Proposal for Chapter in Edited Book:

Innovations in Educational Leadership and Continuous Teachers' Professional Development

Theme: Use of Technology in Education/Teacher Education

Realising the vision of technology integration: A case study of K-12 private schools in the United Arab Emirates

Kheder Mahmoud

Doctoral Candidate, Doctor of Education, University of Southern Queensland, Toowoomba, Queensland, Australia

Dr. Catherine Arden

Senior Lecturer in Adult and Vocational Education, School of Education, University of Southern Queensland, Toowoomba, Queensland, Australia

Dr. Jennifer Donovan

Lecturer (Education), School of Education, University of Southern Queensland, Toowoomba, Queensland, Australia

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 Communications Technologies (ICTs) into its K-12 education system 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. 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 chapter reports some preliminary findings from a qualitative case study investigating the teacher, school and system-wide factors impacting on technology integration in selected private schools located in four Emirates. The study combines policy analysis with semi-structured interviews of a purposive sample of private school K-12 educators to yield a detailed understanding of the challenges faced by private sector UAE schools in implementing technology integration in response to national government policy directives. The findings will inform the development of an implementation framework providing guidance regarding critical success factors for effective technology integration in private schools with particular implications for school leadership and teachers' professional learning.

Keywords:

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

Acknowledgments: The authors acknowledge the valuable feedback provided by the book chapter's two peer reviewers and also by our colleague, Professor Patrick Danaher, on early drafts of the chapter.

Introduction

The integration of digital technologies into schooling is a "complex process of educational change" 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 (Tondeur, van Braak, Ertmer, & Ottenbreit-Leftwich, 2016, p. 555). The current Covid19 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 Orgagnisation for Economic and Cultural Development (OECD) (2019), the impact of integrating Information Communications Technologies (ICTs) 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). The doctoral study on which this chapter is based draws on a conceptual framework for technology integration originally devised by Kozma (2003a) developed from extensive study of the factors influencing the integration of technologies in K-12 settings in 27 countries. This framework, which has been shaped to suit the focus and context of this case study of technology integration, "positions ICT within layered contexts of classroom (micro), school and community (meso), and national (macro) factors" (Kozma, 2003a, p. 218). The chapter presents some preliminary findings from an analysis of relevant policy and structured interviews with 10 private school educators and educational administrators located in three Emirates in response to these two research questions and their related sub-questions:

- 1. What is the policy context for technology integration in the UAE private school sector? What do private sector education policies at system and school levels tell us about the key factors influencing technology integration in schools and curricula?
- 2. What are school teachers' and administrators' experiences of and perceptions about the integration of technology in UAE private schools, including reported challenges and enablers? How do UAE K-12 private school teachers learn to integrate technology into their practice?

In combination, the policy analysis and interview data help to paint a rich picture of the teacher, school, and system-wide factors impacting on the integration of technology in a purposive sample of 10 UAE K-12 private schools in response to the national government's mandate for reform to the education system. The chapter begins with a brief overview of the UAE private school education sector as the research context, situated in the broader macro context of UAE's education reforms. This is followed by a review of literature on technology integration in K-12 schools in the UAE and other countries, with a focus on the experiences of educators – that is, both classroom teachers and teachers working in formal leadership and

administration roles. The study's conceptual framework and methodology are then described, after which preliminary findings from a review of key policies at international, national and system levels along with findings from the educator interviews are then presented in answer to the stated research questions. Some implications of these preliminary findings are discussed with reference to the key themes identified in the literature review.

The UAE Private School Sector

As in many countries, education in the UAE comprises both public and private sectors, the public sector being operated and funded by the government, and the private sector primarily operated and funded by individuals or companies under the purview of government regulations and requirements. 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). Private schooling in the UAE is a multi-billion dollar industry as a result of increasing tuition fees (Kamal & Trines, 2018), providing "gateways to western educational qualifications and ideologies, while generating revenue as new markets are developed" (Godwin, 2006, p. 1). School tuition fees in Dubai are reported as being amongst the highest in the world (Maceda, 2017), ranging from USD \$675 to USD \$32,711 yearly and, in Dubai alone, private schools achieved more than 2 Billion American dollars in revenues in 2017/18 (\$1.28 billion in 2013/14) (Kamal & Trines, 2018).

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 (Pricewaterhouse Coopers, 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, including with respect to the effective integration of technology (Ridge et al., 2016). Although the UAE government has invested heavily in technology integration in the public sector across the Emirates (Jigsaw Consult, 2016), limited 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, 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. This chapter, as a case study of technology integration in K-12 private schools in the UAE, seeks to shed light on both the context for technology integration in the sector and some of the emerging issues as they are experienced by educators.

Literature Review

A plethora of terms is used in the English language to refer to the phenomenon of integration of technology in education, broadly speaking, and in K-12 settings more specifically. These include *blended learning* (Horn & Staker, 2011); *e-learning* (ADEC, 2013); *smart education* (Mohebi, 2019); *smart learning* (Jigsaw Consult, 2013); *technology-based pedagogies* (Gao, Choy, Wong, & Wu, 2009); *innovative pedagogical practices* (Kozma, 2003a), to name some. Hew and Brush (2007) use 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, p. 556) use "meaningful technology integration" to

describe "using technology to support 21st century teaching and learning". Literature reviewed for this study revealed a number of articles reporting the findings of research into both preservice and inservice teachers' use of technology in education in the UAE and other Gulf countries in which the terms *ICT integration* and *technology integration* are both used (see for example Almekhlafi, & Almeqdadi, 2010; Alsharief, 2018). Therefore, the umbrella term *technology integration* is used to incorporate all of the above and to reflect this study's focus on 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" innovative educational practices using ICT (Kozma, 2003a, p. 5) in the UAE private school context.

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 is 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). The focus of research into teachers and technology integration has nonetheless varied. Some studies (Bradshaw, Twining, & Walsh, 2012; DiPietro, Ferdig, Preston, & Black, 2008; Erstad, Eikelmann & Eichhorn, 2015; Jigsaw Consult, 2016) have focused on the *role* of the teachers in the implementation process. Common themes in these studies revolve around impacts on teachers' daily practices (Andersson, 2006; Dawson, 2006; Kay & Knaack, 2005; Swain, 2006; Wright & Wilson, 2005), whilst others, such as Eom and Wen (2006) and Garrison (2003), focus on the disruptive impact of emerging technologies on the teacher's role.

