

THESIS

**Technology-enhanced learning and teaching:
Narratives of secondary English teachers in Western
Australia**

Richard Hedley Gordon. Bachelor of Arts, Graduate Diploma of
Education (Tertiary & Workplace).

This thesis is presented for the degree of
Master of Educational Technology of Murdoch University

2022

Thesis Declaration

I, Richard Hedley Gordon verify that in submitting this thesis;

the thesis is my own account of the research conducted by me, except where other sources are fully acknowledged in the appropriate format,

the extent to which the work of others has been used is documented by a percent allocation of work and signed by myself and my Principal Supervisor,

the thesis contains as its main content work which has not been previously submitted for a degree at any university,

the University supplied plagiarism software has been used to ensure the work is of the appropriate standard to send for examination,

any editing and proof-reading by professional editors comply with the standards set out on the Graduate Research School website, and

that all necessary ethics and safety approvals were obtained, including their relevant approval or permit numbers, as appropriate.

Attribution Statement

The content in this thesis was developed by the Candidate with advice from their supervisory panel.

The following individuals contributed to the thesis.

Contributor	Contribution (%)	Concept Development	Data Collection	Data Analyses	Drafting of Chapters
Richard Gordon	90%	X	X	X	X
Wendy Cumming-Potvin	6%	X	X	X	X
Sian Chapman	4%	X	X	X	X

Contribution indicates the total involvement the Candidate has had in the creation of the thesis. Placing an 'X' in the remaining boxes indicates what aspect(s) of the thesis each individual engaged in.

By signing this document, the Candidate and Principal Supervisor acknowledge that the above information is accurate and has been agreed to by all other contributors.

Candidate

Principal Supervisor

Abstract

This qualitative study explored teacher beliefs, decision-making, and pedagogical practices for using digital technologies in Western Australian secondary English classrooms. Driven by technology and the assumption that technology integration enhances student learning, the secondary school education landscape is undergoing a period of rapid change. While some stakeholders view teachers' pedagogical practice as integrated with technology-enhanced learning (TEL), the literature identifies that the contrary is often true: technology use and deployment can be uneven and unsystematic. This study aimed to understand these perceptions via three research questions, that explored TEL's effects on secondary English teaching, both before and after the COVID-19 pandemic home learning experience. Six secondary English teachers were recruited via professional networking. Employing a narrative inquiry methodology, semi-structured interview questions were designed to encourage participants to share their pedagogical approaches and experiences with technology. The interview data were analysed using narrative thematic analysis and dominant themes were identified. The analysis found that teacher participants articulated stories of change and adaptation when using TEL, which gave insight into both personal and professional beliefs regarding education technology. Additional findings report that the home-learning experience during the pandemic has opened up possibilities for new digital pedagogies. However, this was counterbalanced by reinforcement of traditional beliefs about behaviour management, student learning, and teacher agency. The study concludes that if the knowledge gained from home learning in 2020 is utilised in positive ways to further integrate digital pedagogies into curricula, all educational stakeholders are likely to benefit. Furthermore, findings may have implications for twenty-first century in-service and pre-

service teacher education to ensure that TEL functions as an enhancement to learning in its broadest sociocultural context.

Keywords: narrative inquiry, technology-enhanced learning, secondary education, online learning, digital literacy

Acknowledgements

Having reached the end of this accelerated research masters with training at Murdoch University, I would like to acknowledge and express my gratitude to my supervisors Wendy Cumming-Potvin and Sian Chapman for their unwavering support and expert advice throughout this past year. Your commitment and encouragement enabled me to proceed when I felt unable to. I would also like to thank the Murdoch University Graduate Research School and fellow research graduate colleagues for their support and advice throughout this inaugural ARMT (Accelerated Research Masters with Training) year of 2020. Special acknowledgement is given to the participants who volunteered their time and their stories for this study. I also want to acknowledge those friends who understood why I would be absent from many events during this past year, and who expressed their admiration and support to me. Thank you, Trish, Irina, and Michael. Finally, special thanks and appreciation goes to my family, particularly my mother Norma, who encouraged me throughout this journey. I could not have succeeded without your love and support.

