integration Policies

Sharjah

Publicly available information about ICT policies on schools' websites in Sharjah did not reveal a lot of specific detail about the schools' approach to technology integration, including the nature of the technology used, which tools they used to capture and analyse data or for what purpose the technology was used and how it was presumed to affect the teaching and learning process. Rather, the information shared was in the form of high-level statements reflecting the school's over-arching philosophy in relation to ICT integration:

> "The school will use [a] safe and efficient online learning platform" (British Curriculum, low tuition fee school).

> "Students will have interdisciplinary opportunities for critical thinking and problem solving, as well as innovation, enterprise and entrepreneurship" (American Curriculum, medium tuition fee school).

> E-Learning – A learning system based on formalised teaching but with the help of electronic resources is known as E-learning. While teaching can be based in or out of the classrooms, the use of computers and the Internet forms the major component of E-learning. E-learning can also be termed as a network enabled transfer of skills and knowledge, and the delivery of education is made to a large number of recipients at the same or different times (British curriculum, medium tuition fee school).

> … strongly believes in e-learning and its benefits [for] the education process and student understanding. We have integrated Computer Based Learning (CBL) in the high school section of our school (British Curriculum, high tuition fee school).

An examination of information shared on websites of the three Sharjah schools revealed no specific reference to technology integration in the curriculum. Rather, the generic approach to providing information reflected above continued:

> Low tuition fee/American school: "[The] American curriculum is based on the international schools system following the American National Common Core Curriculum Guidelines".

> Low tuition fee/British school: "We have the accreditation from the Cambridge University to conduct the IGCSE Examination in the months of May/June. In order to cover a broad and balanced curriculum as recommended by Cambridge University, the students are offered 6 compulsory IGCSE subjects from Grade10".

> Medium tuition fee/American school: "The formal curriculum has its foundation in the US education system. It is designed to be suitable and motivational for students so that it promotes their learning at the level of their abilities and needs, American Curriculum/CCSS".

> Medium tuition fee/British school: "[T]he school provides a comprehensive curriculum, with a clear process of learning and specific learning goals for every subject. It also develops international mindedness and encourages personal learning".

High tuition fee/American school: “American-based curriculum”.

High tuition fee/British school: [E]xcellent and challenging UK education dedicated to providing an outstanding education comparable to the best schools in the Gulf region and internationally. Our educational ethos will always remain focused on quality teaching and learning, rather than any commercial imperative; this, we claim, has a profound impact on both our students and [our] teachers.

From the above quotations, we can understand that the generic approach to providing information continued, with a notable absence of anything relating to education technology, innovation or alignment to the UAE government vision. The quotations reflected the schools’ advertising their curriculum to their potential clientele, without really offering in-depth insights into the curriculum offered, to the extent that one school needed to clarify its stance on the commercial aspect of the school, as was seen in the quotation immediately above.

Dubai

In comparison with Sharjah, Dubai schools seemed to be a little more informative when it came to their curriculum, their approach to teaching and learning, and their alignment to standards, as shown in the following quotations. Low tuition fee/American school:

“The curriculum itself can be defined as the totality of planned learning outcomes and experiences. As a school, we have reviewed our courses to ensure they are constructed out of the learning outcomes and experiences provided by the California curriculum, Common Core Standards, and NGSS”.

Low tuition fee/British school: “A British Curriculum School…[that] follows the Cambridge Curriculum programmes and accreditation. They are designed to prepare students for life – helping them to develop a curiosity and enthusiasm for learning. Our programmes have a detailed, planned and integrated curriculum scheme, from the age of 4 to 16. It is a skill-based curriculum, that helps students to become confident, responsible, reflective, innovative individuals.”

Medium tuition fee/American school “…the school follows the US Curriculum, aligned to: Common Core State Standards (CCSS) for English Language and Math classes, Next Generation Science Standards (NGSS), California State standards for other subjects taught in the English language. Ministry of Education’s prescribed program for the Arabic Language, Islamic Studies and Social Studies.”

Medium tuition fee/British school: “the programme of study follows the UK Curriculum, which we aim to be broad and enriching, providing a balanced and holistic approach to learning – diversely connected. It is important that our students are exposed to the local and International dimensions that support the notion of becoming global citizens who interact and collaborate with their peers both at [name of school withheld] and across our schools.”

High tuition fee/American school: “the common core and standards-based learning models for classroom instruction”.

> High tuition fee/British school: … delivers the [name of school withheld] College Curriculum, which is based on the National Curriculum of England and Wales. The school provides a deep, broad and balanced curriculum that consistently offers rich, varied and highly engaging lessons and extra-curricular opportunities to allow all children to develop their skills and abilities to their full potential.

However, other than the alignment to the Ministry of Education in both Arabic and Islamic subjects, there was no mention of how the schools aligned to the government vision of innovation, and how they were helping to create a knowledge-based economy. These lack of details and the absence of any information with regard to the alignment to the government vision and how they were sustaining alignment to the American/British standards were rather concerning owing to the vague and generic nature of the information that was supplied.

Abu Dhabi

An examination of three Abu Dhabi schools in terms of curriculum policies revealed that these schools are open to sharing which curriculum they use and the standards that they are aligned to.

> Low tuition fee/American school: "The academic courses are designed to expose all students to a wide range of creative, social, scientific and athletic experiences. [Name of school withheld] is internationally accredited by educational authorities (CIS, ECIS, NEASC, Edexcel, SAT, TOEFL, ASPNET, Cambridge International Examinations Syndicate) and at home enjoys national recognition with local and international educational institutions. The school curriculum lays emphasis on academic achievements and believes in

fostering the intellectual, creative, physical, personal and social development of students in a multicultural learning environment."

Low tuition fee/British school: "British Curriculum school, Cambridge international education". Medium tuition fee/American school: "US Common Core curriculum for English and Math, Next Generation Science Standards (NGSS) for Science and the Virginia Curriculum for all other subjects". Medium tuition fee/British school: no information found. High tuition fee/American school: "Our American, standards-based curriculum provides excellence in the four pillars of academics, the arts, athletics, and service". High tuition fee/British school**: "**[T]he College offers its pupils a vibrant and challenging learning environment, and a distinctive British independent school ethos which reflects the values and dynamic culture of Abu Dhabi and the United Arab Emirates".

It was no surprise to see the trend continuing in Abu Dhabi private schools of offering very generic information, and of emphasising what seemed to be the main selling tags "American" and "British" to attract clientele. With no information at all being provided when it came to alignment to governmental vision and usage of innovation and education technology in their schools, this raised the question about why no such information was provided and about how the schools were planning to manage the American and British standards and to achieve the governmental agenda at the same time. A suggested response would be to state clearly that the alignment is in process or the alignment is partially or aligned in total; if not, a reasoning to why this step has not taken place should be displayed.

By contrast, Dubai schools seemed to share more detailed information across all three fee categories in both American and British schools:

> "The school uses a whole range of software in the class for teaching and Learning, for independent and group research, for assessment, recording, analysis and reporting. And all this is ably supported by robust digital infrastructure" (Low tuition fee/British)

Medium tuition fee/American: "Demonstrate 21st century learning and life skills [,] including: presentation, communication, ICT, creativity, and critical thinking". Medium tuition fee/British:

> "There are clear benefits of using technology in the classroom. We are committed to using innovative teaching methods to serve students better and to teach them about the benefits of innovative thinking. Innovation is part of the National Agenda and [,] to support this and our students' development, we are committed to developing the next generation of innovators. Digital learning is embedded in our curricular and extra-curricular programmes. We also provide cross-curricular integration of technology to support students in communication, collaboration and critical research".

High tuition fee/British: "Distance learning has started in earnest at the School. Before it launched, significant thought and research went into developing a comprehensive Continuity of Learning (COL) plan".

However, the above Dubai schools did seem to be more on the advertisement side of the spectrum than to be providing in-depth information about the process of integration, alignment with the governmental vision, student safety and the process of evaluating their progress with integrating technology.

However, the above quotations from schools' websites did provide evidence of the school's broad position on the integration of technology. However, to what extent, for what purpose, how it is used and by whom and its alignment to the government's directives or international curriculum standards and priorities were not shared publicly.

In the low fee schools, no detailed information was shared. Medium tuition fee/British:

> "ICT plays a major role within many aspects of the whole curriculum, for researching, recording and presenting information as well as using specific programs to enhance lessons, motivate children and practice skills….A comprehensive set of ICT outcomes is included in the curriculum along with methods for integrating some or all of them into other subjects….The School shall be responsible for the safety of their students by maintaining instructions on the correct use of the Schools IT systems".

> High tuition fee/British: [S]tudents and faculty have access to state-of-the-art technology including Apple and Google educational products, virtual reality (VR), 3-D printing, a fully equipped production & design lab, and a video studio. Technology is integrated into all aspects of school life to inspire, help [to] develop critical thinking skills and support creativity and collaboration. We actively

> incorporate the expectations of technological proficiency throughout all grade levels and content standards. We believe that technology should promote active learning; allow teachers to share information efficiently and maintain proficiency; enable administrators to manage the school more effectively, and facilitate timely communication and collaboration between students, teachers, administrators and parents.

From the quotations listed above, it was notable that the level of detail, information and responsibility towards students' safety was much greater in comparison with the schools in Sharjah. From the information shared, it was easy to notice the alignment with the governmental vision and the schools' work on the 21st century skills when it came to the integration of technology. However, this information was present only in the medium and high tuition fee British schools, and not in the American schools in all three fee categories or in the low tuition fee British schools. Further, no clear information with regard to the alignment with the governmental directive and to long-term data collection and analysis about the process of integration was found on the school websites.

Staffing and Professional Development Policies

Sharjah

In both medium and high tuition fee Sharjah schools, the commitment to teacher professional development was evident, and the staffing policy of hiring trained teachers was also evident throughout:

> Medium tuition fee/American: "This high quality teaching performance is best ensured with continuous professional development, commitment to action research and inquiry, strong and high morale growth, and carefully constructed recruitment and

selection policies to ensure that we attract, develop and retain teachers of the highest quality, integrity and personal as well as professional standards".

High tuition fee/American: "[W]e believe that staff development is an integral part of our school's success".

High tuition fee/British: "Teachers all undertake continuous professional development, and indeed lead other schools in raising standards and keeping abreast of educational developments". High tuition fee/British: "All our teachers are experienced UK trained specialists".

Further, the statement that "All our teachers are experienced UK trained specialist" potentially suggested that "UK trained" was a perceived indicator of differentiation between this school and its competitors and, if so, ICT integration could be seen similarly as an indicator of such product differentiation. The statement was also concerning, as it could potentially be interpreted as discriminating against the local/international teachers who were not UK trained but who could still perform the tasks needed.

Dubai

An examination of information shared on websites of the three Dubai schools revealed no specific reference to staffing and professional development policies. Rather, the generic approach to providing information reflected above continued:

Low tuition fee/American: in relation to staffing policies, “well-qualified and committed staff”.

Medium tuition fee/American: with regard to staffing policies, “hiring qualified educators that can deliver the innovative curriculum that promotes 21st century learning skills”.

Medium tuition fee/British school: in relation to staffing policies “we continually seek highly motivated staff with experience in British Curriculum schools”. High tuition fee/American school: with regard to PD, “[T]eachers work collaboratively to share their teaching strategies so that all students benefit from our collective expertise”.

The absence of clear information about the recruitment and professional development of teachers continued, making it a very worrying trend as the lack of emphasis and clarity might affect teacher recruitment and retention. The information provided with regard to the staffing policies was very generic, and it did not provide any insight into how the staffing process was conducted.

Abu Dhabi

The emphasis on qualified and experienced teachers was evident in this section, as school without stating the nature of this experience.

Low tuition fee/British: in relation to staffing policies, “English speakers teach the National Curriculum of England”. Medium tuition fee/British: in relation to staffing policies, “Staff are highly qualified and experienced, providing personalised care and support, to help each individual [to] realise and achieve his/her own potential”.

The absence of any information about the recruitment and professional development of teachers in relation to ICT integration was very notable from all the schools, which was concerning when it came to attracting and retaining teachers, as was seen in the Macro 2 level policies. In addition, the concern continued with what might be seen as a discriminatory approach to the staffing policies as hiring native speakers does not guarantee competencies and will lead to overlooking quality staff members who are not native English speakers. However, the British medium tuition fee school did provide a generic description in relation to its staffing policy, but it did not provide in-depth details about its staffing policies.

School Performance Data

Sharjah

The importance of benchmark testing was evident, and its importance was highlighted.

Low tuition fee/American school: Measures of Academic Progress (MAP). Low tuition fee/British school:

In Grade 10, the students are prepared for IGCSE examination in 2 subjects namely, ICT and English. In Grade 11, they are prepared for the 4 remaining subjects namely, Mathematics and three subjects from Science/Commerce stream. In Science stream, Physics, Chemistry and Biology subjects are offered whereas in Commerce stream, Accounting, Business Studies and Economics subjects are offered.

Both American and British medium tuition fee schools did not share any information about their performance data. High tuition fee/American school: “MAP and California Achievement Test (CAT)”. High tuition fee/British school: “GCSE or IGCSE, A Levels”.

In the analysed Sharjah schools, we can see some information with regard to benchmark testing and standardised assessment, mainly just providing the names of the assessment without any information about what they did with the data captured, and whether those data were subjected to analysis to make informed decisions, or whether those data were used for reporting purposes only and without alignment to the government vision. On the other hand, how realistic is it that such information would be provided on the school websites?

Dubai

Following the same trend as Sharjah, benchmark testing seems to be highly emphasised and advertised.

> Low tuition fee/American school: “Cognitive Abilities Test (Cat 4), MAP, PISA, TIMSS”. Low tuition fee/British school: “IGCSE/GCE O Level”. Medium tuition fee/American school: “the school carries out regular assessments using American Standardized tests, including the Measures of Academic Progress (MAP) test”. Medium tuition fee/British school: “IGCSE, BTEC Firsts, A Levels and BTEC Nationals, GL assessments”. High tuition fee/American school: “student assessment, focusing on student mastery of concepts and skills”. High tuition fee/British school: “International GCSE and A-level”.

The trend of the lack of publicly shared information continued with the Dubai schools, with the same approach of providing the test names echoed on the schools’ public domains without any connection with the government vision being made, or without stating how the assessment data were used. However, there was one school that mentioned the PISA and TIMSS benchmark tests, which was

mentioned also by the UAE government in their documentation. This mention might be considered as an indicator of alignment to achieve the governmental vision; however, no concrete information was shared publicly to cement this contention.

Abu Dhabi

Low tuition fee American and British schools did not share any information. Medium tuition fee American schools did not share any information. Medium tuition fee/British school: “A Level and IGSCE”. High tuition fee/American school: “[I]n grades 11 and 12 students can choose to enrol in the IB Diploma Programme (IB), Advanced Placement (AP)”. High tuition fee/British school: “A level, GCSE or IGCSE”.

When it came to performance data in Abu Dhabi, it was very surprising to see almost no data being shared publicly other than the names of the standardised tests in the British and American schools. The reason for this lack of information sharing could relate partly to perceived commercial-in-confidence information and to the highly competitive character of the UAE private schooling sector, and whether there was any form of benchmark testing and alignment to the governmental directive was something that I could not infer as a result of the schools being very conservative in sharing details of their performance data.

4.5.3 Summary of Key Findings of Policy Analysis Linked to RQ1

In undertaking this policy analysis, I aimed to achieve detailed insight into the driving forces of education technology integration in terms of why schools would want to use technology in their schools, what challenges they faced while integrating technology and what the barriers and enablers were.

In summary, the policy analysis reveals that the UAE's national level policies reflected the broader global vision to create a "first-rate education" (UAE Vision, 2021, p. 23) that strives for innovation (Ministry of Education Strategic Plan 2017-2021; Education 2020 Strategy), and that aims to transform the "current education system and teaching methods" (UAE and the 2030 Agenda for Sustainable Development, 2017, p. 43), recognising that "improving learning and skills must be a long-term priority for the GCC, with a continued need to integrate SDG4 goals and indicators into national policies, turning intent into action" (Sustainable Development Goals, 2017, p. 45). However, it is the nature of a high level policy document to make these kind of positive-seeming statements. In reality, progress with technology integration in the private school sector may not be able to keep pace with progress in the public sector due to system-related factors such as funding, which was highlighted in the analysis of the Operational components of the Macro level policies.

As was outlined in Chapter 3, in my research for this section of the policy analysis, I relied on the information in the public domain that the schools shared on their websites, as this was the only source of information that I was able to access, given my geographical location and other constraints. The data collected from the school websites were from 18 schools in total. However, the amount of information that the school decides to share publicly serves as both a strength and a limitation of this reliance: a strength in that the school might disclose and update its information frequently to communicate with current parents and to attract new parents at the same time; a limitation if the school is reserved about the information that is made public. In addition, achieving the standards (American/British) that do not necessarily align with the local standards is complex, hence adding to the struggles

of achieving Vision 2021. With the school level strategic policy documents, there was limited information in the public domain from all the schools that were researched, other than that some policies were shared in the form of posts on their websites to communicate with current parents, and other posts were for advertisement purposes to attract new enrolments. However, some sort of alignment with the government's vision about innovation and 21st century skills was evident in the American schools; on the other hand, the lack of information about how this was to be achieved remained consistent. When analysing both curriculum and standards documents, there was barely any mention of ICT in British documents, as was noted in the Macro 1 level policies. The only inference that can be made from the information or lack of information provided was that the schools were far behind alignment to the governmental directive on their websites; however, internally this might not have been the case.