Other studies have focused specifically on the relationships between teachers' characteristics, attitudes and pedagogical beliefs related to technology and technology integration. 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, Davis et al. (2010) and DiPietro et al. (2008) consider that teachers' characteristics, such as abilities, attributes and perceptions of their success in using ICT on a daily basis, 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. These findings about the so-called teacher factors are supported by studies conducted in Sweden (Angélli Genlott, Grönlund & Viberg, 2019), Malaysia (Ghavifekr, Kunjappan, Ramasamy, & Anthony, 2016), Spain (Gil-Flores, Rodríguez-Santero, & Torres-Gordillo, 2017) and Australia (Goodwin, Low, Ng, Yeung, & Cai, 2015), all of which point to the importance of teachers' characteristics and practices for the successful integration of technologies in teaching and learning.

Teachers' *preparedness or readiness* to use emerging technologies in their teaching is another theme found in the literature reviewed for this study. For example, Archambault and Crippen (2009) found that 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. This finding is supported by recent surveys conducted with teachers in participating OCED countries which 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 (OCED, 2019, para 4). By way of contrast, OCED (2019, para.16) reveals that, whilst approximately 18% of teachers across the OECD still express 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 is supported by a study conducted with teachers at UAE Model Schools (Almekhlafi & Almeqdadi 2010, p. 173). 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". This suggests 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.

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 including resourcing, leadership, subject-matter cultures, assessment practices, teacher workloads, access to quality training and technology infrastructure and equipment. Hew and Brush (2007) warn researchers proposing to investigate technology integration in K-12 settings against focusing exclusively on the teacher and what is happening in the classroom. They recommend consideration of school and district-level administration and leadership and "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). This is 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, pp. 570-1) findings about the importance of "school cultures ... national and local curricular organizations, and the societal characteristics of educational systems" and Jigsaw Consult's (2014) evaluation of the implementation of Vision 2021 in the UEA public school system, which noted the significant influence of cultural context, leadership, provincial, and spatial issues on effective technology integration in a school.

At the interface of 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. Tondeur et al (2016, p. 566) found teachers' professional development to be a central theme in their review of the relationship between technology integration and teachers' pedagogical beliefs. They conclude that because pedagogical beliefs are "relatively stable", shortterm, one-off professional development events are likely to be ineffective in changing teachers' practices. They recommend that professional development programs should "support teachers learning about the meaningful use of technology in education" based on a nuanced understanding of the important role played by teachers' pedagogical beliefs (Tondeur et al., 2016, p. 571). Hew and Brush (2007, p. 228) maintain that teachers should be exposed to professional development in "transformative technology-supported pedagogy" 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, Raffaghelli, Albion, & Knezek, 2013). Accordingly, interviews conducted for this study with educators in

classroom teaching and administration roles included 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.

Research Design and Methodology

A qualitative, case study approach in the interpretivist paradigm (Gray, 2014; Stake, 2003; 2005) guides the research design and the collection of both overview and rich data to answer the stated research questions. Research in an interpretivist paradigm looks for "culturally derived and historically situated interpretations of the social life-world" (Gray, 2014, p. 23), a perspective that aligns well with a constructivist epistemology and case study approach and also with the stated research objectives and questions for this study. A blended instrumental-intrinsic approach to case study research (Stake, 2003) is adopted for the study. This means that the researcher is 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 lived experiences of integrating technology into their teaching - that is, "how the phenomenon exists within the particular case[s]" (Stake, 2003, p. 149). Sources of qualitative data for the case study include structured interviews with ten K-12 private school educators across three UAE Emirates and selected education policies at international, national, and school system levels. The findings of the content and thematic analysis (Braun & Clark, 2006) of qualitative data from the interviews and key policy documents are then correlated and further interpreted to "afford a richer analysis of the phenomenon" under investigation (Bowen, 2009, p. 28).

Conceptual Framework

No single theory of technology integration has been adopted as a theoretical framework for this study. Rather, the study draws on and adapts 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, p. 10) describes 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 draws 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". Whilst Kozma's framework focuses on both students' and teachers' practices and includes student outcomes, the scope of this case study is limited to 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.



Figure 1. Conceptual framework (adapted from Kozma, 2003a, p. 12)

Modifications that have been made to this adapted version of Kozma's framework include expansion of the "teacher practices" component of the framework to include infrastructure and finances, professional development, cultural context, and staffing (such as presence of support workers), relationships and collaboration, and teacher learning, competence and confidence. The specific factors in the macro, meso, and micro boxes in the framework have also been modified and expanded to incorporate and elaborate key factors elucidated through the literature review. These changes ensure 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, incorporating key issues from the above literature.

Policy Analysis

Education policy documents at international, national, and UAE education system levels relevant to the study of technology integration in UAE K-12 private schools and in the

public domain were identified and subject to an initial review to determine their relevance to and importance for the study. To start with, national level policies were located that were specifically related to the UAE's vision to establish a first-rate education system and also because they reflect the country's responses to key international policy directions for education innovation. In addition, curriculum frameworks, quality standards and inspection frameworks and policies outlining the country's licencing requirements and standards for teachers were also included. Content and thematic analysis (Bowen, 2009; Owen, 2014) of the included policy documents with reference to the study's conceptual framework is ongoing, however an initial analysis reveals the system-wide factors at macro levels of the conceptual framework impacting on technology integration in the UAE private school sector in response to the government's mandate for reform to the education system. This chapter reports the results of the first stage of the policy analysis component of the study in answer to the first research question to explore what key "macro" level policies reveal about the policy context for technology integration in the UAE private school sector.

Structured Interviews with K-12 Private School Educators

Key constructs from the study's conceptual framework informed the design of a semistructured interview protocol, with a combination of choice responses and open-ended questions used to explore perspectives and experiences of technology integration among a purposive sample of 10 private school K-12 educators. These educators were recruited, on receipt of university ethics approval, via the researcher's professional networks on LinkedIn. The interview was piloted with one teacher and minor changes were made to the interview protocol as a result of the researcher's critical reflection on his interview technique. As no changes were made to the interview questions themselves as a result of the pilot, the pilot interview responses are included in the main study. The interview questions are presented in Table 1.

Table 1.