Table of Contents

ABSTRACT.....	IV
ACKNOWLEDGEMENTS	VI
LIST OF FIGURES	IX
GLOSSARY OF IMPORTANT TERMS.....	X
CHAPTER 1 INTRODUCTION.....	1
BACKGROUND AND RESEARCH OPPORTUNITIES	1
SIGNIFICANCE, AIMS, AND RESEARCH QUESTIONS	4
<i>Significance</i>	4
<i>Research aims</i>	6
<i>The research questions</i>	6
EPISTEMOLOGY AND ONTOLOGY	7
CHAPTER 2 REVIEW OF LITERATURE	10
INTRODUCTION	10
CONTEMPORARY CONTEXTS	11
REVIEW METHODOLOGY.....	12
A PARADIGM SHIFT	14
THE FIELD MATURES.....	17
LOCAL NATIONAL AND GLOBAL CONTEXTS	18
NATIONAL POLICIES AND APPROACHES.....	21
TEACHERS, TECHNOLOGIES AND PEDAGOGIES.....	24
A NEW FRAMEWORK FOR THE TWENTY-FIRST CENTURY	26
EDUCATION RESEARCH AND TECHNOLOGY-ENHANCED LEARNING	29
CONCLUSION	31
CHAPTER 3 RESEARCH DESIGN	33
INTRODUCTION	33
METHODOLOGY	34
<i>A qualitative approach</i>	34
<i>NARRATIVE INQUIRY</i>	36
ETHICS.....	38
PARTICIPANTS AND RECRUITMENT	40
<i>Participants</i>	40
<i>Recruitment</i>	41
CONCLUSION	57
CHAPTER 4 RESULTS.....	58
PANDEMIC TEACHING: PARADIGM SHIFTS	59
<i>Theme 1: Teaching with technology in a time of sociocultural change</i>	59
<i>Theme 2: Technology becomes a pedagogical lifeline</i>	66
TEACHER TEL BELIEFS, ATTITUDES AND VALUES	69
<i>Theme 1: Sociocultural beliefs</i>	70

<i>Theme 2: Pedagogical Beliefs attitudes and values</i>	81
TEL EFFECTS ON PEDAGOGIES.....	94
<i>Theme 1: Sociocultural effects of TEL</i>	94
<i>Theme 2: Pedagogical effects of TEL</i>	96
CONCLUSION	99
CHAPTER 5 DISCUSSION	101
INTRODUCTION	101
ADDRESSING THE RESEARCH QUESTIONS	103
<i>Research question one: TEL during and after the COVID-19 lockdown periods</i>	104
<i>Research Question two: TEL beliefs, attitudes and values</i>	119
<i>Research Question 3: TEL and the pedagogies of secondary English teachers</i>	129
CHAPTER 6 CONCLUSION	136
LIMITATIONS OF THIS STUDY	139
FURTHER RESEARCH.....	139
SUMMARY	140
REFERENCES	142
APPENDIX A	165
APPENDIX B	168
APPENDIX C	170
APPENDIX D	174

LIST OF FIGURES

Figure 1. Teacher Digital Competence (TDC) Model.....	27
Figure 2. Technology-Mediated Learning Theory Model.....	30
Figure 3. Open Coding Phase.....	51
Figure 4. Axial Coding Phase.....	52
Figure 5. Selective Coding Phase.....	56
Figure 6. Teaching With Technology Model.....	102

GLOSSARY OF IMPORTANT TERMS

ATAR: Australian Tertiary Admission Rank is a ranking number that universities use to select which Australian high school students are offered a place in a university course. In Western Australia the results of four ATAR subject examinations form the basis of the calculation.

Digitalisation (Brennen & Kreiss, 2016): Not to be confused with the term digitisation (the process of converting analogue data into digital data), digitalisation describes the systematic adoption of digital technology by an organisation such as an industry sector, an economy, or a society and a culture that replaces previously analogue modes of operating and communicating with affordances of digital mediation technologies.

EROT: Emergency Response Online Teaching. This term and its acronym are a descriptor for the pivot to a period of online delivery of education due to the closure of schools during the COVID-19 pandemic period of 2020 and 2021.