What these insights mean for countries such as the UAE in terms of K-12 technology integration is that there is a need to develop a UAE framework that aligns with the advice provided in the PISA ICT framework in order to integrate ICT in the schools and to help to guide staffing and professional development policies. However, some but not all the requirements/elements identified by PISA (2019) were reflected/evidenced in the national level policy analysis. To address the question of why schools would want to use technology in their schools, other than being a government requirement that costs schools a considerable amount of money, from the policies, the main reason why any school should use ICT was for skill purposes. However, the lack of clear, concise, budget friendly and aligned directives where the involved teachers are well trained and drilled to implement the ICT integration leaves the schools in limbo. For instance, a school can use a 1000MB

Internet connection with the top-range software and hardware for each student, and another school is on dial-up Internet connection with a one device access per class, and both could be categorised as integrating education technology. The same can be said for teacher professional development: one can be a guru in a certain software/hardware, yet, if employed in a school, what are the chances that the school uses the exact same hardware/software?

As for what challenges that the schools face while integrating technology and what the barriers and enablers were, a government's vision is both a challenge and an enabler at the same time. A government that heavily invests in the country's infrastructure to provide all the advantages needed for a school to deliver the governments vision is a tremendous undertaking and definitely a major enabler, in addition to frequent roll-out of policies to help to aid the schools in their journey. However, the challenge will remain evidently in funding and teacher professional development and their ability to deliver the government vision at the same time as achieving their curriculum standards.

4.6 Conclusion to the Chapter

This chapter described the data collection, analysis and findings for the policy analysis component of the research in answer to the first research question. The findings contributed to understanding the challenges and issues facing private sector K-12 schools in the UAE in responding to the Vision 2021 mandate for technology integration. All the above steps supported my findings and contributions to knowledge, and pave the way for the next chapter that details the findings of RQ2 and RQ3.

CHAPTER 5: INTERVIEW FINDINGS (RQ2 AND RQ3)

5.1 Introduction to the Chapter

The previous chapter addressed the RQ1 data analysis and findings by providing an overview of the UAE education system and policy context for K-12 technology integration, analysing key policies at different levels of the study's conceptual framework and considering the impact of policy on technology integration in UAE K-12 private schools. This chapter outlines the data analysis and findings for the interview component of the research in answer to the second and third research questions. The findings contribute to understanding the challenges and issues facing private sector K-12 schools in the UAE in responding to the Vision 2021 mandate for technology integration linked to RQ2: What are school teachers' and administrators' experiences of and perceptions about the integration of technology in UAE private schools, including reported challenges and enablers? and to RQ3: How do UAE K-12 private school teachers learn to integrate technology into their educational practice? This paves the way for the final chapter in which the conclusions and recommendations of the research are presented.

5.2 Structure of the Chapter

There are nine sections in this chapter, the first section being an introduction to the chapter, followed by this outline of the structure of the chapter. The third section, Section 5.3, presents the data analysis framework and three-step data analysis procedure explaining the content and thematic analysis procedures used to analyse the data generated from interviews with the study's participants – the ten

UAE private school educators. Section 5.4 provides an overview of the participants' contexts and characteristics by highlighting their years of experience in K-12 schools, positions held and background knowledge that might influence their perspectives and experiences when integrating education technology. Section 5.5 outlines participants' perceptions of each school's progress in implementing technology integration in response to Vision 2021 in the UAE, including the main challenges faced and the recommended solutions for technology integration. Section 5.6 describes the educators' attitudes towards and beliefs about educational technology and technology integration, and the differences between classroom teachers and administrators are highlighted. Section 5.7 addresses educators' perceptions and experiences of professional development in supporting technology integration and its effectiveness, and again differences in perceptions between classroom teachers and administrators are noted. Section 5.8 identifies the key themes emerging from the analysis, including: ways to use technology in education; finances and infrastructure; cultural context and staffing; meaningful technology integration; and participants' contexts and characteristics revisited. Section 5.9 concludes this chapter and paves the way for the discussion of findings of the policy analysis and interviews in Chapter 6.

5.3 Data Analysis Framework and Procedure

As was outlined in Chapter 3, the data analysis procedure followed a three-phase procedure of content and thematic analysis adapted from Peel (2020). This process involved organising and managing the data, mapping and coding the data, and identifying emerging themes. To facilitate this process, the analytical framework presented in Table 5.1 was developed. The framework maps the research questions

(RQ2 and RQ3) in the first column to the interview questions in the second column, and the interview questions to components of the study's conceptual framework presented in Chapter 2 in the third column. This in turn led to the identification of the three thematic clusters shown in the last column of the table. This third column illustrates how the research questions coalesce into three thematic clusters, each of which addresses a particular aspect of the participants' perceptions and experiences of technology integration linked to particular research questions and specific components of the conceptual framework. As shown in Table 5.1, the interview questions mapped to Cluster A probed participants' perspectives of the challenges and enablers of technology integration with reference to their experience of their school's progress in integrating technology in response to Vision 2021 linked primarily to meso (school) level factors in the conceptual framework. In contrast, the interview questions mapped to Cluster B probed participants' attitudes and beliefs about educational technology and its integration linked to particular micro (teacher) level factors in the conceptual framework. The questions mapped to Cluster C probed teachers' experiences of learning to integrate technology into their practice mapped to corresponding micro (teacher) level factors in the conceptual framework.

Table 5.1:
Analytical Framework Used to Guide Analysis of Interview Transcripts

Research Questions	Interview Questions	Conceptual Framework (adapted from Kozma, 2003)	Thematic Clusters
RQ2: What are school teachers' and administrators' experiences of and perceptions about the integration of technology in UAE private schools, including reported challenges and enablers?	1. Please provide your overall rating for your school in terms of the progress of integrating technology in the context of Vision 2021. 3. What challenges to the integration of technology have you faced in your school? 4. From your experience, what are some solutions to these challenges? 8a. What is your perspective on the (a) availability and (b) suitability of the resources available to you? (Teacher) 9. Which professional development approaches and strategies would you suggest?	School-level factors (Meso) • **Infrastructure and Finances** • **Ways of ICT Use** • **Cultural Context and Staffing** • **Professional Development** Teacher-level factors (Micro) • **Teacher attributes**	A: Perceptions of the school's progress in implementing technology integration in response to Vision 2021, including main challenges faced and key strategies implemented to address these challenges (Q 1, 3, 4, 8a, 9)

Research Questions	Interview Questions	Conceptual Framework (adapted from Kozma, 2003)	Thematic Clusters
	5. What are your beliefs about the quality of teaching and learning once technology has been integrated into the classroom? 6. How did you feel when technology integration was introduced to the school? 7. Which subject do you think the technology integration is most effective for? Why? (Administrator)	Teacher-level factors (Micro) Teacher attributes Curriculum content and goals	B. Educators' attitudes towards and beliefs about educational technology and technology integration (Q 5, 6, 7, 8)
RQ3: How do UAE K-12 private school teachers learn to integrate technology into their educational practice?	2. Can you explain how you integrate technology on a day-to-day basis in your role as a teacher? 3. What challenges to the integration of technology have you faced in your school? 4. From your experience, what are some solutions to these challenges? 7. How easy do you find it to integrate technology? (Teacher) 9. Which professional development approaches and strategies would you suggest?	Teacher-level factors (Micro) Teacher practices Classroom factors Teacher attributes Teacher learning	C. How classroom teachers experience learning to integrate technology into their practice (Q 2, 3, 4, 7, 9)

As was shown in Table 5.1 and as was explained in the study's conceptual framework in Chapter 2, each of the interview questions (column 2) was designed to target specific aspects of the two research questions (column 1), which in turned mapped to factors at the school level (Meso) and teacher level (Micro) in the study's conceptual framework (column 3). These factors served as initial codes for the content analysis of the interview transcripts. These in turn were able to be organised into three thematic clusters (column 4) that emerged a priori to facilitate the process of thematic analysis. The data analysis involved three distinct phases:

1. engaging with the data;
2. mapping and coding the data; and
3. identifying emerging themes.

These data analysis phases were completed iteratively throughout the whole process, as was outlined by Peel (2020). The actions undertaken for each of these are now described, followed by examples to illustrate them.

5.3.1 Engaging with the Data

To start with, I organised the raw data from the ten interviews by putting them into different folders, the first containing the audio recording, then another folder containing the transcriptions of these recordings. Those transcriptions were then checked for any mistakes that might have occurred from the transcription software, and they were corrected accordingly. The next step was to create another folder for the data analysis documents needed to capture the data in a way to streamline the process of coding and identification of themes with reference to the analytical framework. After consultation with my supervisors, we determined that I would need three different templates to do so: an Excel document for capturing data

about the participants' responses to the multiple choice interview questions that could be graphed (refer to Q 1, 3, 4, 9 in Table 5.1); a Word document for content and thematic analysis containing quotations representing points of particular interest from the responses to the open-ended questions (refer to Q2, 5, 6, 7, 8 in Table 5.1) that would be further analysed and coded with reference to the study's conceptual framework and then revisited, in an iterative process, to identify emerging themes; and, finally, another Word document that allowed me to list side by side teachers' responses against responses from administrators in answer to all nine interview questions for the purposes of comparison (refer to Appendix 8). The Word document in Appendix 8 also lists the gender, emirate and curriculum to help to identify any influence that these factors might or might not have on their experience/perspective with/on education technology integration in their schools.

5.3.2 Mapping and Coding the Data

To add details about the mapping and coding process, the elements listed in column 3 of Table 5.1, drawn from my conceptual framework (Figure 2.3), had been used to devise my interview questions to ensure that the interview questions explored these key factors. These served as 'a priori' codes to identify extracts from the interview transcripts that directly related to these factors. In the transcription process, I went through each interview transcript, and I coded particular quotations using these elements, and I also identified other emerging factors that may not have been included in the conceptual framework and coded these accordingly.

5.3.3 Identifying Emerging Themes

I then created a Word document for thematic analysis that contained quotations from the participants' responses to the interview questions providing their

in-depth perspectives, thereby shedding light on their experiences with education technology. These were coded into themes corresponding with the three thematic clusters shown in the analytical framework in Table 5.1. Finally, I created a Word document that contained teachers' responses to all nine interview questions and listed them against the administration responses to the same nine questions, which enabled me to highlight the differences and similarities in experiences and perceptions according to position, and allowed me to spot any influence that gender, emirate and curriculum might have had on education technology integration in each school. Table 5.2 presents a summary of the three steps in the data analysis with reference to examples included in the Appendices to illustrate each step in the process.

Table 5.2:
Steps in the Data Analysis Process with Illustrative Examples (adapted from Peel, 2020)

Steps in the Data Analysis Process	**Examples to illustrate**
1. Engage with the data	Refer to Appendices 1 and 2 and 8 for examples
2. Mapping and coding the data	Refer to Appendices 2 and 8 for examples
3. Identifying emerging themes in the data	Refer to Appendix 2 for examples

The next section paves the way for interpretation of the interview findings, providing an overview of the interview participants' contexts and characteristics by highlighting their years of experience in K-12 schools, positions held and background knowledge that might influence their perspectives and experiences when integrating education technology.

5.4 Participants' Contexts and Characteristics

This section provides in depth details of the background and experience of the ten interview participants, stating their pseudonym, gender, Emirate, current role, curriculum, past and previous positions, and years of experience in current and past roles. The rationale for this step was explained and outlined in Chapter 3 as a part of my sampling strategy for the interviews, which included a selection of private schools from particular Emirates and both classroom teachers and teachers who were working in administration and leadership roles at the time of the interviews. Further, the different characteristics – for example, years of experience and role, as presented in Table 5.3 – were likely to impact on the analysis of the data.

Table 5.3: *Contexts and Characteristics of Interview Sample*

Pseudonym	Gender	School location (Emirate)	School curriculum	Current role	Experience in current role	Previous role	Experience in previous role
Savannah	F	Abu Dhabi	American	Head of English and English teacher	3 years and 5 months	English teacher	13 years
Bruce	M	Abu Dhabi	American	Principal	2 years	Principal	20 years
Timothy	M	Sharjah	American	English teacher	8 months	English teacher	2 years and 6 months
Mollie	F	Al Ain	American	Vice principal	8 months	Vice Principal	12 years
Eleanor	F	Abu Dhabi	American	Vice principal	9 Months	Vice principal	5 years and 11 month
Abraham	M	Abu Dhabi	British	Program coordinator	1 year and 9 months	Biology teacher	10 years
Shaun	M	Dubai	British	Deputy head academic	2 years and 7 months	Head of Science	8 years
Ava	F	Dubai	British	Head of education technology	5 years and 5 months	Head of ICT	13 years
Christine	F	Sharjah	American	Vice principal	6 Months	Head of English	2 years and 7 months
Scarlet	F	Abu Dhabi	American	Chemistry teacher	7 Months	Science teacher	3 years and 1 month

As shown in Table 5.3, and moving from left to right across the table, there are eight tags, which are pseudonym, gender, school location (Emirate), school curriculum, current role, experience in current role, previous role and experience in previous role. Each interviewee was given a pseudonym to protect her or his anonymity, and thus the letters in column 1 of the table reflect the first letter of the pseudonym (e.g., A = Alexis, B = Badri). Column 2 states the gender of the interviewees in order to compare responses between male and female participants to determine any possible patterns in the data linked to the gender of participants. Column 3 addresses the school location (Emirate); it was important to list this tag in order to have insight into whether or not the particular Emirate in which the school was located played a role in influencing the experiences and perceptions of the educators towards education technology integration. Column 4 identifies the school curriculum (American, British); this tag was important to highlight if there were any differences when it came to education technology integration, and if the curriculum itself were a challenge for implementation. As shown in Table 5.3, three schools were teaching the international English curriculum (Clark, 2014), with the remaining seven teaching the American curriculum (Clark, 2014). Overall, two subject areas were represented across the sample: English (three respondents) and Science (three respondents), with ICT/Education Technology arguably a third subject area. Three of those in administrative roles at the time of the interviews had previously been subject-specific classroom teachers of either English or Science.

Columns 5, 6, 7 and 8 are experience and role-specific. The first two columns (5, 6) shed light on the current role and experience of the educator in that specific role. The importance of these two columns derived from the potential influence of each participant's position/experience on his or her

experience/perspective on challenges and enablers for education technology integration. Further, columns 7 and 8 shed light on the previous experience and the previous role of the educator and how they could potentially influence the educator's perception of education technology integration. For example, it became clear in the first stages of data analysis that there were significant differences in responses between classroom teachers and administrators, and that comparing responses between the two respondent groups would become a key feature of my analysis process, as is shown in subsequent sections of this chapter. Important factors such as these related to the respondents' contexts and characteristics shown in Table 5.3 are incorporated into the analysis and presentation of the findings in the following sections of the chapter, with key implications being highlighted in the conclusion of the chapter.

In the following sections 5.5 – 5.7, the findings of the analysis of the interviews are presented, organised into the three thematic clusters shown in the analytical framework in Table 5.1:

A. Perceptions of the school's progress in implementing technology integration in response to Vision 2021 in the UAE, including main challenges faced and key strategies implemented to address these challenges (Q 1, 3, 4, 8a, 9).
B. Educators' attitudes towards and beliefs about educational technology and technology integration (Q 5, 6, 7, 8).
C. Educators' perceptions and experiences of learning to integrate technology into their teaching (Q 2, 3, 4, 9, 10).

Finally, to facilitate identification of individual participant responses and, potentially, the ability to draw comparison or to identify differences in the

participants' responses to the interview questions linked to gender, role, Emirate and curriculum, participants' responses were coded as shown in Table 5.4.