No.	Interview Questions							
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 s	starting out						
	3 =underway, aver	age progress made						
	4= quite good, a fe	w issues still to resolve						
	5 = very good, full	y implemented						
	6 = NA (Not applied)	cable)						
2.	Can you explain how you integrate technology on a day-to-day basis in your role							
	as an Administrator / teacher?							
3.	What challenges to the int	egration of technology have	e you faced in your school?					
	1. lack of funds	9. workload issues, lack	17. parental objections					
		of time						
	2. insufficient training 10. staff unwillingness, 18. unsuited to some							
	resistance to change subjects							
	3. persistent technical 11. classroom spaces 19. assessment practices							
	difficulties unsuited to ICT use not changed to match							
	4. feeling of isolation 12. staff turnover 20. access to technology							
	resources							

Interview questions with response options

5. teacher's lack	13. lack of	21. quality of resources
confidence in using	encouragement from	available
technology	management	
6. lack of clear vision	14. lack of infrastructure	22. concerns about class
as to what to do		behaviour
7. lack of technical	15. concerns over	23. concerns about
support	student outcomes	privacy and internet
		safety
8. lack of pedagogical	16. local culture not	24. timetabling not
knowledge for ICT use	ICT-driven	conducive to ICT use
		25. student resistance to
		change

Are there any others you would like to add?

4.

From your experience, what are some solutions to these challenges?

1. working together to	9. use student	17. redesign classroom
achieve a shared vision	technology helpers	layouts
2. creating a whole	10. timetable larger	18. new assessment
school implementation	blocks of time	practices to suit ICT use
plan		
3. staged implementation	11. professional	19. clarify alignment to
(by years/subjects)	development in ICT	required curriculum
	use	
4. convenient technology	12. professional	20. open sharing of ideas
e.g. wireless internet	development in ICT	within subjects
	pedagogy	
5. put technology in	13. encouragement,	21. select and pay for
classrooms not	incentive from	high quality resources
laboratories	management	
6. teacher collaboration	14. redirect funds to	22. meetings with parents
to share load and time	improve	and students
	infrastructure	
7. reduce other workload	15. institute buddy	23. best practice in
types for teachers	system for teachers	privacy and internet
		safety
8. hire more technical	16. plan and adopt	24. technology
support staff	school-wide	implementation
	behaviour rules	committee

Are there any others you would like to add?

- 5. What are your beliefs about quality of teaching and learning once technology has been integrated into the classroom?
- 6. How did you feel when technology integration was first introduced to the school?
- 7. Which subject do you think the technology integration is most effective for? Why? (*Admin*)

How easy do you find it to integrate technology? (*Teacher*)

8. What subject do you think the technology integration is least effective for? Why? *(Admin)*

8a.Whatis 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 to the curriculum, (3) different ways technologies can be used, (4) 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	8. mentoring				
communities					
Are there any others you would like to add?					

Interviews were conducted online during 2019-2020 using GoToMeeting and were recorded and transcribed by the researcher using HappyScribe software. Preliminary content and thematic analysis (Braun & Clark, 2006) of the 10 interview transcripts were then completed with reference to relevant factors at different levels of the conceptual framework. The preliminary findings reported in this chapter represent the results of this initial analysis of school teachers' and administrators' experiences of and perceptions about the integration of technology in UAE private schools, including reported challenges and enablers, in answer to the second research question.

The study's preliminary findings are now presented, beginning with the findings of the first stage of the policy analysis, after which the interview findings are presented.

Preliminary Findings

What is the policy context for technology integration in the UAE private school sector?

The Gulf Cooperation Council (GCC) in the Middle East is increasing its efforts in implementing policies and visions to prepare member countries for a post-petroleum future by creating diversified knowledge economies (Beidas-Strom, Rasmussen & Robinson, 2011). This policy direction is also reflected in the United Arab Emirates' (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 (Kingdom of Saudi Arabia, 2016). An integral part of this economic diversification is the important role played by each country's national education system in working towards achievement of economic and related social reforms (Hvidt, 2013; Ulrichsen, 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; Webb, 2019).

The regional call for education policy reform in GCC countries was already being enacted in the UAE though the *UAE Vision 2021* (UAE, 2010), supplemented in 2014 with a plan for achieving this vision (Jigsaw Consult, 2016). 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 the Programme for International Student Assessment (PISA) (Jigsaw Consult, 2016; Ministry of Education Strategic Plan 2017-2021, 2020). Further, the UAE already recognized that Information and Communications Technologies (ICT) form the cornerstone of most of its industries such as the e-government and education sectors (Atil & Guessoum, 2010). Examples of education reform initiatives targeting technology integration in UAE schools include the Mohammed Bin Rashid Smart Learning Initiative, launched in 2012, which has been posited as potentially "one of the largest tablet initiatives in the world" at the time (Tamim, Borokhovski, Pickup, & Bernard, 2015, p. 20). Key findings from an independent evaluation of the progress of 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 successful implementation of the UAE technology reforms. However, the experience of technology integration in the UAE private sector remains under-investigated.

In order to achieve a better understanding the factors influencing the successful integration of educational technology in UAE K-12 private schools, education policies at international, UAE national and private sector education system and school levels were selected for analysis from among a range of policies at each level. Selected policies were chosen based on their relevance and perceived importance to the UAE education system's mandate for innovation and reform in the country's education system, focusing on technology integration and technological innovations. These policy documents were then subject to an initial content analysis using a policy analysis template developed for the study that identified the policy source, type, focus, target audience, key messages and implications for technology integration and mapped the content of each of the policy to "factors" and "actors" at macro and meso levels of the study's conceptual framework in Figure 1. Table 2 lists the policies analysed.

Table 2.

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	Transforming Our World: The 2030 Agenda For Sustainable Development (UN) (General Assembly, 2015, Transforming Our World: The 2030 Agenda for Sustainable Development). PISA 2021 ICT Framework (PISA, 2019, PISA 2021 ICT Framework).
(macro level)	Better Skills, Better Jobs, Better Lives: A Strategic Approach to Skills Policies for The United Arab Emirates (Höckel, 2015, Better Skills, Better Jobs, Better Lives: A Strategic Approach to Skills Policies for The United Arab Emirates).