Table 5.4:
Interviewed Code Name and Pseudonym

Code Name	**Pseudonym**	**Code Name**	**Pseudonym**
(1.A - FTAA)	Savannah	(2.B - MAAA)	Bruce
(5. E – FAAA)	Eleanor	(6. F – MAAB)	Abraham
(9. I – FASA)	Christine	(3. C – MTSA)	Timothy
(10. J – FTAA)	Scarlet	(7. G – MADB)	Shaun
(4. D – FAAA)	Mollie	(8. H – FADB)	Ava

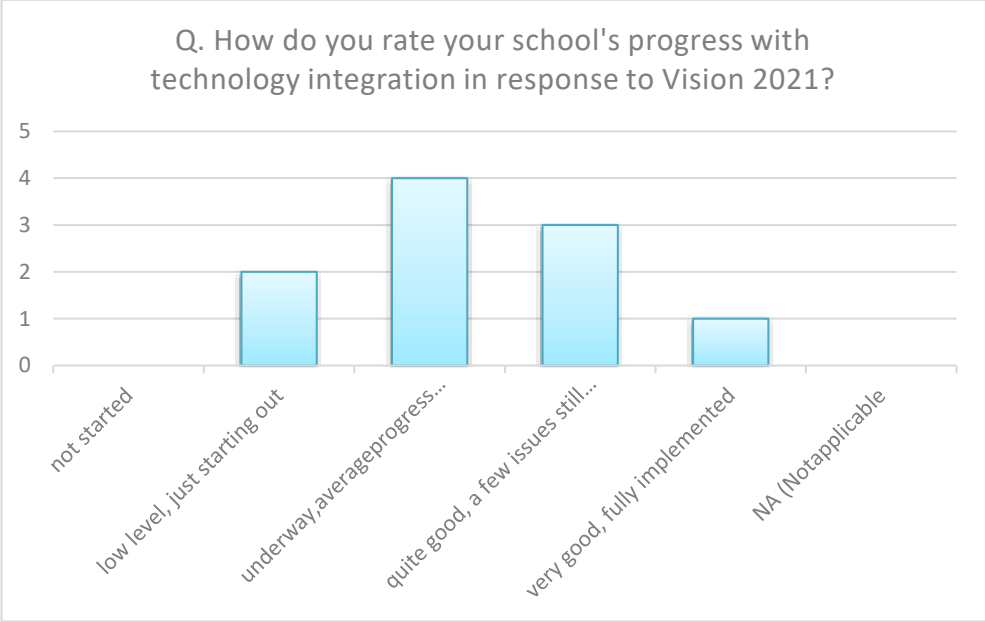
As shown in Table 5.4, the Gender (Male/Female), Role (Teacher/Administration), Emirate (Abu Dhabi/Dubai/Sharjah) and Curriculum (American/British) are listed, in addition to the letters A-J aligning to the numerical system 1-10 according to the interview number. For example, Savannah is participant (A), Gender: Female (F), Role: Teacher (T), Emirate: Abu Dhabi (A), Curriculum: American (A); hence, the code A-FTAA.

5.5 Perceptions of the School's Progress in Implementing Technology Integration in Response to Vision 2021

As is shown in Figure 5.1, participants' responses to the first interview question asking them to rate their school's progress in implementing technology integration showed that seven of the ten respondents saw their school's progress as being "average" to "quite good", with two rating their school's progress as "low

level" and "only just starting out", and one rating her or his school as having "fully implemented" technology integration.

Figure 5.1:
Respondents' Ratings of School Progress in Implementing Technology Integration in Response to Vision 2021



Whilst these results, which predictably indicated variation among interviewees in their perspectives of their school's progress with technology integration, were not particularly remarkable on their own, they did indicate that technology integration was perceived by respondents to be still very much a work in progress, with only one of the respondents rating the school's progress as being "very good, fully implemented", and none as "not started". A comparison of responses from teachers in different roles and from different schools using different curricula revealed interesting nuances in respondents' subjective experiences of their school's progress with technology integration. For example, where both a teacher and an administrator from the same school with an American curriculum were interviewed, the teacher rated the school's progress as "Quite good, a few issues still to resolve", whilst the administrator rated the same school as "low level, just starting

out". This indicated that there were significant differences in the perceptions and experiences of technology integration between teachers and administrators.

The examples provided by respondents of different ways that technology was being integrated at the school level in response to Question 1, and also to Q8a about the availability and suitability of resources for technology integration, were of interest as they highlighted two broad and quite different purposes for which the technologies were being used. These were firstly for administrative purposes:

> [We] *use technology to communicate. So we have a number of different platforms that we have to email. We're also using Microsoft teams as well as a way to communicate with one another. (G-MADB)*

> *We have an appraisal system which we use on a daily basis where we record our lesson observations that we go and see to review, and record the findings of the lesson observations onto a platform that also has all of our objectives. (G-MADB)*

The second main purpose identified for integration of technology was for classroom teaching:

> *Jigsaw strategy, it's [a] specific model for the differentiation between the levels of students. (J-FTAA)*

> *Analysis of data so that you can adjust and adapt in the engineering of the lesson plan using the technology. (J-FTAA)*

> *We also have Chromebooks where we give the students like various things, like Quizzlet games that you play on Quizzlet to increase student performance. (A-FTAA)*

All the classes are equipped with new technology like projectors and smartboards. And also we use some new apps and some sites like Kahoot and Quizzlet. (C-MTSA)

We use iPads in the classroom as a part of the teaching. (D-FAAA)

The significance of these reported purposes for technology integration is seen below in Section 5.6 as education technology integration enables teachers to be more dynamic and students to experience a more enjoyable teaching and learning process.

With respect to the factors influencing the integration of technology, the interview questions in this cluster exploring the challenges and solutions mapped both to factors at the organisational (or *meso* level) of the conceptual framework in Figure 3.1 and to teacher-related factors at the *micro* level. Beginning with meso-level factors, organisational factors highlighted by respondents as challenges of technology integration in response to Q3 and Q8a included a lack of finances, ICT infrastructure, resources and technical support at the school:

We don't have that … [many] resources in the school ... Sometimes I depend on myself, not on the school. And sometimes I try to find my resources by myself. And it's not that many. (C-MTSA)

People get discouraged because of the lack of funds, infrastructure and persistent technical issues. (E-FAAA)

Lack of financial support for teacher training and relying on already existing teacher knowledge, but it is not that effective. (I-FASA)

The second thing, applying or using, for example, no support. A teacher with an iPad can provide that teacher [with] iPads in order to control the class with the technology that they can control the students who can or can't connect to the school setting. (C-MTSA)

Responses also made reference to challenges related to a high staff turnover at the school:

Because we have staff coming and going very frequently, the ability to train staff on certain aspects of technology is quite difficult. The person driving it and leading it moves on and leaves and goes somewhere else. (G-MADB)

Every year…there is a staff turnover, so the issues are with regards to training. (H-FADB)

Staff workloads were also raised as a barrier:

Because most of them, like they say, "We don't have time". We don't have time to do that. We have – oh, we are overloaded by work. (F-MAAB)

Reduce other workload times for teachers (like the owners of the school, they will be against this because they always [say that] we have…financial issues). (F-MAAB)

Other responses highlighted inadequate provision of professional development for staff to support technology integration:

You need intensive training; at the same time, before the training, you need orientation sessions, awareness campaigns for teachers in particular. (I-FASA)

Teacher-related factors mapped to the *micro* level of the conceptual framework that were also seen by respondents as being barriers to effective technology integration included teachers' lack of confidence and pedagogical knowledge for ICT use and also their lack of motivation and their unwillingness, or resistance, to change:

I think many teachers lack confidence in using technology… I am turning 56 years old; I find many of my colleagues and my peers are very – they are resistant to change. They are afraid. I think it's more afraid of using the technology. I mean, you know, if you are afraid of [it], you don't [want to] know it. (A-FTAA)

Teachers should not be scared of trying. Teachers should be more open to experimenting and taking risks, and it's their personality that prevents them from [doing] that. (H-FADB)

Teachers' mindset, so the mindset was like, "Why do I have to use technology, whereas I have a proven record of being a good teacher all these years?". (H-FADB)

Challenges from the teachers themselves, like, you know, teachers are people in general. They don't like to change or they don't change easily. (F-MAAB)

Not all the teachers are familiar with these things ... new technology, and some of them, they use the old way of teaching with new modern technology. (C-MTSA)

Respondents also reported challenges related to some teachers' lack of regular use of technology in their private lives and the associated lack of interest in using technology generally and in their low motivation to integrate technology into their teaching, seeing this as a significant teacher-related challenge:

Up to the individual teachers to drive their learning. If they're interested in technology, well, then they'll take it up, [while] the non-interested in technology will then maintain the current practice. (B-MAAA)

At the end of the day, if a teacher is not regularly using social media and technology for their own personal use, and I find it's often difficult for them to use the technology inside the classrooms. So building teacher expertise is a challenge. (B-MAAA)

Teachers' motivation because some of the teachers – because particularly those who are not well-versed in the use of technology, who used to work in traditional schools, are not that motivated to use technology. (I-FASA)

As was noted by one educator in an administrative role, teachers appeared to be more comfortable with integrating technology for administration purposes, such as record-keeping and staff communication, than for classroom teaching purposes:

Teachers are coming into school…pretty okay with the general technological programs, be it like Google Drive or Google Office programs; everyone is pretty comfortable there. What is different and is utilising the technology [is] to help [to] drive learning as opposed to just simply researching or recording learning. And, as we introduce things like mind mapping software and those basic practices into the classroom, well, then we start to begin to get some traction on improving teachers' use of technologies for teaching. (B-MAAA)

The significance of this finding lies in the importance of recruiting teachers who are capable of using these technologies and who are willing to learn.

From my data analysis documents Teachers vs Administrators (Appendix 8), I was able to extract the differences in responses between educators in administrative roles and classroom teachers with regard to perceptions and experiences of the challenges of technology integration. The interviewed classroom teachers selected workload issues, lack of time, parental objection, teachers' lack confidence in using technology, staff unwillingness and resistance to change as the most selected challenges (two out of three classroom teachers). In comparison, educators in administrative roles seemed to have a very different perspective from the teachers, highlighting as the main challenges for technology integration teachers' lack of pedagogical knowledge for ICT use, insufficient training for teachers in how to integrate technology into their classroom teaching and lack of funds (five out of seven respondents), as well as high staff turnover, persistent technical difficulties, lack of technical support (four out of seven) and teachers' lack confidence in using technology (three out of seven).

From the responses above, the discrepancy in opinions was very evident as highlighting the significance of the difference between what the classroom teachers were saying versus the administrators. The management responses can be seen from two lenses. The first lens was teacher-related factors, such as the teachers' training, their pedagogy and their lack of confidence in using technology. The second lens focused on organisational factors, including a lack of funds, persistent technical difficulties and lack of technical support. The reported challenge of teacher turnover can be a direct result of both lenses, as was reported in the literature investigating teacher turnover in the UAE education system (Alkhyeli Van Ewijk, 2018; Hoeckel, 2015; Ridge et al., 2016) The issue of teacher turnover appears to be a vicious cycle in which teachers feel that they do not have time and they are overloaded, are possibly unwilling to learn and are resistant to change, whilst at the same time teachers in administration roles want more funds to overcome the technical issues and to implement more training. The main cause of teacher turnover was not clearly stated or identified by the school or the researcher.

With respect to what solutions participants thought would help to address the identified challenges of technology integration (Q4), along with responses to Q8 about the provision of resources and professional development (Q9) to support technology integration, many responses were focused on the need for a whole-school, well-resourced, strategic approach and a sustained investment over time, linking these solutions with meso-level factors in the conceptual framework. The following five suggested solutions:

i. investment in technology infrastructure at the school level:

You know, I think they don't really think at [the] end of the day. Schools that [have] set up a good infrastructure, they have high expectations. (B-MAAA)

ii. a planned, strategic approach to technology integration at the school level:

Establish a culture, a school code to where technology…is in the core of every single practices school. (I-FASA)

iii. a consistent and streamlined approach to technology integration across the school:

What I am advocating is that we have consistency across the school. (B-MAAA)

Creating a whole school implementation plan. So…the teachers are using the same thing, the same sorts of technology. I think it's useful. (F-MAAB)

Just have a very few key platforms and key aspects [of] *technology* [that] *we use… because random, haphazard application won't be of any benefit. (I-FASA)*

iv. a school-wide pedagogical vision for technology integration:

Curriculum programs that are built to support a more personalised and flexible learning concept. I think we tend to integrate technology quite well. The schools that are very traditionally based I think will

use technology more…as a gimmick or a knickknack approach. (B-MAAA)

And what we've tried to do is to integrate every lesson, every subject. A very similar outline. We have a pedagogical framework called "the eight elements of effective lessons" in that, which helps to drive the personalised learning programs to enable teachers then to look at those elements in year groups. And the subject groups discuss the mechanisms and the doing to enhance learning. And that has been a very positive and professional development concept that enables teachers to really reflect on their practice and helps to drive change, I suppose, in classrooms. (B-MAAA)

v. provision of support for classroom teachers to integrate technology, including professional development:

First of all, that's the responsibility of the management; they have to find time, suitable time for the teacher and for training, and support the teacher with apps and laptops in order to be used inside the classroom. (C-MTSA)

I think sometimes the curriculum [needs] *to have some time for implementing these technologies; instead of giving too much content, we teach more maybe skills. (F-MAAB)*

I think [at] *the end of the day is a school that has a mandate. That is how we do things here. You come into the school and you adopt that,*

and this way you get good PD programs, help [to] *support the teachers with that. I really believe that, if we focus*[ed] *on the teacher and helped him to implement good pedagogical practice, then you will get a shift in the use of ICT. (B-MAAA)*

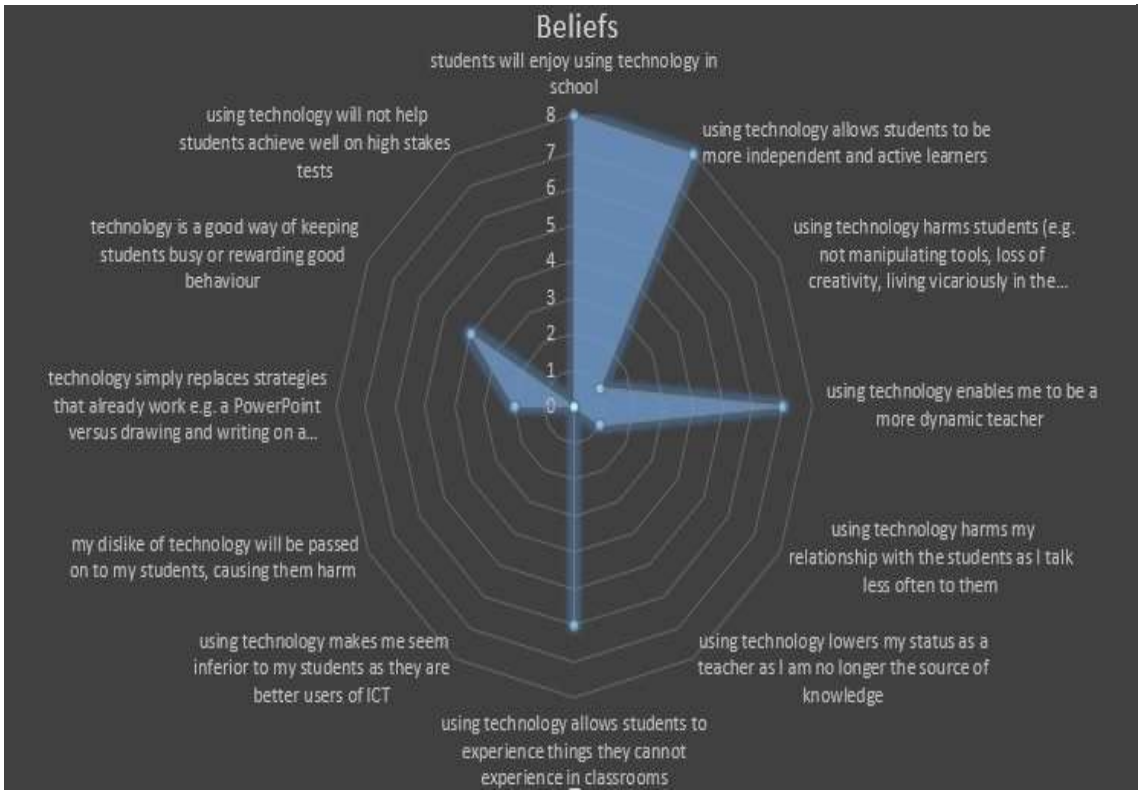
The above data indicate a lack of planning, recruitment issues and overall the absence of whole-school ICT implementation policies. From my data analysis documents "Teachers vs Administrators" (Appendix 8), I was able to extract the differences in responses between classroom teachers and administrators with regard to solutions to and enablers of technology integration (closed question choices). For example, all three classroom teachers opted for professional development in ICT use as a solution, in addition to meeting with parents and students. On the other hand, teachers in administration roles opted for professional development in ICT pedagogy, putting technology into classrooms and teachers' open sharing of ideas within their subject areas (four out of seven), working together to achieve a shared vision, reducing teachers' workloads, staged implementation of technology integration initiatives, encouragement and incentives from management, creating a whole school implementation plan and redirecting funds to improve infrastructure (three out of seven). It seemed that, at this point of the interview, both the classroom teachers and the administrators were highlighting that teachers need professional development in ICT use, and that the school needs to plan better and to adopt a more effective approach to ICT integration. When examining both the challenges and the solutions provided by the interviewees, one can infer that the above challenges were a direct result of the lack of above solutions. In other words, the lack of planning, including teacher training and budgeting in addition to ICT integration policies, is a primary challenge for schools when it comes to ICT integration.

Moving on to the next thematic cluster in Table 5.1 (Cluster B), which focused on teacher-related factors mapped to the *micro* level factors in the conceptual framework, the following section presents key findings related to educators' attitudes towards and beliefs about educational technology and technology integration in answer to questions about: (i) participants' beliefs about the quality of teaching and learning once technology has been integrated into the classroom; (ii) how they felt when technology integration was introduced to the school; and (iii) which subjects they thought were most suited to the integration of technology, and why.

5.6 Educators' Attitudes Towards and Beliefs about Educational Technology and Technology Integration

Interviewees' attitudes towards and beliefs about technology integration were gleaned by analysing responses to interview questions 5, 6 and 7, as was shown in the analytical framework in Table 5.1, mapped to relevant *micro* level factors in Kozma's (2003a) framework. Firstly, Figure 5.2 shows a graphical representation of educators' responses to the options provided in Question Q5: What are your beliefs about the quality of teaching and learning once technology has been integrated into the classroom?

Figure 5.2:
Educators' Beliefs About the Impact of Technology Integration on Teaching and Learning



As shown in Figure 5.2, the most popular responses about the perceived impact of technology integration on the quality of teaching and learning are those related to the perceived benefits for students' learning, including:

i. increased enjoyment of learning (eight of ten respondents);
ii. students becoming more active and independent learners (eight of ten respondents); and
iii. students being able to experience things that they cannot experience in the classroom (six of ten respondents).

Seven respondents also agreed that using technology enabled more dynamic teaching, whilst four believed using technology in teaching to be a good way of keeping students busy or rewarding good behaviour. Two educators chose responses

indicating a negative perception of the impact of technology integration on the quality of teaching and learning, one believing that technology merely replaced strategies that already worked, and another that the use of technology in the classroom harmed the teacher's relationship with the students. The responses to this particular question therefore, demonstrated strong support among respondents for the claimed benefits of technology integration for teaching and learning, along with some reservations related to a perception of technology being used "for technology's sake", along with a perceived negative impact of technology use on the quality of the teacher-student relationship.

With five out of seven administrators and two out of three teachers believing that technology integration enables more dynamic teaching, five out of seven administrators and three out of three teachers selecting that students enjoy education technology, and six out of seven administrators and two out of three teachers selecting that technology enables students to be more independent, it was very noticeable that both classroom teachers and educators in administrative roles agreed on the positive impacts of education technology on teaching and learning in the form of a dynamic aspect for teachers, increasing students' engagement/enjoyment levels and leading to creating independent learners. However, six out of seven administrators and zero out of three teachers opted for education technology allowing students to experience things that they could not experience in the classroom. The discrepancy in perception was notable between teachers and administrators in relation to this aspect, leading to thinking that the teachers might have felt fear with regard to their lack of innovation when it came to creating new approaches within the classroom, and with the administrators clearly

looking towards education technology to facilitate more innovation within the classroom via education technology.

Drilling down further into the data to analyse responses to open questions, such as how educators felt when technology was first implemented in the school (Q6) and questions about the suitability of integrating technology into the teaching of particular subjects (Q 7 and 8), revealed a more nuanced view of educators' attitudes towards and beliefs about technology integration and their relationship to factors in other areas of the conceptual framework. Some of these responses reflected and reinforced the above positive view of perceived benefits for students, for the quality of teaching and learning and for the work of teachers:

To make it good for the kids. (A-FTAA)

Technology has such a great importance now, and it does affect the learning of kids. (I-FASA)

Giving the opportunity to adjust my plans according to the student's level. (J-FTAA)

And it's making my work easier – more professional. (J-FTAA)

The administrators' responses to Q7 about "Which subject do you think the technology integration is most effective for? Why?" were varied, with Social Studies, Design Technology and English scoring one selection each, and two administrators selecting Science. On the other hand, two administrators opted for a similar response; that is, that the successful integration of technology was not subject-related. Rather, it was dependent on the teachers, their knowledge and their ability to integrate education technology into their teaching.

Further analysis of the responses highlighted that one of the respondents who selected Science came from a Science background, the one who selected English came from an English background and the two respondents who selected that it was not about the subject had 22 and 18+ years of experience in education. What could be inferred from these responses is that the teaching subject of the teachers before they became administrators may have influenced their decision-making when it came to answering Q7. Further, it is possible that more extensive teaching experience may have led to a different perspective on education and education technology integration, as was seen in the responses of Administrators B and H. It was noted that the gender, Emirate and curriculum did not seem to have influenced participants' answers, as no distinctive patterns in answers were noticed.

To analyse further the interviewees' answer to Q6, about how educators felt when technology was first implemented in the school (Q6), two out of three teachers felt happy about ICT integration, whereas the third teacher found it "a little bit hard to adjust" (J-FTAA). On the other hand, the administrators seemed to find the integration challenging:

> *I was moving around like a headless chicken. I looked over there because I was met with a lot of criticism. Unfortunately, the management at that time, five years back, was not understanding the vision that we're are trying to get. (H-FADB)*
>
> *Not a great impact so far. (I-FASA)*
>
> *There were some aspects that were good, some aspects not so good. (G-MADB)*

Was below average. And it's even below the expectations that the Ministry of Education is looking for technology in the school. (D-FAAA)

When I first arrived, the integration was sort of ad hoc across the school. I think that the integration has been slow because of some of the barriers I mentioned earlier. (B-MAAA)

More resources, easier planning like instruction would be easier. (F-MAAB)

Whilst the teachers seemed somewhat happy with education technology, it was clear that the feeling was not mutual when it came to the administrators. The challenges were visible, from lack of resources, planning and support, and the inability of one school to meet the government requirements. This linked to the literature in Chapter 2 addressing technology integration and educational change and the scholarly literature investigating barriers and enablers for successful technology integration in K-12 schooling. Tondeur et al. (2016, p. 555), described it as a "complex process of education change" (p. 555), and Ensminger (2016) stated that the implications of poor planning included the fact that "poorly aligning a technology to meet organizational goals during the adoption phase influences an organization's ability to act in ways that promotes successful implementation" (p. 456).

From my data analysis document Teachers vs Administrators (Appendix 8), I was able to extract the differences in responses between both parties with regard to educators' attitudes towards and beliefs about educational technology and

technology integration. The interviewed teachers believed that students would enjoy using technology in school (two out of three), and that using technology enables me to be a more dynamic teacher, using technology allows students to be more independent and active learners, and technology is a good way of keeping students busy or rewarding good behaviour. Administrators, on the other hand, seemed to have an almost unanimous belief system that using technology allows students to experience things that they could not experience in a classroom, to be more independent and to be active learners (six out of seven). Further, the administrators expressed the belief that using technology enables them to be more dynamic teachers, and that students will enjoy using technology in school (five out of seven). Two out of seven administrators believed that technology is a good way of keeping students busy or of rewarding good behaviour. While both parties seemed to agree on most of the above, when it came to student enjoyment/independent and teachers more being dynamic, it was interesting to see that, in contrast to the six administrators, not one of the classroom teachers opted for "using technology allows students to experience things they could not experience in a classroom". This provokes questions, such as: are administrators more aware of what technology is available, but is not currently being made available for teachers? Or is it related to teachers' lack of professional development in terms of what technology can do for their teaching, or perhaps both? If administrators agree that teachers cannot deliver what technology could offer in terms of enhanced learning experiences in the classroom, why would they recruit teachers who do not have certain knowledge in that specific technology, and why would not the administrators make this technology available? At the same time, I do not consider that this is a warranted interpretation as there were other data that showed that these administrators were frustrated

because they did not have this power. However, according to Tondeur et al. (2016), as was mentioned in Chapter 2, teachers' perspectives on and experiences of technology integration found that teachers' pedagogical beliefs aligned with their educational practices, and may in fact hinder or prevent technology integration. This brings to mind one of the comments that was made by an administrator when asked about the least effective subject for technology integration:

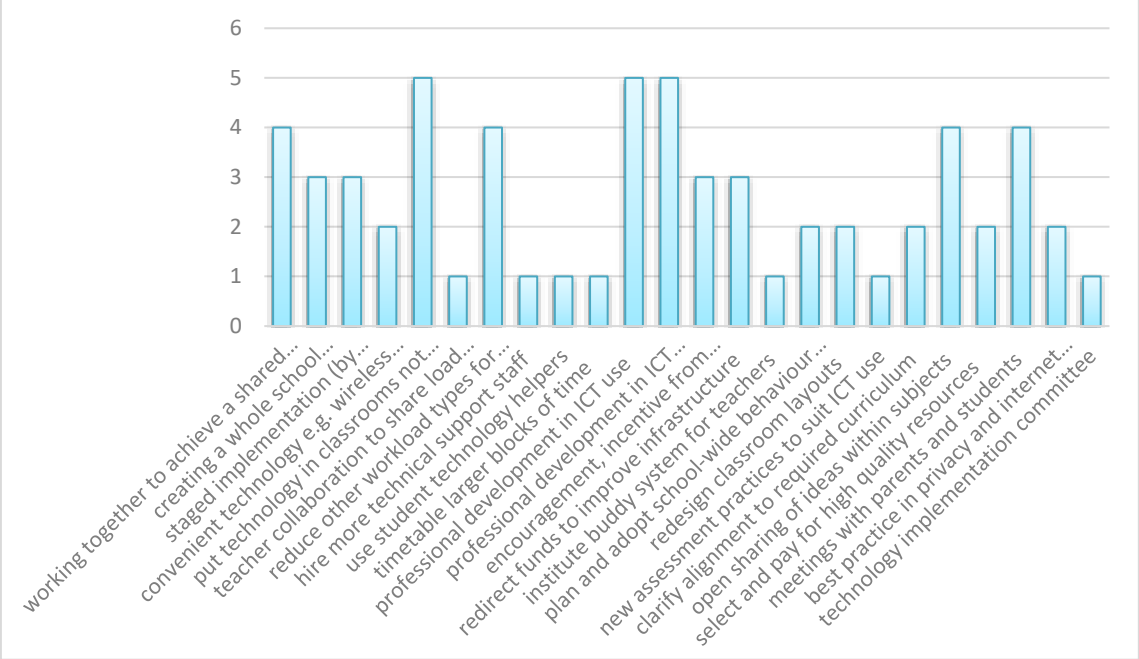
> *The subject that has the least effect on technology integration would be with poorer teachers; they will be struggling not just in technology, but in their performance in the classroom. (B-MAAA)*

The following section now looks at educators' perceptions and experiences of learning to integrate technology into their teaching.

5.7 Educators' Perceptions and Experiences of Learning to Integrate Technology into their Teaching

The centrality of teachers' professional development for technology integration was highlighted both in the literature reviewed for this study and at the centre of the study's conceptual framework in Figure 3.1. As was reported in Cluster A above, the provision of adequate support for teachers to help them to integrate technology into their teaching was identified by the respondents as being key to addressing the challenges of technology integration, with professional development being highlighted as a key strategy. This section now reports the findings of an initial analysis of responses to questions exploring educators' perceptions and experiences of learning to integrate technology into their practices, including professional development.

Figure 5.3:
Respondents' Preferred Solutions to the Challenges of Integrating Technology

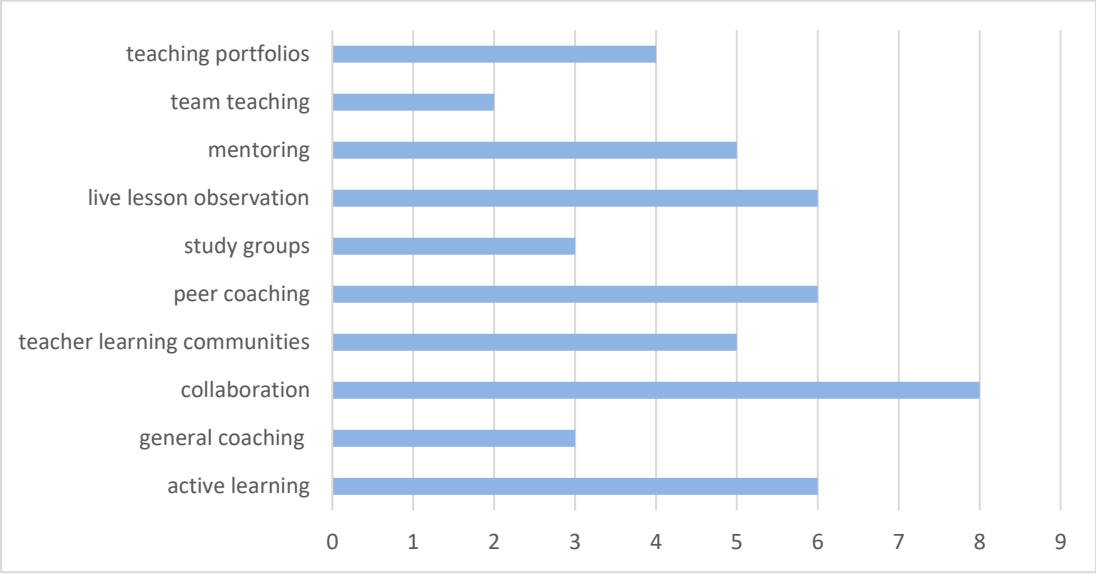


Firstly, educators' responses to Interview Question 4 about solutions to the challenges of technology integration are presented in Figure 5.4 and showed that, along with putting technology in classrooms, professional development in the use of this technology and in particular "ICT pedagogy" were perceived by half of the educators as being a key solution. A difference was evident between what classroom teachers and what administrators said about solutions, particularly in relation to professional development. Three out of three interviewed teachers selected "professional development in ICT use", and only two teachers selected "professional development in ICT pedagogy", as a solution. On the other hand, two out of seven administrators selected "professional development in ICT use", and four out of seven selected "professional development in ICT pedagogy". In response to Q4, administrators provided diverse responses that covered all of the multiple choices provided. Most selections other than the ones mentioned already were as follows: three selections of working together to achieve a shared vision; three for reducing teacher workload; three for staged implementation; three selected encouragement/incentive from management; four open sharing of ideas within subjects; and three for redirecting funds to improve infrastructure, which was not selected by any of the teachers. Further, only one teacher opted for shared vision, and another for reduced workload. It can be inferred that there

was no one agreed approach to the solutions of the challenges of education technology integration, other than professional development. The gender, Emirate and curriculum did not seem to be an influencing factor. However, the role did seem to influence the multiple selection process, which might have been a direct result of administrators being outside the classroom, and teachers not being included in administrative decision-making and hence, what might have been perceived as a lack of teachers' knowledge of and exposure to schools' day-to-day running procedures and how it influenced what happened in the classroom. Furthermore, two teachers and two administrators selected meetings with parents and teachers as a solution to the challenges, which opened the door to implying that improving communication with students and their parents may lead to better implementation of education technology.

Figure 5.4 is a graph of interviewees' responses to Q9, which asked them to choose from among a list of professional development strategies those that they saw as being most effective for teachers to learn in order to integrate technology.

Figure 5.4:
Educators' Preferred Professional Development Strategies



Participants' responses to this question indicated educators' preferences for a variety of professional development experiences for teachers, with the most popular being collaboration (eight responses), active learning, peer coaching and live lesson observation (each with six responses), closely followed by mentoring and teacher learning communities (with five responses each). These findings were

consistent with the findings of the OECD's Teaching and Learning International Survey (TALIS), which reported that 78% of teachers in OECD countries helped one another to implement new ideas. Interestingly, however, the OECD also reported that "only 44% of teachers take part in training based on peer learning and networking, despite collaborative learning being identified by teachers as having the most impact on their work" (Schleicher, 2018, p. 19).

A comparison of responses to Q9 between educators in administrative roles and classroom teachers showed that, whilst both the teachers who responded to this question opted for "Active learning, collaboration and mentoring", and one of those teachers selected all other options, all six administrators selected "collaboration", five of them also selected "peer coaching" and "live lesson observation", and four chose "Active learning and teacher learning communities". In addition, "mentoring" and "teaching portfolios" were selected three times each by administrators. It was worth mentioning that only eight out of the ten interviewees answered this question. One teacher opted for all ten of the professional development choices, with the other teacher selecting only three. From the administrators' responses, it was noticeable that they opted for several choices of professional development, from which one can infer that there was a lack of professional development currently in those schools, which was something that was seen also in the Q4 responses. However, the better known professional development strategies such as collaboration, peer coaching and live lesson observation were selected more frequently, which can be interpreted as suggesting that the administrators' responses may have been based on an awareness of what was in the mainstream rather than what the school needed. Further, gender, role and Emirate did not seem to impact on the selection process.