Education policies subject to analysis

	AdvancED Policies and Procedures for Accreditation and Certification Updated June 29, 2018 (AdvancED, 2018, AdvancED Policies and Procedures For Accreditation and Certification).
	AdvancEd Performance Standards for School Systems. (AdvancED, 2017, AdvancEd Performance Standards for School Systems).
	Standards For British Schools Overseas. 2016 Department For Education (Department For Education, 2016, Standards For British schools overseas).
	New England Association of Schools and Colleges. Accreditation Handbook 2019 (New England Association of Schools and Colleges, 2019, Accreditation Handbook 2019).
	UAE Vision 2021 (United Arab Emirates, 2010, UAE Vision 2021)
	Ministry of Education Strategic Plan 2017- 2021 (United Arab Emirates Ministry of Education, 2020, Ministry of Education Strategic Plan 2017-2021)
	Education 2020 Strategy (United Arab Emirates Ministry of Education, 2020, Education 2020 Strategy).
UAE national education policy including policies regulating schools in the private sector (macro level)	From Goals to Reality: UAE and The 2030 Agenda For Sustainable Development (Sustainable Development Goals, 2017, From Goals to Reality: UAE and The 2030 Agenda For Sustainable Development).
	Teaching Licensing System (Educational Profession Licensure, 2018, Teaching Licensing System).
	Teacher Standards For The UAE (National Qualifications Authority, 2015, Teacher Standards For The UAE).
	UAE School Inspection Framework (United Arab Emirates, Department of Education, 2019, UAE School Inspection Framework)
Private sector K-12 school level policies and performance data	School fees
(meso level)	School curricula

School performance data
School level ICT, PD and staffing policies

Macro-level policies

Selected "macro" level policies are relevant government education policies at international, national (UAE) and Emirate levels such as those high level government and international education body policies promoting technology integration as part of global and national education reforms. For example, the international documents of United Nations (UN) and the OCED were found to be relevant as the UAE is a member of both the UN and OCED, with one of the OECD policies specifically targeted at innovation and skill development in the UAE's education and training system (Höckel, 2015). The PISA ICT Framework (2019, p. 7) focuses specifically on ICT integration in education. It recognises that "specific ICT-related policies and practices" at national, system and school levels can impact the use of educational technology resources. These include "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" (PISA, 2019, p. 7). Some of the UN's sustainable development goals (United Nations, 2015), can 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". These national level policies reflect the broader global vision to create a "first-rate education" system (UAE Vision 2021) that strives for innovation (Ministry of Education Strategic plan 2017-2021; Education 2020 Strategy) and aims to transform the "current education system and teaching methods" (UAE, 2017). Importantly, there is an explicit acknowledgment at the national policy level 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).

Also included at the "macro" level are UAE national and Emirate education system policies regulating quality standards, curriculum frameworks and funding arrangements potentially influencing technology integration efforts at the school level. Education system policies specifically targeting private sector schools, such as those related to international curriculum frameworks and school performance data, are also included here. Policies subject to analysis include the UAE's Teaching Licensing System (Teacher Standards for the UAE, 2015) which was "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). The Teacher Standards for the UAE were developed "to ensure teachers, as different career stages, can demonstrate professional competence that align with the aspiration of the UAE vision 2021 and international best practices" (National Qualifications Authority, 2015). There are also a number of key documents at international and national levels directly targeting the UAE Private Sector schooling system. They include the AdvancED Policies and Procedures for Accreditation and Certification Updated June 29, 2018 (AdvancED, 2018) and the related AdvancEd performance standards (AdvancEd, 2017). Also included are 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, 2016) for the British curriculum (Clark, 2014) and the New England Association of Schools

and Colleges Accreditation Handbook 2019 (New England Association of Schools and Colleges, 2019) for the American curriculum (Clark, 2014).

Meso-level policies

To align with factors in the conceptual framework, "meso" level policies identified for analysis are school level documents that reflect school policies, practices and performance related to technology integration and innovation. This meso level policy analysis of publicly available information relevant to technology integration is ongoing and includes school performance data in the public domain obtained from regulatory authorities along with information on fees, staffing, curricula, ICT policies and practices obtained via a purposive sample of K-12 private schools' websites. A full list of policies is presented in Table 2.

What are school teachers and administrators' experiences of and perceptions about the integration of technology in UAE private schools, including reported challenges and enablers? Findings of interviews with 10 private school educators

Of the 10 educators interviewed for the study (six female and four male), five were from private K-12 schools in Abu-Dhabi, two from Dubai, two from Sharjah and one from Al Ain. Seven respondents were in dedicated school administration or curriculum leadership roles at the time of the interviews (one Principal, three Vice-Principals, one Head of Curriculum, one Deputy Head Academic and one Head of Education Technology). One respondent was performing a curriculum leadership role combined with a classroom teaching role and the remaining two respondents were classroom teachers. Respondents' years of teaching experience ranged from two years to 22 years, with six teachers having more than 10 years of teaching experience. Details of the key characteristics and contexts of each of the 10 educators in the respondent sample are summarised in Table 3.

Table 3.

Contexts and	lc	haracteristics	of	interview	sample
--------------	----	----------------	----	-----------	--------

pseudony m	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	Μ	Abu Dhabi	American	Principal	2 years	Principal	20 years
Timothy	М	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 months
Abraham	М	Abu Dhabi	British	Program coordinator	1 year and 9 months	Biology teacher	10 years
Shaun	М	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 3, three schools were teaching the international English curriculum with the remaining seven teaching the American curriculum . Overall, two subject areas are 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. Important factors related to the respondents' contexts and characteristics shown in Table 1 and summarised here are incorporated into the discussion of the findings and their implications in the concluding sections of the chapter.

Content and preliminary thematic analysis of the interview responses reveal a number of emerging themes and key issues related to educators' experiences and perceptions of technology integration. For the purposes of this chapter, presentation of these preliminary findings is organised into the following three thematic clusters, showing links to the interview questions presented in Table 1, mapped to the study's conceptual framework:

- A. Educators' 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, 9)
- B. Educators' attitudes towards and beliefs about educational technology and technology integration (Q 5, 6, 7, 8)
- C. How classroom teachers experience learning to integrate technology into their practice (Q 2, 3, 4, 9, 10).

These findings are now presented in the following sections, with supporting quotations from the interview transcripts included to support the interpretation being presented.

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

Participants' responses to the first interview question asking them to rate their school's progress implementing technology integration show that seven of the 10 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 their school as having "fully implemented" technology integration. These responses are shown in Figure 2.



Figure 2. Respondents' ratings of school progress in implementing technology integration in response to Vision 2021

Predictably, these responses indicate variation among interviewees in their perspectives of their school's progress with technology integration and are not particularly remarkable on their own. However, they do indicate that technology integration is 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 reveals interesting nuances in their 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 their 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".