Analysis of the responses to the open interview questions shed further light on the kinds of professional learning experiences that educators found most helpful for integrating technology into their teaching. These included:

- regular professional development workshops provided by the school that focused on helping teachers to learn about and learn to use specific technologies for classroom teaching:

  Professional development in ICT use. My school is working very hard on PD sessions every week, every free time. (J-FTAA)

  Workshops about technology, teaching strategies and always we have everything in the school. We are guided to use every single device and using application to facilitate teaching during the lessons. (J-FTAA)

  Comparing how the technology is going to be useful. (J-FTAA)

- teachers engaging in their own self-directed, individual learning:

  Exploring and experimenting with different ways of using technology. (E-FAAA) (H-FADB)

- opportunities to learn through collaboration and networking with other schools:

  Visits with other schools that visit exchange with other schools. Schools which aren't like us, being advanced in the use of technology. (I-FASA)

Networking and connecting with teachers from other schools. (I-FASA)

To conclude this section, from the above quotations one can interpret the responses to the questions as demonstrating that there was a genuine need for professional development, especially in ICT use in the classroom, in order to facilitate teaching and learning. This professional development could be acquired by other means not only from professional development but also from teachers being self-driven and open to experimenting with technology, and from collaboration with other schools that were more advanced in the usage and implementation of education technology and that were willing to share the knowledge acquired from their integration process.

5.8 Emerging Themes and Issues

In this section, I make links among emerging themes and issues, my conceptual framework and my research questions, as seen in Table 5.1. I begin by addressing the different purposes for technology integration in K-12 education. I then move on to the theme of meaningful technology integration, followed by professional development supporting technology integration and, finally, questions of cultural context and staffing.

5.8.1 Different Ways of Using Technology in Education

As was stated earlier, the umbrella term *technology integration* has been adopted for this study to refer to both teachers' use of technologies for teaching and learning and the "school-based organizational practices, national policies, and other contextual factors" that "support and sustain" (Kozma, 2003a, p. 5) innovative

educational practices using ICT. An important finding from the analysis of interview responses was that technology integration refers to at least three different kinds of practices, each of which has its own characteristic purpose and associated "experience" of challenges, opportunities and solutions:

i. using technology for school communications
ii. using technology for data collection, record-keeping and reporting
iii. integrating technology in meaningful ways for enhancing teaching and learning.

As was noted by one educator:

[What] *we use here is – it's just a Google suite itself. Now Google Drive. And obviously the G-mail forms a calendar that's used online on a daily basis. (B-MAAA)*

Teachers coming into school are pretty okay with the general technological programs, be it like Google Drive or Google Office programs; everyone is pretty comfortable there. What is different…is utilising the technology to help [to] drive learning as opposed to just simply researching or recording learning. (B-MAAA)

The above quotes refer to using technology for school communication and record-keeping, which further links to the first and second categories of technology integration in the PISA ICT framework (2019). However, the comment at the end of the second quotation emphasises the difference between using technology for communication and record-keeping and "utilising the technology to help drive learning". The following quotes provide examples illustrating how this occurs in practice.

As a teacher. The first thing that I use is the PowerPoint for my classes and at the moment we have a smart board that we use. And then we also have Chromebooks where we give the students like various things, like Quizzlet games that you play on Quizzlet to increase student performance. (A-FTAA)

This is our fourth year of using Education City because it is a very versatile program. Students have their logins, teachers do use it in the classroom to reinforce activities and then students are assigned homework. And the most recent development is that they have introduced an assessment module. (H-FADB)

All the classes are equipped with new technology like projector and smart board. And also we use [with] them some new apps or some sites like we applied Kahoot and Quizzlet. (C-MTSA)

The above quotes referring to examples of where technology is being used "to drive learning" link to the third category in the PISA ICT framework: integrating technology in meaningful ways for enhancing teaching and learning (2019, p. 22), which in turn links with Tondeur et al.'s (2016, p. 556) construct of "meaningful technology integration" and is discussed further in the following section.

As administrators, you know, all the reports or the attendance, the absence, teachers' opportunities, it's all on the computers and use it with them. (D-FAAA)

We used to write the meeting minutes, for example, and we have to bring them out and send them. Now we just like do this through the email. We encourage teachers to use, let's say, Edmodo to communicate with parents and students and to organise some stuff. (E-FAAA)

We use technology to communicate. We're also using Microsoft Teams as well as a way to communicate with one another. We use an information system, so I have oversight of all of the registers for the attendance, [and] also behaviour aspects. So I can track it in real time. We have an appraisal system which we use on a daily basis where we record our lesson observations that we go and see to review, and record the findings of the lesson observations onto a platform that also has all of our objectives. (G-MADB)

The above quote refers to technology usage for data collection. Which further links to category two of PISA ICT framework (2019).

The applications and types of technology used in the schools are very versatile and cover all the above practices, as seen from the data analysed in the interviews. In light of RQ1, it seemed that the UAE government had enabled education providers (Google, Microsoft, Education City), among others, to deploy their products in the UAE education market, by allowing them to sell to their schools in addition to creating suitable infrastructures – i.e., the Internet and policies/legislations needed for those providers to operate, as without appropriate infrastructure and governing policies a deployment and usage of education technology products would not be possible. These specific factors were listed in both

Macro and Meso levels of my conceptual framework that help to illustrate the enablers and challenges of education technology integration in K-12 schools. One could argue that, without governmental aid, vision and goals to facilitate/enable technology generally and education technology specifically, providers entering a certain market will not be possible owing to restraints in relation to policies and infrastructure.

5.8.2 Meaningful Technology Integration

The interview findings indicated that, whilst the first two examples of technology integration in the previous subsection (i). using technology for school communications; (ii). using technology for data collection, record-keeping and reporting appeared, at least on the surface, to have been experienced by the educators interviewed for this study as being relatively unproblematic, (iii) integrating technology in meaningful ways for enhancing teaching and learning was experienced as a significant challenge. The challenge of "meaningful" integration of technology by classroom teachers into the pedagogical process to "support 21st century teaching and learning" (p. 556) was highlighted by Tondeur et al. (2016) in the findings of their meta-analysis of a number of qualitative studies focusing on teachers' experiences of technology integration.

The above analysis links to the conceptual framework on both the Micro and Meso levels and helps to answer RQ2 and RQ3. For example, as was seen in the factors listed on the micro level of the conceptual framework in Figure 2.3, teacher attributes and practices play a major role in the integration of education technology in K-12 schooling. This is especially the case when teachers are willing to change their teaching styles and to explore new approaches to teaching (which Kozma [2003a] referred to in his original conceptual framework as "innovative pedagogical

practices" [p. 5]). From the responses of educators interviewed for this study, it can be seen that there was an element of fear of, and resistance to, change. Indeed, the interview responses started to tell a story of complex and significant educational change being experienced by educators, including changing identities, roles and practices:

> *In the beginning, I found [it] a little bit hard to adjust. I used to fear that the use of the technology will decrease the role of the teacher. (J-FTAA)*

> *We have to change. I think sometimes the curriculum [needs] to have some time for implementing these technologies; instead of giving too much content, we teach more maybe skills. (F-MAAB)*

> *Not just using the old way of teaching with the new modern technology. (C-MTSA)*

> *I find many of my colleagues and my peers are resistant to change. They are afraid. I think it's more afraid of using the technology. So what is not knowing that this will make your workload easier in the long run. (A-FTAA)*

However, to what extent was this change process supported by schools? As was reported above, educators' responses indicated that there were significant challenges related to factors that linked to the 'meso' (school culture and leadership) level of the conceptual framework, including school staffing and ICT integration policies and professional development for teachers to support "meaningful technology integration". These themes are discussed in the following subsections.

5.8.3 Professional Development Supporting Technology Integration

Professional development in the study's conceptual framework occupied the centrepiece position consolidating factors at macro, meso and micro levels. From the data above, there was an obvious need for professional development supporting technology integration. The above findings provided support for the view that well-planned, strategic, whole-school approaches to the integration of technology that privilege professional development and support for teachers in how to integrate technology into their teaching were seen to be more valuable than one-off or ad hoc approaches. This was consistent with Tondeur et al.'s (2016) finding that short-term, one-off professional development events are likely to be ineffective in changing teachers' practices.

However, while professional development is always an obvious approach to help to add to the skill-set of teachers and to enhance their existing pedagogical knowledge, enabling them to be more dynamic and to add another dimension to their teaching, the findings indicated that educators should not stop there, and rely only on the information to come to them; rather, they should be encouraged to overcome their fear of using technology, and to experiment and explore different approaches to teaching and learning with technology in the classroom. Furthermore, it is worth teachers looking into the type of technology that a school uses prior to joining, and planning accordingly either to learn how to use that technology or to request professional development in advance. These factors speak to teachers' agency – a theme that was highlighted in the literature review in Chapter 2: "teachers as agents of change". As was mentioned by Erstad et al. (2015), preparing teachers to face these challenges in implementing ICT, and supporting them through professional development and pedagogical practice, are essential.

5.8.4 Cultural Context and Staffing

The school's cultural context and staffing are seen as critical factors influencing technology integration in K-12 education, as was noted in the Meso level factors in the study's conceptual framework, and also in the findings of the interviews with UAE private school educators. As was reported above, educators' responses indicated that there were significant challenges related to factors that link to the 'meso' (school culture and leadership) level of the conceptual framework, including school staffing and ICT integration policies and professional development for teachers to support "meaningful technology integration". For example, as reported, the school's perceived "culture of technology integration" appeared to have a significant impact, with a consistent and streamlined approach to technology integration across the school and a school-wide pedagogical vision for technology integration advocated by participants:

> *What I am advocating is that we have consistency across the school. (B-MAAA)*

> *Creating a whole school implementation plan. So…the teachers are using the same thing, the same sorts of technology. I think it's useful. (F-MAAB)*

> *I think the school culture and school climate makes all the difference in the world when it comes to the tiniest of their initiatives or huge initiatives. (E-FAAA)*

Awareness is necessary, whether for parents, for teachers, that you need to establish a culture, a school code to where technology is, as in the core of every single practices school. (I-FASA)

Results from the interviews with the educators also confirmed that factors related to teachers' workloads and high teacher turnover were experienced as a significant challenge for technology integration. For example, the interview findings revealed teacher workloads and "lack of time" to be a barrier to teachers' integrating technology into their teaching:

Teachers, most of them, like they say, we don't have time. We don't have time to do that. We have oh, we are overloaded by work. We're teaching like 20 periods a week, and we don't have time. (H-FADB)

Teachers, you know, like when you give the teachers too much work, they have to plan to make lesson plans and they have to do well. And other duties. So you'll be overloaded. (F-MAAB)

This finding was also reflected in Ridge et al.'s (2016) study of characteristics of the UAE private school system, which found that the teaching load of private school teachers was reported as being, on average, more than double that of their public sector counterparts.

High teacher turnover was also seen by participants to be a challenge for technology integration:

Yes, we have a high teacher turnover. Many of my colleagues that are not with me, that were with me three years and two years ago. And it's

a lot of change. I would say 50 per cent. We are always left with like if we are like five in the department, three definitely. (A-FTAA)

In terms of staff turnover, we tried to kind of just have a very few key platforms and key aspects of technology [that] we use. (G-MADB)

Every year when there is a staff turnover, so the issues are with regards to training. (H-FADB)

Also of particular interest in relation to cultural context and staffing was a reported link between a lack of investment in technology integration and the school's private sector status:

Another thing we need to do is that because, you know, in the world of private schools, we have owners and we have usually owners [who] are not directors of the schools. But you need as a principal or somebody in the administration to the senior leadership to play your role [in] convincing the owner of the importance of technology and the importance…[of providing] the needed funds, financial support needed for making the implementation of technology effective. (I-FASA)

Also noteworthy in the findings were comments that specifically linked the challenge of staff turnover and its impact on technology integration to the transient and culturally diverse nature of the UAE private school sector's expatriate teacher workforce:

People coming from different backgrounds and different areas around the world. (H-FADB)

Coming to a new country and getting used to understanding the school's policies [and] *philosophy. (H-FADB)*

So the preference is that you get a majority of our stock recruits from India. So people who come are not ready, [in terms of being] *exposed to technology. (H-FADB)*

I think the local culture. I would not say it's not a city driven because the students have a lot of smartphones and things, but when it comes to learning is to use them. It's a little bit down, I think. [So do you think it's more because of the students or the parents or just the general atmosphere?] *I would say that the students are more interested in Instagram, Facebook, WhatsApp, Twitter and things like that. (A-FTAA)*

The student's resistance to change. It can be considered, as I told you, the culture part. Where students just want to have fun with that technology. (D-FAAA)

These findings were consistent with those of other studies conducted in the UAE and are discussed in Chapter 6.

5.9 Conclusion

This chapter described the data analysis framework and procedure, added in-depth details related to participants contexts and characteristics, perceptions of the school's progress in implementing technology integration, educators' attitudes towards and beliefs about education technology, educator's perceptions and experiences of learning to integrate technology into their teaching and paved the way for the emerging themes and issues. These themes and issues and their implications are discussed further in the following, final chapter of the thesis.

CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction to the Chapter

The previous chapter addressed the RQ2 and RQ3 data analysis and findings by providing an overview of the data analysis procedure, participants' contexts and characteristics, perceptions of the schools' progress in implementing technology integration in response to Vision 2021, key challenges of technology integration experienced by educators on both micro and meso levels, and the differences between classroom teachers and administrators. Further, the previous chapter explored the identified solutions to and enablers of technology integration on the same levels, the educators' attitudes towards and beliefs about educational technology and technology integration, the educators' perceptions and experiences of learning to integrate technology into their teaching, and emerging themes and issues.

This chapter outlines the key findings arising from responding to all three research questions and discusses their implications for policy and practice. The study's' contributions to knowledge are then presented, including an evidence-based framework for technology integration in the UAE K-12 private school sector. Following this is a brief discussion of the limitations of the study and recommendations for further research.

6.2 The Structure of the Chapter

There are seven sections in this chapter, the first section being an introduction to the chapter, followed by this outline of the structure of the chapter. The third section, Section 6.3, presents the key findings in response to all three

research questions, explaining and recapping them briefly, drawing some comparisons with the findings of the evaluation of technology integration in UAE K-12 public schools conducted by Jigsaw Consult (2016). Section 6.5 outlines the study's implications for addressing the technology integration challenges facing UAE private schools. Section 6.6 provides an overview of the study's contributions to theoretical, methodological, policy and practice knowledge and presents an evidence-based framework for technology integration in the UAE K-12 private school sector. Section 6.7 addresses the study's' limitations and recommendations for future studies. Section 6.8 concludes this chapter and the study.

6.3 Answering the Research Questions

In this section, I present a summary of the key findings in response to each of the RQs that were presented in detail in Chapters 5 and 6. Further, I synthesise the findings for all three research questions to examine the challenges to and enablers of education technology integration in the UAE private school sector.

6.3.1 RQ1: Key Findings from the Policy Analysis

The following discussion focuses on key themes and issues emerging from the findings of the policy analysis that shed light on the factors influencing technology integration in the UAE K-12 private school sector and their implications for teachers' practice, teachers' professional learning, school leadership and education policy in response to RQ1. In undertaking this policy analysis, I aimed to identify the driving forces of education technology integration in terms of why schools would want to use technology in their schools and the implications of these policy drivers for various stakeholders involved in implementing technology integration in UAE private schools. The policy analysis component also sought

identify insights that could contribute to the understandings gained about barriers to and enablers of technology integration revealed in the interviews conducted with UAE private school educators in response to RQ2 and RQ3.

The key findings of this undertaking are now summarised in terms of four identified challenges for technology integration in the UAE private school sector gleaned from the policy analysis:

Challenge 1: Operational Components of UAE National Policy for Supporting Technology Integration in Schools

It is the nature of policy documents to make positive-seeming statements, but in reality, the progress made in the private school sector in response to government policies such as Vision 2021 (United Arab Emirates, 2010) might not be adequate or sustainable owing to deficiencies in the operational components of policies that guide implementation of the policy in that sector of UAE education system. Whilst strategic level policy imperatives are clearly outlined in UAE national level policies such as Vision 2021, the analysis identified a significant gap in terms of the operational component of national policies for ICT integration for the private school sector. There were no policies identified that provided specific advice targeted at supporting technology integration in UAE private schools, such as system or school level policies for infrastructure, school-wide pedagogy and staffing. There is therefore, a need to develop a UAE framework that provides specific advice about components of, and strategies for, technology integration at the system and school levels that aligns with the advice provided in the PISA ICT framework. This should include specific guidance in relation to allocation of both human resources and technology infrastructure. order to integrate ICT in the schools and to help to guide the recruitment process and ensure that teachers are teachers are recruited, well-trained and equipped to implement technology in their teaching.

Challenge 2: Resourcing of Technology Integration Initiatives in UAE Private Schools

Related to Challenge 1, the progress made in the private school sector in response to government policies such as Vision 2021 (ref) might not be adequate or sustainable owing to a lack of government funding specifically targeted for this purpose. Analysis of key strategic level policies at macro and meso levels of the policy analysis framework revealed some evidence of initiatives undertaken or being planned to provide financial support for technology integration. However, analysis of operational components of policies at the macro and meso levels revealed limited evidence of any allocation of resources to support technology integration at the private sector system and school levels. Adequate resourcing of technology integration was key an element included in Kozma's (2003a) conceptual framework as a factor for supporting innovative pedagogical practices in K-12 schools and was included also in my conceptual framework on the macro level. The findings of the policy analysis highlight the significance of this factor as a potential barrier to successful technology integration in the UAE private school sector in comparison with the public sector, which does receive targeted funding for technology integration.