The examples provided by respondents of different ways that technology is being integrated at the school level are of interest as they highlight two broad and quite different purposes for which the technologies are being used: administration purposes, on the one hand and classroom teaching on the other:

[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. (Shaun) 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 (Shaun)

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

As noted by one educator in an administrative role, teachers appear 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 are pretty ok with the general technological programs, be it like Google Drive or Google office programs, everyone is pretty comfortable there. What is different and is utilizing the technology to help 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 teacher's use of technologies for teaching. (Bruce)

With respect to the factors influencing the integration of technology, the interview questions in this cluster map to factors both at the organisational (or *meso* level) of the conceptual framework in Figure 1 and to teacher-related factors at the *micro* level. Meso-level factors highlighted by respondents as challenges of technology integration included:

• a lack of finances, ICT infrastructure, resources and technical support:

We don't have that much 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. (Timothy)

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

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 (Timothy)

• high staff turnover:

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

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. (Shaun)

• inadequate provision of professional development:

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

• staff workloads:

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. (Abraham)

Reduce other work load times for teachers "like the owners of the school, they will be against this because they always we have a financial issues". (Abraham)

A number of other 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 lack of motivation and 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 not, you don't know it. (Savannah)

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 that. (Ava)

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. (Ava)

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. (Abraham)

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. (Timothy)

Respondents also reported challenges related to some teachers' lack of regular use of technology in their private lives and associated related lack of interest in using technology generally and 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. With the non-interested in technology will then maintain the current practice. (Bruce)

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. (Bruce)

Teachers' motivation because some of the teachers, 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. (Christine)

With respect to solutions for addressing the identified challenges of 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. They include:

• investment in technology infrastructure at the school level:

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

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

Establish a culture, a school code to where technology as is in the core of every single practices school (Christine)

• A consistent and streamlined approach to technology integration across the school:

What I am advocating is that we have consistency across the school. (Bruce)

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. (Abraham)

Just have a very few key platforms and key aspects technology we use... because random haphazard application won't be of any benefit (Christine)

• A school-wide pedagogical vision for technology integration:

Curriculum programs that are built to support a more personalized 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 it as a gimmick or a knickknack approach. (Bruce)

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 personalized 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. (Bruce)

• 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. (Timothy)

I think sometimes the curriculum to have some time for implementing these technologies instead of giving too much content, we teach more maybe skills. (Abraham)

I think 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 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 (Bruce)

Moving on from the meso level of the school to focus on micro-level factors, the following section presents key findings related to educators' attitudes towards and beliefs about educational technology and technology integration.

B. Educators' attitudes towards and beliefs about educational technology and technology integration

Interviewees' attitudes towards and beliefs about technology integration can be gleaned by analysing responses to selected open and closed interview questions. Figure 3 shows a graphical representation of educators' responses to the options provided in question Q5: What are your beliefs about quality of teaching and learning once technology has been integrated into the classroom?



Figure 3. Educators' beliefs about the impact of technology integration on teaching and learning

The diagram shows the most popular responses to be those related to perceived benefits for students' learning including:

- increased enjoyment in learning (eight of 10 respondents);
- students becoming more active and independent learners (eight of 10 respondents); and
- students being able to experience things they can't experience in the classroom (six of 10 respondents).

Seven respondents also agreed that using technology enables 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 replaces strategies that already work and another that use of technology in the classroom harms the teacher's relationship with the students. The responses to this particular question therefore demonstrate strong support among respondents for the claimed benefits of technology integration for teaching and learning along with some reservations.

Analysis of responses to open interview questions reveals a more nuanced view of respondents' attitudes towards and beliefs about technology integration. Some of these responses reflect a positive view of perceived benefits for students, for the quality of teaching and learning and for the work of teachers:

Technology has such a great importance now and it does affect the learning of kids. (Christine)

Giving the opportunity to adjust my plans according to the student's level. (Scarlet) And it's making my work easier. More professional. (Scarlet)

Drilling down further into the data to analyse responses to open questions, such as how educators felt when technology was first implemented into the school (Q6) and questions about the suitability of integrating technology into the teaching of particular subjects (Q 7 and 8), will reveal an even more nuanced view of educators' attitudes towards and beliefs about technology integration and their relationship to factors in other areas of the conceptual framework, as reflected in this educator's response:

If it's being used to improve pedagogy, then I see it to have a really, really positive impact. If it's just being used because it's technology, then I see it not having such a positive impact. (Shaun)

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

C. Educators' perceptions and experiences of learning to integrate technology

The centrality of teachers' professional development for technology integration is highlighted both in the literature reviewed for this study and at the centre of the study's conceptual framework in Figure 1. As shown in the responses in Cluster A above, provision of adequate support for teachers to help them integrate technology into their teaching was identified by respondents as being key to addressing the challenges of technology integration, with professional development 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.

Firstly, educators' responses to interview question 4 about solutions to the challenges of technology integration are presented in Figure 4 and show that, along with putting technology in classrooms, professional development in the use of this technology and in particular "ICT pedagogy" is perceived by half of the educators as a key solution.



Figure 4. Respondents' preferred solutions to the challenges of integrating technology

A difference was evident between what classroom teachers said about solutions and what administrators said, 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". Further analysis interview responses should support a more finely-grained interpretation of these differences.

Figure 5 is a graph of interviewees' responses to Question 10, which asked them to choose from among a list of professional development strategies those that they see as being most effective for teachers to learn to integrate technology.



Figure 5. Educators' preferred professional development strategies

Responses indicate 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 are consistent with the findings of the OECD's Teaching and Learning International Survey (TALIS), which reports that 78% of teachers in OECD countries help each other to implement new ideas. Interestingly, however, the OECD also reports that "Only 44% of teachers participate in training based on peer learning and networking, which is relatively modest compared to participation rates of over 70% in out-of-school types of training, such as attending courses or seminars" (OCED, 2019).

A comparison of responses to question nine between educators in administrative roles and classroom teachers shows that, whilst both 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 selected "peer coaching" and "live lesson observation", and four, "Active learning and teacher learning communities". In addition, "mentoring" and "teaching portfolios" were selected three times each by administrators. Again, further analysis of interview responses should support a more finelygrained interpretation of these differences.