Challenge 3: Teacher Professional Development for Technology Integration

Related to Challenges 1 and 2 above, and highlighted in the study's conceptual framework, effective professional development of educators to support meaningful technology integration is crucial. The policy analysis revealed a mixed picture when it comes to provision of resources and guidelines for staff professional development to support technology integration, which leaves schools to resort to ad-hoc approaches. For example, an individual might be a guru in a certain

software/hardware yet, if employed in a school, what are the chances that the school uses the exact same hardware/software? Linked to point 1 above, targeted funding for teachers' professional development is seen as vital for delivering the government's vision, and at the same time to achieve the curriculum standards.

Challenge 4: Alignment of Policies, Standards and Curriculum Requirements at International, National and Local System Levels

The analysis identified that UAE national education policies for technology integration and the UAE private school sector curricula, regulatory standards and requirements do not necessarily align with private school operations and local conditions, thereby adding to the struggles of achieving the vision of technology integration. There was significant complexity in, and potential misalignment between, the standards (American/British) that private schools are required to adhere to for their accreditation to offer their chosen international curriculum and local standards and requirements. For example, "We recognise that schools in different countries may have to produce and implement policies, or take action, in accordance with local regulations. It is not the purpose of these standards to ensure compliance with local regulation" (Standards for British schools overseas 2016, p. 6).

6.3.2 RQ2 and RQ3: Summary of Key Findings from the Interviews with Educators

This part of the discussion focuses on key themes and issues emerging from the interviews with the ten private school educators that shed light on the factors influencing technology integration in the UAE K-12 private school sector and their implications for teachers' practice, teachers' professional learning, school leadership and education policy in response to RQ2 and RQ3. The findings are summarised in terms of the key barriers to, enablers of and challenges for successful technology integration. These findings were consistent with those of other studies conducted in

the UAE (Alsharief, 2018; Alkhyeli & Van Ewijk, 2018; Hoeckel, 2015; Ridge et al, 2016), where the level of autonomy among private schools with respect to the allocation of funds at the school level to support technology integration – such as investment in suitable technologies, support systems and teachers' professional development – was seen as having negative implications. For example, technology integration became problematic in the context of reported high teacher workloads, high staff turnover, poor teacher training and low job satisfaction among teachers in the private school sector (Alkhyeli & Van Ewijk, 2018; Hoeckel, 2015; Ridge et al, 2016), along with a purported relationship between a teacher's tenure and "his or her willingness to implement innovative practices or reforms" (Goodson et al., 2006 as cited in OECD, 2015, p. 41). In other studies and reports, private school teachers were seen to have a greater degree of pedagogical freedom in comparison with teachers in public schools, which potentially resulted in their being able to use innovations such as the integration of technologies in their teaching, with technology integration even being seen as a job requirement in some schools (Alsharief, 2018).

These factors played a major role in the integration of education technology in K-12 schools, as was seen in the conceptual framework, mainly owing to their impact on decision-making related to policies for staffing, ICT infrastructure and professional development for technology integration. Links between these 'meso' level factors and factors at the 'macro' level of the conceptual framework were also apparent, highlighting the influence of government funding and policy supporting ICT integration. The UAE as a country aspires to create a "First-Rate Education" to "nurture well-rounded citizens" by "equipping our youth with essential skills and knowledge for the modern world" (UAE Vision 2021, 2010, pp. 23, 24). And, in order for schools to incorporate this culture, administrators should aspire to nurture

and facilitate a culture where teachers are confident to explore, experiment and learn how to use technology and where students are willing to use these technologies for learning. However, this can be established only through clear and concise policies for the implementation of education technology and systematic recruitment that is not targeting a certain school sector or segment of the pool of qualified teachers, and that takes a holistic approach to supporting technology integration that takes into account system-wide as well as school and teacher-related factors.

Barrier: Leadership for technology integration

The lack of planning, including teacher recruitment and training and budgeting in addition to ICT integration strategy and policies, was a primary challenge for schools when it came to ICT integration. In particular, the findings from interviews with educators showed that inadequate and/or unsuitable ICT infrastructure, ad-hoc approaches to technology integration in the school, high teacher turnover and workloads all have a negative impact on technology integration.

Enabler: Educator support for perceived benefits of technology integration

Despite the above barriers, there was strong support among respondents for the claimed benefits of technology integration for teaching and learning. These responses reflected and reinforced the positive view of perceived benefits for students among both classroom teachers and administrators, for the quality of teaching and learning and for the work of teachers. There were also some reservations related to a perception of technology being used "for technology's sake" and a perceived negative impact of technology use on the quality of the teacher-student relationship, however the findings indicate that these reservations can be successfully addressed through whole-school, strategic approaches to technology

integration that include professional development for teachers to support "meaningful technology integration".

Challenge: Professional Development for "Meaningful Technology Integration"

It was clear from the interviews that teachers needed to change, potentially shedding the old methods of teaching in favour of adopting a new method that utilises technology to create potentially better learning environments. Related to this, there was a genuine need for professional development, especially in ICT use in the classroom, in order to facilitate teaching and learning. This professional development could be acquired by other means, not only from structured professional development, but also from teachers being self-driven and open to experimenting with technology, and from collaboration with other schools that were more advanced in the usage and implementation of education technology, and that were willing to share the knowledge acquired from their integration process. In other words, school leadership will need to be more open to help or seek help from other schools whom are in an advanced position when it comes to education technology. The findings therefore, endorse those of other relevant studies:

> Research has supported the assumption that computer technology is beneficial for students' performance. Nevertheless, knowing that technology is beneficial is not sufficient on its own where teachers remain the key stakeholders in the success of the process. Teachers need to be aware of various issues, challenges, and ethical aspects when using technology for teaching (Tamim, 2013, p. 23).

6.3.3 Synthesis of Findings from Policy Analysis and Interviews with Educators

In this subsection, I synthesise the findings from the policy analysis (Chapter 4) and the educator interviews (Chapter 5) to combine the different findings into a whole and to draw useful conclusions.

When looking at the findings from Chapters 4 and 5 together, some important insights can be derived. Firstly, it is clear that the UAE's government initiative, goals, vision and work on the country's infrastructure are a major enabler in facilitating and integrating education technology in K-12 public schools. However, the same cannot be said for the extent to which government policies are supporting technology integration in the private school sector. For example, the analysis of relevant policies at "macro" level revealed only one policy that provided explicit guidance for schools and educators with respect to *how* to use emerging technologies for pedagogical innovation in the form of "a comprehensive strategy to identify how teachers, schools and education systems integrate ICT into pedagogical practices and learning environments" (PISA, 2019, p. 4). Further analysis of "meso" level policies revealed whether this aspect of technology integration was being addressed by leadership at different levels of the private school sector, including school owners, senior administrators, and national and international regulators and authorities, as noted in the findings. Thus, while the vision for technology integration is articulated in terms of higher level statements of vision, linked to international policies and benchmarks, such as those presented by UNESCO and PISA, for example, there seems to be a lack of operational components of the policy process when it comes to supporting technology integration in the private school sector versus the public sector. In terms of synthesising the findings of policy and interviews, it is apparent that the perspectives of educators on the challenges they are

facing are directly linked to the above deficiencies in policy at different levels, in addition to deficiencies in school leadership for technology integration. It appears that some measures need to be taken to provide financial support and incentives (carrots and sticks) to private schools via guidelines for technology integration using whole-of-school, strategic approaches and supported with standards articulated in the UAE school inspection standards and the international curricula and licensing standards.

Secondly, the findings indicate need for stronger and more effective leadership for technology integration in t UAE private schools. This includes leadership for technology integration at the level of the school leadership, particularly at the highest level of decision-making about the school's vision for technology integration and how it is resourced. Related to this are planning and resource management, teacher recruitment and professional development, with better planning and teacher recruitment to accommodate these policies on behalf of the schools. The findings from the interviews with educators – both classroom teachers and those in administration roles – provided support for the view that well-planned, strategic, whole-school approaches to the integration of technology that emphasised professional development and support for teachers in how to integrate technology into their teaching were seen to be more valuable than one-off or ad hoc approaches. This was consistent with Tondeur et al.'s (2016) finding that short-term, one-off professional development events are likely to be ineffective in changing teachers' practices.

Thirdly, teachers need to change and to be agents of change, and to become more receptive to the new ways of teaching and learning, as technology makes them more dynamic as teachers and increase students' enjoyment of learning. The interview findings indicated that, whilst teachers appeared, at least on the surface, to

find using technology for school communications to be relatively unproblematic, and educators in administrative roles were in favour of the use of technology for recording, monitoring and reporting purposes, "meaningful" integration of technology by classroom teachers into the pedagogical process to "support 21st century teaching and learning" was experienced as a significant challenge, as was highlighted by Tondeur et al. (2016, p. 556) in the findings of their meta-analysis of a number of qualitative studies focusing on teachers' experiences of technology integration. Indeed, interview responses in this study told a story of complex and significant educational change being experienced by educators, including changing identities, roles and practices. The above findings, when viewed in the light of the policy analysis in Chapter 4, pointed to links among macro policy influences such as national government education policy, a reported national teacher shortage and the regulation of the private school sector, and, at the meso level, school leadership's decisions about investment in technology integration, including technology and teachers' professional development, and teachers' attributes and practices at the micro level. They also highlighted some significant challenges for private sector schools with regard to technology integration; at best, these challenges may well be attributable to decision-making at the level of the school ownership and leadership about the extent and nature of investment in educational technology integration and innovation; at worst, the findings may indicate a preference among the leadership of for-profit schools for technological integration that focuses on using technology for communication, record-keeping, reporting and compliance at the expense of the investment required to sustain meaningful pedagogical innovation.

6.3.4 Comparison Between the Findings and the Jigsaw Consult Study

In this subsection, I draw some comparisons between the findings of my study and the Jigsaw Consult (2016) evaluations of technology integration in the UAE public education system. The importance of this step lies in identifying similarities and differences to order to increase the rigour and validity of my study and to highlights its distinctive contributions to knowledge, as outlined in the next section of the chapter.

Some of the Jigsaw Consult (2016) findings included the following:

- A lack of professional development led to teacher resignations and demotivation to use technology.
- A majority of teachers believed that teaching quality had increased, and that student attitudes and outcomes improved as a result of technology integration.
- A majority of teachers also expressed their liking for working with technology.
- However, 92% of teachers believed that their workload had increased, although, paradoxically, they also believed that they had experienced increased time saving.
- Principals reported better oversight of staff, direct communication with parents and students, and follow-up of student progress.
- Teachers reported increased confidence in using ICT, feeling more effective as teachers, increased enjoyment of their work and increased collaboration.

For example, the government embedded one technology support worker in each public school, and the research (Jigsaw Consult, 2016) indicated this was a

much-needed resource. This had not been provided to private schools, so, at best, the educators in my study could speculate as to whether such a worker would be of benefit to them.

From the above findings, there were a lot of similarities between the Jigsaw Consult (2016) study and the findings of this study, such as the lack of teacher professional development, teaching quality, perceived benefits for student enjoyment and improved communication. By contrast, there were also noticeable differences between that research and this study. Firstly, I did not find a direct link between teacher turnover and lack of professional development. In addition, lack of time, increased workloads and unsystematic professional development may also be factors in staff turnover. Another difference was in teachers' reported increased confidence in using ICT, according to Jigsaw Consult (2016). In this study, by contrast, teachers lacked confidence and felt rather afraid, but in some instances, after experimentation with and self-driven exploration of using education technology in their classrooms, that fear was overcome. What does this mean for policy development and educational leadership related to teachers in the UAE private sector? It means that there is a need for a nation-wide, systematic approach, covering policies, budgets, staff required, training required and potentially an overarching body/framework that clearly states the necessity for education technology integration, providing leadership, guidance and support, rather than leaving it to schools to engage in trial and error, which can consume the time, money and effort of all those who are included.

6.4 The Study's Contributions to Knowledge

The study's contributions to knowledge are now presented, beginning with contributions of the findings to educators' practice knowledge, followed by an

outline of the study's contributions to theoretical and methodological knowledge and concluding with contributions to policy.

6.4.1 Contributions to Practice Knowledge

This paragraph refers to my study's contribution to practice knowledge. My personal experience with education technology in K-12 schools helped in designing this project as my intention was to help fellow educators in their practice of integrating education technology. This intention was reflected in RQ2 when the participants reflected on their experiences and provided a list of challenges to and enablers of education technology. Further, my intention was present in RQ3 as educators provided insights into how they learned to integrate education technology alongside some professional development recommendations. Another contribution was the need for teachers to change, in addition to the need to have clear definitions, a clear budget and a body or a framework that facilitates the integration to be in line with governmental requirements.

When I decided on which topic to research in my doctoral study, it was mainly based on my search for answers and solutions for ICT integration in K-12 schools. As an educator, it was a struggle to adapt to my then school's vision and lack of knowledge on how to integrate technology as my superiors back then purchased new education technology software and asked me to "figure it out". In the process of "figuring it out", my aspiration was to make a contribution to knowledge by providing insight into the challenges and enablers that educators like me face when integrating technology. My conceptual framework, adapted from Kozma to contextualise my case study and incorporating current research, contributes to the scholarship of technology integration in K-12 education. Other researchers can draw on my conceptual framework to guide their research. The new aspects of the

conceptual framework that I introduced constitute new knowledge about (how to investigate) challenges and enablers of technology integration in K-12 education in particular contexts, considering macro (policy), meso (school) and micro (teacher and classroom level) factors and their relationships, and with the perceptions and experiences of educators at the centre.

6.4.2 Contributions to Theoretical Knowledge

In addition, the study's findings have contributed specifically to theoretical knowledge. This contribution is linked directly with my application and adaptation of Kozma's (2003a) conceptual framework, on the basis of which I am saying something new and original about the concept and character of education technology, and more specifically of education technology integration. Education technology integration has emerged from my study as a highly situated phenomenon that is experienced differently in the different contexts of particular schools, and that it is influenced strongly by a wide array of factors, some of which lie outside the control of different levels of political activity (e.g., the UAE government's policy-making sphere vis-à-vis the authority of the principal and other leaders in an individual school). To illustrate, the umbrella term *technology integration* was adopted for this study to refer both to teachers' use of technologies for teaching and learning and to the "school-based organizational practices, national policies, and other contextual factors" that "support and sustain" (Kozma, 2003a, p. 5) innovative educational practices using ICT. An important finding from the analysis of interview responses in this study was that technology integration refers to at least three different kinds of practices, each of which has its own characteristic purpose and associated "experience" of challenges, opportunities and solutions:

- using technology for school communications

- using technology for data collection, record-keeping and reporting
- integrating technology in meaningful ways for enhancing teaching and learning.

The outcomes of the use of the conceptual framework in my study were linked with my ability to organise and analyse the data according to its macro, meso and micro levels and overall to guide the data collection process. Further, with the conceptual framework driving the data collection, I was able to answer the three RQs mentioned in this study. The conceptual framework offered clarity on the different components of education technology influencers on various levels. As a teacher, it clarified the factors and added insight on which factors influenced the school level. On the school level, it detailed the factors and added insight into the factors on the country level. Furthermore, on the country level, it offered details on the factors influencing education technology, including an international aspect. Another contribution to theoretical knowledge was the importance of specifying what education technology is used for, not just referring to it using generic terms such as "e-learning", amongst others.

6.4.3 Contributions to Methodological Knowledge

The study's contribution to methodological knowledge focused on the effectiveness of my data collection and data analysis – e.g., how I managed to work with teachers and school administrators to talk about a topic that might have been seen as controversial, and how in doing so I demonstrated ethical awareness and reciprocity in valuing the participants' voices and perspectives. Providing the teachers and administrators with the information document and the interview questions in advance allowed them to gain insight into the nature of the study and adequate time for them to reflect on their experiences with education technology.

Utilising an online interview platform with no video recording as only the audio was recorded in the interview and at a time convenient to the participants, whereby they were at freedom of selecting a quiet, suitable place to express their views, added to the anonymity of the process. This approach helped the participants to be straightforward in providing answers, thereby nullifying any feelings of awkwardness and fear that might have arisen from participating in an interview and providing details about their experiences in their schools.

6.4.4 Contributions to Policy

My study contributes to policy knowledge at government and system levels as the analysis of the data derived from the interviews revealed that K-12 UAE private school teachers and administrators were experiencing challenges in integrating education technology. The lack of funding, training and policies, just to name a few, were seen as challenges to the integration process. There was an emphasis on professional development for ICT usage by both teachers and administrators as both parties believed that the usage of ICT leads to more enjoyment in student learning. The findings were very comparable and aligned with the themes emerging from the literature review in terms of the need for professional development and for a systematic approach for integration. The findings were very closely aligned with the ones from Jigsaw Consult (2016), as was detailed in the section above, with some notable exceptions related to the differences between the two sectors in terms of how they are funded and administrated.

The level of autonomy among private schools with respect to the allocation of funds at the school level to support technology integration – such as investment in suitable technologies, support systems and teachers' professional development – can be seen to have both positive and negative implications. For example, private school

teachers are seen to have a greater degree of pedagogical freedom in comparison with teachers in public schools, which potentially results in their being able to use innovations such as the integration of technologies in their teaching, with technology integration even being seen as a job requirement in some schools (Alsharief, 2018). On the other hand, technology integration becomes problematic in the context of reported high teacher workloads, high staff turnover, poor teacher training and low job satisfaction among teachers in the private school sector (Alkhyeli & Van Ewijk, 2018; Höckel, 2015; Ridge et al, 2016), along with a purported relationship between a teacher's tenure and "his or her willingness to implement innovative practices or reforms" (Goodson et al., 2006 as cited in OECD, 2015, p. 41). Results from interviews with educators confirmed that teacher turnover was experienced as a significant challenge for technology integration. Of particular interest was a reported link between a lack of investment in technology integration and the school's private sector status.

Interview findings also revealed teacher workloads and "lack of time" to be a barrier to teachers' integrating technology into their teaching. This finding was also reflected in Ridge et al.'s (2016, p. 51) study of characteristics of the UAE private school system, which found that the teaching load of private school teachers was reported as being, on average, more than double that of their public sector counterparts.

The above findings pointed to links between macro policy influences such as national government education policy, a reported national teacher shortage and the regulation of the private school sector and, at the meso level, school leadership's decisions about investment in technology integration, including technology and teachers' professional development, and teachers' attributes and practices at the

micro level. They also highlighted some significant challenges for private sector schools with regard to technology integration; at best, these challenges may well have been attributable to decision-making at the level of the school ownership and leadership about the extent and nature of investment in educational technology integration and innovation; at worst, the findings may have indicated a preference among the leadership of for-profit schools for technological integration that focused on using technology for communication, record-keeping, reporting and compliance at the expense of the investment required to sustain meaningful pedagogical innovation.

It is evident that the UAE has put in place serious reforms and changes to their education sector in order to comply with the UN directive of "quality education" and the OECD's suggestions about attempting to diversify its economy away from oil-based revenues and to develop its skills potential (Höckel, 2015). According to an OECD (2019) report, "Countries need to make the teaching profession more financially and intellectually attractive to meet a growing demand across the world for high-quality teachers" (para.1). It remains unclear how the UN, the OECD and other organisations will tackle the "quality teacher shortage" and how they intend to overcome this challenge as it is one of the UN's goals to "substantially increase the supply of qualified teachers by 2024" (United Nations, 2015, p.17).

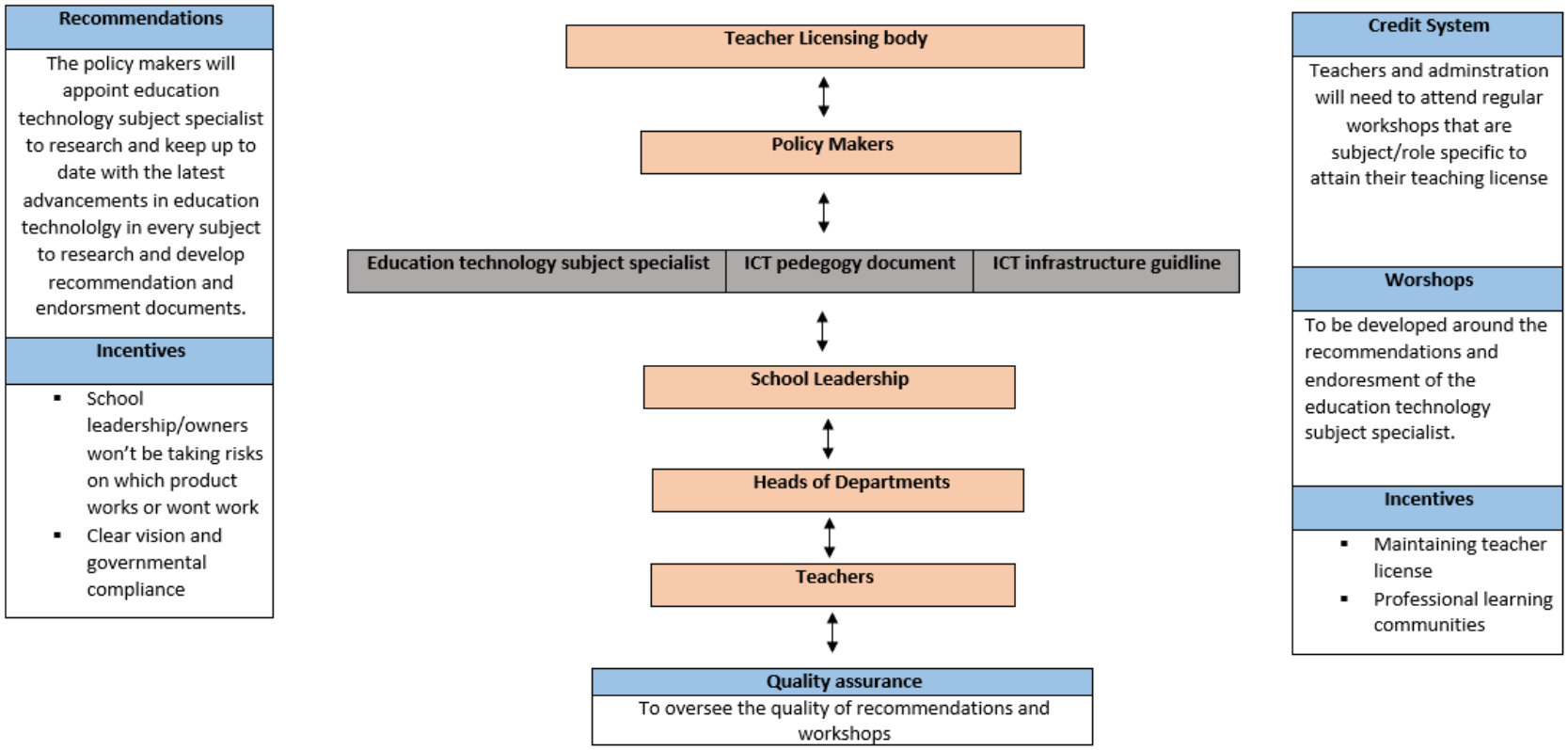
Section 6.5 The above conclusions and contributions to knowledge pave the way for the presentation of a tentative evidence-based framework for technology integration in the UAE K-12 private school sector as a further contribution to policy for technology integration.

6.5 Towards a Framework for Technology Integration in the UAE K-12 Private School Sector

This section provides a potential framework (Figure 6.1) for governments to adapt and utilise to aid in the education technology integration process.

The draft framework in Figure 6.1 is presented as the beginnings of an evidence-based implementation framework for technology integration in the UAE K-12 private school sector derived from the interview and document analysis. This framework was derived from my data analysis as a result of the need for clear, concise policies to direct the process of ICT integration and professional development, rather than paving the way for schools to experiment of their own accord. As such, the framework is proposed as a starting point for policy-makers to consider how technology integration in the UAE K-12 private education sector can be better supported to address the challenges at macro, meso and micro levels of the education system as they have been identified in this study. Its purpose is to be innovative and suggest new ideas that need further proof/testing.

Figure 6.1:
Towards a Framework for Technology Integration in the UAE K-12 Private School Sector



In this section, I unpack how the proposed framework in Table 6.1 is intended to work. At the outset, as shown in the top middle section of the framework the teachers' licencing body and policy-makers need to appoint and oversee education technology subject specialists, and to work together to produce ICT pedagogy documents and ICT infrastructure guidelines to facilitate the UAE's Vision 2021 (and subsequent iterations of national policies for technology integration in UAE private schools), ensure compliance and guide the process to help schools to make better and safer investments in their education technology resources.

As shown in the middle section of the framework, the role played by education technology subject specialists is of high importance, as they will be responsible for researching education technology resources, categorising them according to the three PISA categories, ensuring the quality of education technology products and endorsing resources to achieve the vision for technology integration. As a result, school principals and owners will no longer need to research products, search for providers or even pilot a product, saving much needed time for teachers and saving funds as they will invest only in education technology products that are endorsed by the government. Further, those documents will be passed onto school leaders who will ensure that heads of department and teachers are aware of these guidelines and confirm that they are implemented in their classrooms.

Regarding teacher professional development on the right side of the framework, there is a need for teachers to have access to quality professional development that puts them on the path to acquiring knowledge, skills and pedagogies to ensure that they are complying with the government's vision and attempting to instil certain skills in the students to build a skills-based economy. These professional development sessions should be developed around the

recommendations of the education technology subject specialists and overseen by a quality assurance body, as shown in Figure 6.1, that works alongside the teaching licencing body in monitoring the teachers who have attended the sessions and who can recommend these courses to those who have not done so, making it compulsory for teachers to attend these specific sessions in order to obtain and maintain a teaching licence. The rationale behind this suggestion is to ensure continuous teacher development, collaboration between teachers and the establishment of teacher learning communities as teachers from all around the country will meet, learn and share their knowledge in these sessions. This approach will create a clear learning pathway for teachers, ensure pedagogical knowledge of how to integrate technology in education and build up students' skill sets.

Entities such as the OECD that has vast access to schools from all around the world can potentially use and improve the framework in Figure 6.1 to help schools and countries from all around the world to integrate education technology and to assist in achieving the UN Goals for Sustainable Development (2017). Further, if possible, it would be useful to implement and test the "Figure 6.1: Towards a framework for technology integration in the UAE K-12 private school sector" as a solution for the current challenges in education technology integration.

6.6 The Study's Limitations and Recommendations for Future Research

6.6.1 Limitations

The study took place in one country (the UAE), and it examined nine schools from the American and British curricula with ten participants. Limitations in

geographical location, time, budget and the nature of this study being a doctoral thesis had an impact on how broad this study could be.

The sample size of the interviews was one of the limitations of the study due to the researcher's location, and the difficulties faced in recruiting participants in the UAE. The make-up was in form of a rigorous policy analysis that added in-depth insights as seen in chapter 4. In addition, the desired ratio of teachers v administrators was also a limitation. However, this didn't undermine the quality of this thesis; indeed added substance to the findings by providing an opportunity to drill down into key differences among classroom teachers versus administrators in perceptions and experiences of technology integration. A possible way to overcome this limitation in the future would be to obtain governmental support in order to enforce this survey to a certain extent on schools in the same way it was pushed to public schools in the Jigsaw Consult (2014) research.

Another limitation was that prior research studies that are relevant to my thesis is limited. In this case, discovering this limitation was a driving factor to conducting this research as it was seen as an important opportunity to identify literature gaps and to present the need for further research and development in this area of study.

Further, the time available to study this research problem and to measure change over time was limited as a result of my student states and deadlines imposed for submissions. Based on the findings, I did not see this to have negatively impacted the study.

6.6.2 Recommendations for Further Research

Future research possibilities exist to apply ICT integration to other contexts such as university education to deepen the understanding of how to integrate

education technology and of how teachers best learn to integrate technology into their practices. Although the setting is different, ICT remains a widely used tool for education, especially online and remote learning. Learning about the challenges and enablers would lead to more advancement and to a broader adoption of ICT in the education sector. Another suggestion is to include students' perspectives in order to gain more insight into the process, and what challenges/enablers that they might see on their level.

Another future research recommendation is to have a larger sample size and a long-term research project in more than one country that can also potentially take into consideration student feedback.

6.7 Conclusion to the Chapter

In summary, this chapter provided a summary of the key findings, a synthesis of findings from the policy analysis and the interviews with the educators and a comparison between the findings and the Jigsaw Consult (2016) study. Further, the chapter articulated the study's contributions to knowledge (theoretical, methodological, policy and practice), implications and recommendations for addressing the technology integration challenges facing UAE private schools. In addition, the chapter outlined the limitations of the study, which paved the way for recommendations for future research.

Over the past six years, as I have studied education technology integration and researched the challenges and enablers of integration, I have become increasingly convinced that education technology leads and aids the advancement of teaching and learning, and that it helps to prepare students better for future work, especially for the jobs that do not exist yet. Private K-12 UAE schools indeed face

challenges in integrating education technology, given the amount of technology available in the market, the lack of teacher training and the lack of available funds needed to achieve the government's vision. From my research, I found that an organised and clear approach to education technology can be used to achieve goals, and reach areas and students who cannot learn in the conventional way. It can also pave the way to the emergence of new learning methods such as the reliance today on remote learning in the Covid-19 era where governments, schools, students, parents and teachers are well prepared to utilise education technology to enhance the teaching and learning process and lead to a better tomorrow.

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APPENDICES

Appendix 1: Interview Content Analysis Word Document

Data Analysis Notes for RQ3: How do teachers learn to integrate technology into their teaching? (Qualitative content analysis)

Interview Questions	Relevance to RQ3	Policy Analysis	Conceptual Framework
1. Please provide your overall rating for your school in terms of the **progress of integrating technology** in the context of *Vision 2021*. ☐ 1 = not started ☐ 2 = low level, just starting out ☐ 3 = underway, average progress made ☐ 4 = quite good, a few issues still to resolve ☐ 5 = very good, fully implemented ☐ 6 = NA (Not applicable)	How do respondents explain and justify the rating they have given the school? Is there any reference to staff development, training etc.? Possibly correlate rating with Q9A: Which forms of PD have been used in your school? Also, is there any reference to organisational learning (collective learning, commitment to innovation) as part of this response?	**Correlate with:** **MACRO Level** PISA, UN, UNESCO etc. policy documents and reports – teacher PD to support technology integration UAE Government policies – teacher PD to support technology integration (State and Private Schools) MESO Level Private schools – relevant policies, websites, other info linked to teacher PD for technology integration CURRICULUM – links to international standards – teacher PD for technology integration:	**MESO - Actors**: Leadership levels Intended curriculum Staff development Staff turnover ICT infrastructure at school level Technical support Innovation history **Principals, management** Personal commitment to Vision 2021 Consistent vision and direction (alignment of policy with practice) Personal preference for ICT Perceived benefits versus challenges Management style (macro or micro manager) **MACRO LEVEL** **Actors**: Ed Policy makers (govt), ICT industry **Factors** Economic forces (country level) Cultural norms (one policy for types of schools with different norms) Ed goals and problems Ed funding (different funding levels) Standards (Curriculum, Teachers) ICT policies ICT infrastructure (country level)
2. Can you explain **how you integrate technology** on a day to day basis in your role as an Administrator / teacher?	Are there any references to learning in the response?		**MICRO – Teacher Practices** Methods Roles Collaborations Teacher Learning **MICRO – Teacher Attributes** Innovation history (willing to change) Experience with technology Norms of practice and self-identity (change of role) Like/dislike technology Workload Perceptions about student outcomes Competence, Confidence

Appendix 2: Content and Thematic Analysis

RQ3 Emerging Themes and Issues

How do educators learn to integrate technology into their practice?

- How do teachers say they want to learn to integrate technology into their teaching (pedagogy, including learning and assessment)?

(C) professional development in ICT use – not just using the old way of teaching with the new modern technology

(C) support and encouragement from the management – reduced workload, time for training and learning, provide apps and laptops for classroom use - The second thing, applying or using, for example, no support. A teacher with a IPADs can provide that that teacher iPods in order to control the class with the technology that they can control the students who can or can't connect to the school setting

(C) active learning, collaborating, mentoring

(J) Jigsaw strategy for student differentiation

(J) compare how technology is going to be useful

(J) = active learning; general coaching; collaboration teacher learning communities peer coaching

 6 = study groups 7 = live lesson observation 8 = mentoring 9 = team teaching 10 = teaching portfolios

- How <u>do</u> **<u>teachers actually learn</u> to integrate technology into their teaching** (pedagogy, including learning and assessment)?

(C) **<u>Sometimes, I depend on myself, not on the school And sometimes I try to find my resources by myself. And it's not that many.</u>**

(A) <u>Exploring and experimenting with different ways of using technology "to make it better for the kids"</u>

<u>(J) In the beginning, I found a little bit hard to adjust. I used to fear that the use of the technology will decrease the role of the teacher</u>

<u>(J) So in the beginning, it was hard, but after different sessions and I was trying to do to keep following the development of technology and the usage</u>

in the classes in different ways using different applications of using different links

(J) professional development in ICT use. my school is is working very hard on PD sessions every week every free time. Workshops about technology, teaching strategies and always

(J) we have everything in the school, we are guided to use every single device and using application to facilitate teaching during the lessons.

(J) And the school I was working on us also developing our skills

(J) Analysis of data that so you can adjust and adapt in the engineering of the lesson plan using the technology

(J) And it's making my work easier. More professional. By giving the opportunity to adjust my plans according to the students level.

- How do **teachers** learn to integrate technology into their **practice (other aspects of their role, such as communication with colleagues, responding to recording and reporting requirements etc.)**?

(G) use technology to communicate. So we have a number of different platforms that we have to email. We're also using Microsoft teams as well as a way to communicate with one another.