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

• regular professional development workshops provided by the school that focus 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. (Scarlet)

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. (Scarlet)

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

Visits with other schools that visit exchange with other schools. Schools which aren't likely on us being advanced in the use of technology. (Christine)

Technology integration challenges facing UAE private schools: Some preliminary findings and implications

As 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 "schoolbased organizational practices, national policies, and other contextual factors" that "support and sustain" innovative educational practices using ICT (Kozma, 2003a, p. 5). An important finding from the preliminary analysis of interview responses is 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 noted by one educator:

Teachers coming into school are pretty ok with the general technological programs, be it like Google Drive or Google office programs, everyone is pretty comfortable there. What is different and is utilizing the technology to help drive learning as opposed to just simply researching or recording learning. (Bruce)

The interview findings indicate that whilst the first two examples of technology integration appear, at least on the surface, to be experienced as being relatively unproblematic, "meaningful" integration of technology by classroom teachers into the pedagogical process to "support 21st century teaching and learning" is experienced as a significant challenge. This 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 start 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 a little bit hard to adjust. I used to fear that the use of the technology will decrease the role of the teacher (Scarlet)

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. (Abraham)

Not just using the old way of teaching with the new modern technology. (Timothy)

However, to what extent is this change process supported in the UAE private school sector? A preliminary analysis of relevant policies at "macro" level reveals only one policy that provides 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). Further analysis of "meso" level policies will reveal whether this aspect of technology integration is being addressed by leadership at different levels of the private school sector, including school owners, senior administrators and national and international regulators and authorities.

Preliminary findings from the interviews with educators – both classroom teachers and those in administration roles – provide 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 are seen to be more valuable than one-off or ad-hoc approaches. This is 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. Interview findings also reveal teacher workloads and "lack of time" to be a barrier to teachers' integrating technology into their teaching. This finding is also reflected in Ridge et al.'s (2016, p. 51) study of characteristics of the UAE private school system, which found the teaching load of private school teachers was reported as being, on average, more than double that of their public sector counterparts.

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 them being able to use innovations such as the integration of technologies in their teaching, with technology integration even seen as being 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). Added to this is 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 Höckel, 2015, p. 41). Results from interviews with educators confirm that teacher turnover is experienced as a significant challenge for technology integration. Also noteworthy are comments that specifically link the challenge of staff turnover and its impact on technology integration to the transient and culturally diverse nature of the private school sector's expatriate teacher workforce:

People coming from different backgrounds and different areas around the world. (Ava)

Coming to a new country and getting used to understanding the school's policies philosophy. (Ava)

So the preference is that you get a majority of our stock recruits from India. So people who come are not ready, exposed to technology (Ava)

Of particular interest is 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 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 and convincing the owner of the importance of technology and the importance to

provide the needed funds, financial support needed for making the implementation of technology effective. (Christine)

These concerns reflect those from a recent study exploring technology integration in a selection of UAE private schools which highlighted "infrastructure issues" being one of the key barriers to effective technology integration (Mohebi, 2019, p. 26).

Conclusion

Much analysis work remains to be completed in this study, however the findings indicate clear links between policy influences such as national UAE education policy, a reported national teacher shortage, and the regulation of the private school sector at the macro level, and school leadership's decisions about investment in technology integration, including technology and teachers' professional development, at the meso level. These in turn link to teachers' attributes and practices in relation to technology integration at the micro level. Further, identified barriers to and enablers of technology integration are broadly consistent with the findings of a 2018 investigation into technological innovation in nine UAE schools in four Emirates, seven of which were private schools (Web, 2019). This provides some support for these early findings and the potential value of the study and its recommendations. Most importantly, it is clear that strong, effective and supportive educational leadership is required to steward this "complex process of educational change" (Tondeur et al., 2017, p. 555), and these preliminary findings highlight some significant challenges for UAE private sector school leadership with regard to technology integration. OCED (2016, p. 146) identifies that "leadership is often the most important factor in successful integration of ICTs into the school's instructional practices and curriculum" and that without this leadership, "changes in the teaching-learning process and widespread, effective uses of technology in learning are not likely to occur". The preliminary findings of this study lend strong support to this argument, highlighting the significance of decisionmaking at the level of the school ownership and leadership about the extent and nature of investment in educational technology integration and innovation, and potentially indicating a vulnerability 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.

Delegates at a recent meeting of Arab Gulf State leaders on *Futures of Education after Covid19* proposed a post-Covid19 world in which "online education will become an integral part of school education", but at the same time raised concerns about people's rights to privacy and education as a public good with "education systems becoming more reliant on privately owned commercial technological infrastructure" (UNESCO, 2020, pp. 2, 8). Leadership for educational innovation may therefore be best served by the adoption of more considered and critical perspectives of educational technology such as those most notably proposed by Selwyn (2014) and Hoffman (2006). These authors advise caution and even distrust in relation to the "myth" of a values-neutral "technological imperative" (Hoffman, 2006, p. 10) which they claim is designed to serve the vested interests of those who stand to profit from the proliferation of educational technologies rather than, and possibly even at the expense of, those whose interests the education enterprise is meant to serve. Putting meaningful pedagogical innovations front and centre of technological integration in schools, as recommended by Tondeur et al. (2017), serves as a guiding principle for school leadership moving forward into the post-Covid19 era.

References

- Abu Dhabi Education Council's e-Learning initiative. (2013). In ADEC. Retrieved from https://www.adec.ac.ae/en/MediaCenter/News/Pages/
- AdvancEd. (2017). AdvancEd performance standards for school systems. Retrieved from https://www.advanc-ed.org/sites/default/files/documents/APS_Systems.pdf
- AdvancEd. (2018). AdvancED policies and procedures for accreditation and certification. Retrieved from <u>https://www.advanc-ed.org/sites/default/files/documents/AdvancED-Policies-and-Procedures.pdf</u>.
- Alkhyeli, H., & Van Ewijk, A. (2018). Prioritisation of factors influencing teachers' job satisfaction in the UAE. *International Journal of Management in Education 12*(1), 1-24, ISSN: 1750385X; 17503868
- Almekhlafi, A. G., & Almeqdadi, F. A. (2010). Teachers' perceptions of technology integration in the United Arab Emirates school classrooms. *Educational Technology* & Society, 13 (1), 165–175
- Alsharief, T. (2018). Pre-service teachers' perceptions of the barriers to ICT integration in their future instructional practice in a Gulf State. (*Doctoral dissertation, University of Liverpool, United Kingdom*). Retrieved from: https://liverpool.ac.uk/3026617/1/H00025528_Sep2018.PDF
- Andersson, S. B. (2006). Newly qualified teachers' learning related to their use of information and communication technology: A Swedish perspective. *British Journal of Educational Technology*, *37*(5), 665-682
- Angélli Genlott, A., Grönlund, Å., & Viberg, O. (2019). Disseminating digital innovation in school—leading second order educational change. *Education and Information Technologies*, doi.org/10.1007/s10639-019-09908-0
- Archambault, L., & Crippen, K. (2009). Examining TPACK among K-12 online distance educators in the United States. *Contemporary Issues in Technology and Teacher Education*, 9(1), 71-88.
- Atl, M., & Guessoum, N. (2010). eLearning in United Arab Emirates. In U. Demiray (Ed), *E-Learning Practices*. Turkey: Anadolu University
- Beidas-Strom, S., Rasmussen, T. N., & Robinson, D. O. (2011). Gulf Cooperation Council Countries (GCC): Enhancing economic outcomes in an uncertain global economy. Retrieved from <u>https://www.imf.org/external/pubs/ft/dp/2011/1101mcd.pdf</u>
- Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal*, 9(2), 27-40. doi:10.3316/QRJ0902027
- Bradshaw, P., Twining, P., & Walsh, C. (2012). The vital program: Transforming ICT professional development. *American Journal of Distance Education*, 26(2), 74–85
- Braun V, & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Journal of Research in Psychology 3*, pp. 77–101.
- Buabeng-Andoh, C. (2012). Factors influencing teachers' adoption and integration of information and communication technology into teaching: A review of the literature.

International Journal of Education and Development using Information and Communication Technology (IJEDICT), (8)1, pp. 136-155

- Clark, N. (2014). The major international school curriculums. *World Education News and Reviews*. Retrieved from https://wenr.wes.org/2014/07/the-major-international-school-curriculums.
- Davis, H., Hartshorne, P., & Ring, G. (2010). Being an innovative teacher: Preservice teachers' conceptions of technology and innovation. *International Journal of Education* 2(1), 1-28.
- Dawson, K. (2006). Teacher inquiry: A vehicle to merge prospective teachers' experience and reflection during curriculum-based, technology-enhanced field experiences. *Journal of Research on Technology in Education, 38*(3), 265-292.
- Department for Education. (2016). *Standards for British schools overseas*. Retrieved from <u>https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachme</u> <u>nt_data/file/572360/BSO_standards_23Nov16.pdf</u>
- DiPietro, M., Ferdig, R.E., Preston, M., & Black, E.W. (2008). Best practices in teaching K-12 online: Lessons learned from Michigan Virtual School teachers. *Journal of Interactive Online Learning*, 7(1), 10-35.
- Educational Profession Licensure. (2018). *Teaching licensing system*. United Arab Emirates Ministry of Education. Retrieved from: <u>https://tls.moe.gov.ae/#!/about</u>.
- Eom, S. B., & Wen, H. J. (2006). The determinants of students' perceived learning outcomes and satisfaction in university online education: An empirical investigation. *Decision Sciences Journal of Innovative Education*, 4(2), 215-235
- Erstad, O., Eickelmann, B., & Eichhorn, K. (2015). Preparing teachers for schooling in the digital age: A meta-perspective on existing strategies and future challenges. *Education and Information Technology*, 20(4), 641-654
- Gao, P., Choy, D., Wong, A. F., & Wu, J. (2009). Developing a better understanding of technologybased pedagogy. *Australasian Journal of Educational Technology*, 25(5), 714-730.
- Garrison, R. (2003). Cognitive presence for effective asynchronous online learning: The role of reflective inquiry, self-direction and metacognition. Retrieved from <u>https://www.researchgate.net/publication/228585404_Cognitive_presence_for_effective_ve_asynchronous_online_learning_The_role_of_reflective_inquiry_selfdirection_and_metacognition</u>
- General Assembly (2015). Transforming our world: the 2030 agenda for sustainable development report no. A/RES/70/1. United Nations.
- Ghavifekr, S., Kunjappan, T., Ramasamy, L., & Anthony, A. (2016). Teaching and learning with ICT tools: Issues and challenges from teachers' perceptions. *Malaysian Online Journal of Educational Technology*, 4(2), 38-57*development report no. A/RES/70/1*. United Nations.
- Gil-Flores, J., Rodríguez-Santero, J., & Torres-Gordillo, J.-J. (2017). Factors that explain the use if ICT in secondary-education classrooms: The role of teacher characteristics and school infrastructure. *Computers in Human Behavior*, 68, 441-449

- Godwin, S. (2006). Globalization, education and emiratisation: A study of the United Arab Emirates. *The Electronic Journal on Information Systems in Developing Countries EJISDC* 27(1), pp. 1-14 <u>http://www.ejisdc.org</u>
- Goodwin, A. L., Low, E. L., Ng, P. T., Yeung, A. S., & Cai, L. (2015). Enhancing playful teachers' perception of ICT use in the classroom: The role of risk taking as a mediator. *Australian Journal of Teacher Education*, 40(4), 132-149.
- Gray, D. E. (2014). Doing research in the real world. London: SAGE
- Hew, K. F., & Brush, T. (2007). Integrating technology into K-12 teaching and learning: Current knowledge gaps and recommendations for future research. *Educational Technology Research and Development*, 55(3), 223-252. doi:10.1007/s11423-006-9022-5.
- Höckel, K. (2015). Better skills, better jobs, better lives: A strategic approach to skills policies for the United Arab Emirates. OCED
- Hoffman, B. (2006). When means become ends: Technology producing values. Seminar.net Media, Technology and Lifelong Learning, 2(2), 1-12. Retrieved from http://seminar.net/volume-2-issue-2-2006-previousissuesmeny-114/66-when-meansbecome-ends-technology-producing-values
- Horn, M., & Staker, H. (2011). *The rise of K–12 blended learning*. Mountain View CA.: Innosight Institute
- Hvidt, M. (2013). Kuwait programme on development, governance and globalisation in the Gulf States: Economic diversification in GCC countries: Past record and future trends. Retrieved from The London School of Economics and Political Science: <u>http://eprints.lse.ac.uk/55252/</u>
- Jigsaw Consult. (2016). MBRSLP research report 2015 2016. London: Author
- Kamal, K., & Trines, S. (2018, August 10). Education in the United Arab Emirates. Education system profiles. Retrieved from: <u>https://wenr.wes.org/2018/08/education-in-the-united-arab-emirates</u>
- Kay, R. H., & Knaack, L. (2005). A case for ubiquitous, integrated computing in teacher education. *Technology, Pedagogy and Education*, 14(3), 391-412
- Kingdom of Saudi Arabia. (2016). *Vision 2030 Kingdom of Saudi Arabia*. Kingdom of Saudi Arabia: Author.
- Kozma, R. B. (2003a). ICT and education: A global phenomenon. In R. B. Kozma (Ed.). *Technology, innovation, and educational change: A global perspective*. Eugene, OR: International Society for Technology in Education (pp. 1-18)
- Kozma, R. B. (2003b). Technology and classroom practices: An international study. *Journal* of Research on Technology in Education, 36(1), 1-14.
- Kozma, R. B. (Ed.). (2003c). *Technology, innovation, and educational change: A global perspective*. Eugene, OR: International Society for Technology in Education.
- Kuwait. (2017). New Kuwait 2035 Kuwait national development plan. Kuwait: Author.
- Maceda, C. (2017, July 3). UAE school fees 'second highest in the world': HSBC study. Retrieved from <u>http://gulfnews.com/business/money/uae-school-fees-second-highest-</u> in-the-world-hsbc-study-1.2052333