- How do **educators in leadership, management and administrative roles** learn to integrate technology into their **practice**?

(F) We have to change. I think sometimes the curriculum to have some time for implementing these technologies instead of giving too much content, we teach more maybe skills…. Edmodo versus the school website. So they have to put everything on school website and at the same time how to use Edmodo. So that's too much work with the teachers. Of course there would be like something lacking behind them.

(G) use technology to communicate. So we have a number of different platforms that we have to email. We're also using Microsoft teams as well as a way to communicate with one another.

(G) Just have a very few key platforms and key aspects technology we use.

(G) an information system. So I have oversight of all of the registers. That's the attendance also behavior aspects. So I can track it in real time what she's doing in terms of merits and demerits.

(G) Appraisal system issues or daily basis where we have record all the observations that we go and see to review and record the findings of the lesson information on a platform that also has a lot more objectives….

(G) And then from a kind of campus point of view, we have tracking data system. So look at on a daily basis data from performance of tests and assessments

(H) Introducing education technology to reduce teacher workload

- How do **educators in leadership, management and administrative roles** believe that **teachers** can best learn/ **actually do learn** to integrate technology into their practice (teaching, pedagogy, etc.?)

(A) Professional development - ICT pedagogy

(A) Professional development – ICT use

(A) Working together to achieve a shared vision (for technology integration)

Mandate and support the integration of technology at a whole school level. Consistent approach. Get good PD programs, help support the teachers with that. I really believe that if we focus on. The teacher and helped him to implement good pedagogical practice. Then you will get a shift in the use of ICT…For example: **School-wide pedagogical framework…teachers work together in year groups…reflect on and share their practice in technology integration for their subject/s. And that has been a very positive and professional development concept that enables teachers to really reflect on their practice and helps to drive change, I suppose, in classrooms.**

(B) introduce things like mind mapping software and those basic practices into the classroom, well then we start to begin to get some traction on improving teacher.

(B) introduce a specialist who teaches computer science in the STEM programs to help drive learning for the other teachers as well also.

(B) Then solution is just time. It teaches just need time to develop their own understanding of how technology impacts the caution.

(D) Training, encouragement from management, technical support, access to resources

(D) Clear vision for technology integration, staged implementation

(D). Professional development in ICT use. Professional development in pedagogy

(D) Peer coaching, collaboration, live lesson observation, teacher learning communities

(E) open sharing of ideas within subjects; Working together to achieve a shared vision; professional development in ICT pedagogy; clarify alignment to required curriculum

(E) Having a clear vision of what to do

(E) Teacher learning communities, Peer coaching, Live lesson observation, collaboration, active learning

(E) having a network of supportive administrators and supportive colleagues

(E) Time (workload)

(F) Provision of information and pedagogical knowledge for ICT use – send teachers to workshops

(F) Active learning, general coaching, collaboration, live lesson observations, team teaching, teacher learning portfolios

(F) Creating a whole school implementation plan. So every the teachers are using the same thing, the same sorts of sort of technology. I think it's useful.

(G) Open sharing of ideas and subjects

(G) Just have a very few key platforms and key aspects technology we use. A few key platforms and technologies that we can build on/use effectively/ repurpose what we already have v buying new devices – “piecemeal” approach

(G) Active Learning, collaboration, teacher learning communities, study groups

(G) Staged implementation

(G) Professional development in ICT pedagogy

(G) Impact of tech on quality of teaching and learning depends on purpose/intent/ rationale for using technology “ if it's being used because improve pedagogy, then I see to have a really, really positive impact. If it's just being used because it’s technology, then I see it not have such a much more positive impact”.

(H) Staged implementation, (by years/subjects)

(H) encouragement, incentive from management.

(H) Working together to achieve a shared vision, Creating a whole school implementation plan; open sharing of ideas within subjects;

(H) Teachers getting used to understanding the school's policies philosophy

(H) Collaboration, peer coaching, live lesson observation, mentoring, teaching portfolios

(H) convenient technology e.g. wireless internet; put technology in classrooms not laboratories

(H) teachers should not be scared of trying. Teachers should be more open to experimenting and taking risks, and its their personality that prevents them from that.

(H) "**The philosophy of first followers" (I take one willing learner, which is a teacher, and I just work with that teacher. So I looked at her in such a way that, you know, that did become a stock of the town. So if you see that she's so successful and, you know, she's been able to create those wall moments. So that is all you learn, all the other teachers to follow that step. So we have tried doing that and it has worked very well).**

(I) Tech savvy teacher teaching other teachers on how to use technology.

(I) having a clear strategic plan for the implementation of technology use in school because random haphazard application won't be of any benefit

(I) working together to achieve a shared vision

(I) teacher collaboration to share load and time

(I) institute buddy system for teachers

(I) teaching portfolios

(I) open sharing of ideas within subjects

(I) Twenty four technology implementation committee

(I) Best practices in privacy and Internet safety. Sure. Yes, this is one of the concerns for teachers and parents.

(I) encouragement, incentive from management; reduce other workload types for teachers; professional development in ICT use ; professional development in ICT pedagogy

(I) Active learning, general coaching, collaboration

(I) teacher learning communities

(I) peer coaching

(I) study groups

(I) live lesson observation

(I) mentoring

(I) visits with other schools that visit exchange with other schools. Schools which aren't likely on us being advanced in the use of technology. Networking and connecting with teachers from other schools

(I) clarify alignment to required curriculum

(I) establish a culture, a school code to where technology as is in the core of every single practices school you need intensive training at the same time before the training, you need orientation sessions, awareness campaigns for teachers in particular

(I**) So that we start doing with the teacher I told you about [check what this was] is at least paying off on the level of teachers. They start to realize that we do need to use it that way and was request intensive training and making resources available for them**

Appendix 3: Participant Invitation Document

LinkedIn Invitation to Participate in Study (Kheder Mahmoud USQ HRE H18REA129)

Connection request message:

Hello (Name), I am a PHD student and would like to connect with you in the hope that I can use your expertise in Education to help inform my study (USQ HRE H18REA129) by participating in an Interview.

Kind regards, Kheder

Message on receiving acceptance of connection request:

Hello (name). Thanks for accepting my connection request. Would you be prepared to be interviewed for my study? Please do let me know so I can send you more information.

Kind regards, Kheder

LinkedIn Messages for existing contacts:

Hi (Name). Hoping you are well. I am a doctoral degree student at the University of Southern Queensland. For my doctoral study (USQ HRE H18REA129) I am currently conducting interviews with educators and administrative personnel working in UAE Private Schools (American and British curricula) for my research entitled "*Realising the vision: Exploring challenges educators in UAE's private schools face as they integrate technology in response to Vision 2021*".

The purpose of this research is to create a framework to help prepare private school educators for technology integration. It will be great if you can spare 30 minutes of your time for an online

Appendix 4: Participant Information Document

University of Southern Queensland

Participant Information for USQ Research Project Interview

Project Details	
Title of Project:	"**Realising the vision: Exploring challenges educators in UAE's private schools face as they integrate technology in response to Vision 2021"**
Human Research Ethics Approval Number:	H18REA129

Research Team Contact Details

Principal Investigator Details
Mr. Kheder Mahmoud
Email:
Mobile:

Principal Supervisor Details
Dr. Catherine Arden
Email:
Telephone:
Mobile:

Associate Supervisor Details
Prof. Patrick Danaher
Email:
Telephone:

Description

Dear Educator

My name is Kheder Mahmoud and I am a doctoral candidate at the University of Southern Queensland (USQ), Australia completing my Doctor of Education on the topic of technology integration in K-12 private schools in the UAE. Firstly, thank you for your time in reading this information document and considering my invitation to participate in an interview for my study.

My research involves collecting data from private school educators in the UAE to see what challenges they are facing as they integrate digital information and communications technologies into their teaching in response to Vision 2021. My

interest arises from my years as a resident in the UAE, where I worked as a teacher and Head of English. I have recently relocated to Australia.

I am seeking to interview both teachers and education administration personnel working in K-12 private schools in Dubai, Abu Dhabi and Sharjah. Staff eligible for this study are:

(1) Administration (Principal and/or Vice Principal, administration coordinator, supervisor)
(2) Head of Department, program, education technology or Head of Curriculum
(3) Classroom Teachers.

If you agree to participate in this study, you will participate in a 30-minute online interview at a mutually convenient time, using GoToMeeting. You will be asked questions about your perspectives and experiences of technology integration in your role as a private school educator. The interview will be conducted in English, however interview questions will be sent to you before the interview so you have a chance to think about your answers first. At the same time you will receive a consent form for you to sign. Once this has been returned, and a time organised, a link to the meeting will be sent.

Participation

Participation is voluntary and refusal to participate will not adversely affect you. If you do not wish to take part, you are not obliged to. In the event that you did decide to participate and then to subsequently withdraw from the study, your responses to the interview questions would also be able to be withdrawn providing this occurred before the data had been subject to analysis. Your decision whether you take part, do not take part, or to take part and then withdraw, will in no way impact your current or future relationship with the University of Southern Queensland.

Expected Benefits

As a participant in the study, you may benefit from the opportunity to consider the challenges of integrating technology into your practice and reflecting on how these challenges can be overcome. You will also be provided with the project summary of results via email. The results of the study will provide access to a range of different ideas and experiences of technology integration in UAE private schools. This may enable your school's success as you continue your own implementation of digital technologies.

Risks

There are no risks involved in participating in this study beyond possible inconvenience in giving up half an hour of your time for the interview plus 15-20 minutes to review the questions and consider your responses prior to the interview. You are not required to identify the school at which you are employed.

Privacy and Confidentiality

All comments and responses will be treated confidentially unless required by law. Interviews will be recorded and later transcribed for qualitative, thematic analysis using NVivo. The interview will be audio recorded for transcription purposes only, and only the members of the research team mentioned above will have access. It will not be possible to participate in the project without being recorded or to obtain a copy of the recording. The findings of the study will be reported in the doctoral thesis and subsequent research publications and conferences. Only de-identified, thematically analysed data will be reported.

Any data collected as a part of this project will be stored securely as per University of Southern Queensland's Research Data Management policy, including storage of identifiable data such as Participant Consent Forms separately from the de-identified interview data. In the event that you did decide to participate and then to subsequently withdraw from the study, your responses to the interview questions would also be able to be withdrawn providing this occurred before the data had been subject to analysis.

Consent to Participate

We would like to ask you to sign a written consent form (enclosed) to confirm your agreement to participate in this project. Please return your signed consent form to the Principal Researcher prior to participating in your interview.

Questions or Further Information about the Project

Please refer to the Research Team Contact Details at the top of this document to have any questions answered or to request further information about this project.

Concerns or Complaints Regarding the Conduct of the Project

If you have any concerns or complaints about the ethical conduct of the project, you may contact the University of Southern Queensland Manager of Research Integrity and Ethics on +61 7 4631 1839 or email researchintegrity@usq.edu.au. The Manager of Research Integrity and Ethics is not connected with the research project and can facilitate a resolution to your concern in an unbiased manner.

Thank you for taking the time to help with this research project. Please keep this sheet for your information.

Appendix 5: Participant Consent Form

University of Southern Queensland

Consent Form for USQ Research Project Interview

Project Details

Title of Project:	Exploring challenges educators in UAE's private schools face as they integrate technology in response to Vision 2021
Human Research Ethics Approval Number:	H18REA129

Research Team Contact Details

Principal Investigator Details
Mr. Kheder Mahmoud
Email:
Mobile:

Principal Supervisor Details
Dr. Catherine Arden
Email:
Telephone:
Mobile:

Associate Supervisor Details
Prof. Patrick Danaher
Email:
Telephone:

Associate Supervisor Details
Dr. Jennifer Donovan
Email:
Telephone:
Mobile:

Statement of Consent

By signing below, you are indicating that you:

- Have read and understood the information document regarding this project. ☐Yes / ☐No
- Have had any questions answered to your satisfaction. ☐Yes / ☐No

- Understand that if you have any additional questions you can contact the research team. ☐Yes / ☐No
- Understand that the interview will be audio recorded and that you can choose not to answer any particular question. ☐Yes / ☐No
- Are over 18 years of age. ☐Yes / ☐No
- Are an educator working in an American/British curriculum school in Abu Dhabi, Dubai or Sharjah. ☐Yes / ☐No
- Agree to participate in the project. ☐Yes / ☐No

- Understand you are free to withdraw from the study at any time without needing to give any reason before or during the interview. ☐Yes / ☐No
- Understand you will not be identified in any publication arising out of this study ☐Yes / ☐No

Participant Name	
Participant Signature	
Date	

Please return this sheet to the Principal Researcher via email prior to undertaking the interview.

Appendix 6: Policy Analysis Template

Policy and Document Analysis Template

Title of policy/document, author and year of publication (full bibliographic reference)	**Level? (Macro/Meso[1]) + Factors[2]** (from Conceptual Framework)	**Type, purpose, focus and target audience** **("Actors")**	**Key Messages/Information** relevant to tech integration in UAE K-12 private schools? **Examples** of related programs/initiatives **in practice**	**NOTES: Implications?** (Implications for schools, teachers, curriculum, community, partnerships etc.) **Emerging issues?** (links to tech integration issues discussed in academic literature)
AdvancED Policies and Procedures for Accreditation and Certification Updated June 29, 2018	Meso (Local culture (US, UK, Indian) Intended curriculum, School organisation **Principals, management** Personal commitment to Vision 2021 Consistent vision and direction (alignment of policy with practice)	Focus on American schools in the UAE that is accredited by AdvancED (Leadership)	The institution or system must comply with all applicable governmental requirements, including any requirements for governmental approval, recognition, or accreditation	

[1] **Macro level**: relevant government education policies at international (e.g. OECD), national (UAE) and Emirate (Dubai, Abu Dhabi, Sharja) and System levels such as standards, curriculum, funding arrangements etc. influencing technology integration **Meso level**: school level policies and related data in the public domain relevant to technology integration in K-12 private schools, including staffing, curricula, performance data etc.
[2] See **Factors at Macro and Meso levels in Kozma's adapted framework**

Appendix 7: Ethics Approval

OFFICE OF RESEARCH
Human Research Ethics Committee
PHONE +61 7 4631 2690| FAX +61 7 4631 5555
EMAIL human.ethics@usq.edu.au

UNIVERSITY OF SOUTHERN QUEENSLAND

28 June 2018

Mr Kheder Mahmoud

Dear Kheder

The USQ Human Research Ethics Committee has recently reviewed your responses to the conditions placed upon the ethical approval for the project outlined below. Your proposal is now deemed to meet the requirements of the *National Statement on Ethical Conduct in Human Research (2007)* and full ethical approval has been granted.

Approval No.	H18REA129
Project Title	Realising the vision: Exploring challenges educators in UAE's private schools face as they integrate technology in response to Vision 2021
Approval date	28 June 2018
Expiry date	28 June 2021
Status	**Approved with standard conditions**

The standard conditions of this approval are:

(a) responsibly conduct the project strictly in accordance with the proposal submitted and granted ethics approval, including any amendments made to the proposal;
(b) advise the University (email: ResearchIntegrity@usq.edu.au) immediately of any complaint pertaining to the conduct of the research or any other issues in relation to the project which may warrant review of the ethical approval of the project;
(c) promptly report any adverse events or unexpected outcomes to the University (email: ResearchIntegrity@usq.edu.au) and take prompt action to deal with any unexpected risks;
(d) make submission for any amendments to the project and obtain approval prior to implementing such changes;
(e) provide a progress 'milestone report' when requested and at least for every year of approval;
(f) provide a final 'milestone report' when the project is complete;
(g) promptly advise the University if the project has been discontinued, using a final 'milestone report'.

For (d) to (g) forms are available on the USQ ethics website:

Appendix 8: Teacher Vs Admin

Teacher Vs Admin

Question	Teacher		Admin	
Q1.	Underway, average progress made	(1.A - FTAA)	Underway, average progress made	(2.B - MAAA) + (4. D – FAAA) + (7. G – MADB)
	Quite good, a few issues still to resolve	(3. C – MTSA)	Quite good, a few issues still to resolve	(6. F – MAAB) + (8. H – FADB)
			low level, just starting out	(5. E – FAAA) + (9. I – FASA)
	very good, fully implemented	(10. J – FTAA)		
Q2.	Powerpoint, Smartboard, Chromebooks, Quizzlet (Integrating technology in meaningful ways for enhancing teaching and learning)	(1.A - FTAA)		
			Learning management system, Google Suite, Interactive whiteboards, Zoom (Using technology for school communications + Using technology for data collection, record-keeping and reporting purposes)	(2.B - MAAA)
	Smartboards, Projector, Quizzlet, Kahoot, Internet (Provided in Q1 answer) (Integrating technology in meaningful ways for enhancing teaching and learning)	(3. C – MTSA)		
			Reports or the attendance, the absence, teachers opportunities, IPads, Smartboards, marks and incidents and feedback, daily feedback or weekly feedback regarding to the level, emails, surveys, School website. (Integrating	(4. D – FAAA)