- Mohebi, L. (2019). Leaders' perception of ICT integration in private schools: An exploratory study from Dubai (UAE). Social Science Research Network, Elsevier. Retrieved from <u>https://www.researchgate.net/publication/333994622_LeadersPerceptionLeadersPerception of ICT Integration in Private Schools An Exploratory Study from Dubai</u> UAE
- National Qualifications Authority. (2015). *Teacher standards for the UAE. United Arab Emirates*. Retrieved from <u>https://tls.moe.gov.ae/#!/downloads-v2</u>.
- New England Association of Schools and Colleges. (2019). *Accreditation handbook 2019*. Retrieved from <u>https://cpss.neasc.org/sites/cpss.neasc.org/files/Downloads_pdf/2019_Accreditation_Handbook.pdf</u>.
- OECD. (2018). *Trends shaping education 2018 spotlight 15: A brave new world*. Retrieved from [https://www.oecd.org/education/ceri/Spotlight-15-A-Brave-New-World-Technology-and-Education.pdf].
- OECD (2019). TALIS 2018 Results (Volume I): Teachers and School Leaders as Lifelong Learners. OECD Publishing. doi: 10.1787/1d0bc92a-en
- OECD. (2019). Countries must make teaching profession more financially and intellectually attractive. Retrieved from https://www.oecd.org/education/countries-must-make-teaching-profession-more-financially-and-intellectually-attractive.htm
- Owen, G. T. (2014). Qualitative methods in higher education policy analysis: Using interviews and document Analysis. *The Qualitative Report*, *19*(26), 1-19. Retrieved from <u>https://nsuworks.nova.edu/tqr/vol19/iss26/2</u>
- PISA. (2019). PISA 2021 ICT Framework. OCED
- Pricewaterhouse Coopers [PwC]. (2016, August 17). Understanding the GCC education Sector: A country by country guide. Retrieved from <u>https://www.pwc.com/m1/en/industries/education/publications/education-country-profile-uae.pdf</u>
- Private Schools in the UAE. (2017, March 7). Retrieved from <u>https://government.ae/en/information-and-services/education/school-education-k-</u> <u>12/joining-k-12-education/private-schools-in-the-uae</u>
- Ridge, N. Y., Shami, S., & Kippels, S. M. (2016). Private education in the absence of a public option: The cases of the United Arab Emirates and Qatar. *FIRE: Forum for International Research in Education*, 3(2), pp. 41-59. Retrieved from https://files.eric.ed.gov/fulltext/EJ1133015.pdf
- Selwyn, N. (2014). Distrusting educational technology: Critical questions for changing times. New York: Routledge.
- Stake, R. E. (2003). Case studies. In N. K. Denzin & Y. S. Lincoln (Eds.), *Strategies of qualitative inquiry (2nd ed.)*. London: SAGE.
- Stake, R. E. (2005). Qualitative case studies. In N. K. Denzin & Y. S. Lincoln (Eds.), *The SAGE handbook of qualitative research* (p. 443–466). London: SAGE

- Sustainable Development Goals. (2017). *From goals to reality: UAE and the 2030 agenda for sustainable development*. The UAE portal for the Sustainable Development Goals. Retrieved from <u>https://uaesdgs.ae/UAESDGs/report1/en/index.html#2</u>
- Swain, C. (2006). Preservice teachers' self-assessment using technology: Determining what is worthwhile and looking for changes in daily teaching and learning practices. *Journal of Technology and Teacher Education*, 14(1), 29-59
- Tamim, R., Borokhovski, E., Pickup, D., & Bernard, R. (2015). Large-scale, governmentsupported educational tablet initiatives. Commonwealth of Learning. doi: 10.13140/RG.2.1.2359.7849
- Tondeur, J., Braak, J.V., Ertmer, P. A., & Ottenbreit-Leftwich, A. (2016). Understanding the relationship between teachers' pedagogical beliefs and technology use in education: A systematic review of qualitative evidence. *Education Technology Research and Development 65*, pp. 555–57. doi: 10.1007/s11423-016-9481-2
- Twining, P., Raffaghelli, J., Albion, P., & Knezek, D. (2013). Moving education into the digital age: The contribution of teachers' professional development. *Journal of Computer Assisted Learning*, 29(5), 426-437
- Ulrichsen, K. C. (2016). *The Gulf States in international political economy*. DOI: 10.1057/9781137385611
- United Arab Emirates Ministry of Education. (2020). *Education 2020 Strategy. The UAE portal for the Sustainable Development Goals*. Retrieved from https://u.ae/en/aboutthe-uae/strategies-initiatives-and-awards/federal-governments-strategies-andplans/education-2020-strategy
- United Arab Emirates Ministry of Education. (2020). *Ministry of Education strategic plan* 2017-2021. (2020, October). Retrieved from https://www.moe.gov.ae/En/AboutTheMinistry/Pages/MinistryStrategy.aspx
- United Arab Emirates. (2010). UAE vision 2021. UAE: Author.
- UNESCO. (2020). The futures of education after COVID-19 regional dialogue synthesis report. Retrieved from <u>https://en.unesco.org/sites/default/files/synthesis_report_future_of_education_webnair</u> <u>1.pdf</u>
- Webb, C. (2019). The innovation imperative: Adding fire to the fuel of genius in UAE schools? Paper presented to the *Future of Education International Conference*. Retrieved from <u>https://conference.pixel-online.net/FOE/files/foe/ed0008/FP/4935-SOE3276-FP-FOE8.pdf</u>
- Wright, V. H. & Wilson, E. K. (2005). From preservice to inservice teaching: A study of technology integration. *Journal of Computing in Teacher Education*, 22(2), 49-55