NAPLAN: The National Assessment Program – Literacy and Numeracy is an annual program of online tests to assess the learning progress of all students (both state and non-state schools) in years 3, 5, 7 and 9 in reading, writing, spelling, grammar and punctuation, and numeracy.

TPACK (Mishra and Koehler, 2006): Technological Pedagogical and Content Knowledge. A conceptual model or framework of technology integration that identifies three categories of knowledge: technology pedagogy and content

knowledge and which provides a basis for effective interdisciplinary decision making and teaching with technology.

SAMR (Puentedura, 2006): Substitution Augmentation Modification Redefinition. A conceptual framework/model that describes four stages of educational technology use that increases in complexity, educative value and transformative potential for students and teachers. The stages comprise of substitution (a direct transposing of an analogue function or task, to that of a digital technology tool), augmentation (when a digital artefact can be altered and improved by digital editing and affordances), modification (refining a digital artefact for wider, public or online dissemination that provides wider contextual meaning), and redefinition (incorporates new contexts, communications and connections that may create new meaning and knowledge for students and teachers).

Chapter 1 Introduction

Background and research opportunities

Education systems worldwide are undergoing rapid change, that is largely driven by technological advances. Supranational bodies, such as the United Nations Educational, Scientific and Cultural Organisation (UNESCO) (2011, 2012), the European Union (EU) Council (2006), and the Organisation for Economic Co-operation and Development (OECD) (2018) have all declared that digital/technological knowledge and skills are essential in modern education. These bodies have specified that these twenty-first-century skills are necessary for students to become fully engaged members in modern societies of the present and the future. However, the process of digitalisation has encountered significant challenges, barriers, and policy direction shifts (Brennen & Kreiss, 2016; Jandrić 2018; O'Mara et al., 2017; Smirnova et al., 2018), the cumulative effect of which is to create an uneven educational landscape for technology use in K-12 settings worldwide. This thesis explores how these challenges, barriers and contextual changes may have influenced the teaching practices of six secondary English teachers in Western Australia.

By way of introduction, and indeed in writing this thesis, I suggest that it is of primary importance to explore understandings of how, and the extent to which, technology is changing individuals, education and society. This gap in our ongoing understanding of how technology intersects with educators, education systems and society, provides an opportunity to focus research on this field. However, in the necessarily brief context of an accelerated one-year degree, the research design and thesis needed to focus on an explorative topic with a

methodology that was achievable in the given timeframe. Turning to this chapter, this introduction provides a brief background to the study, followed by an outline of the significance, research aims and research questions. A brief look at the ontological and epistemological positions of this study and its subsequent methodological basis follows, and finally, this chapter concludes with a description of the thesis layout.

It is a contested assumption that we are living in a fully digital education era. The old analogue ways of conceptualising education and working, teaching and communicating still have a strong presence in society, and in particular in education (Graham & Sahlberg, 2020, 2021; Jandrić et al., 2018; Selwyn & Aagaard, 2021; Smirnova et al., 2018). Within the discipline of education, such analogue ways may be more prevalent in the English language arts and humanities, where deeply held concepts of canonised textual literacy are dominant, in contrast to subject areas such as mathematics and the sciences (see Alvermann et al., 2019; Beach, 2016). Such concepts may be perpetuated by many factors, such as shifting socio-political climates, national curriculum objectives, state education departments, and on to local secondary schools and individual English departments within them.

The Australian education context and digitalisation process can be said to mirror the uneven and insufficient digitalisation experiences of global education systems alluded to above in Jandrić (2018), O'Mara et al., (2017), Smirnova et al., (2018). Despite the prevailing narrative of ongoing western neoliberal technological advancement, at the individual school and classroom level, the commonplace and ubiquitous use of digital technologies has yet to be comprehensively achieved (Abbott, 2016; Bate et al., 2012; Graham & Sahlberg, 2020, 2021; Males et al., 2017) in Australia. In the wide field of technology-enhanced learning (TEL), there is a rich body of literature that explores many of the possible barriers to technology usage in schools over the past

three decades, and recent studies have often shifted towards a broader sociocultural perspective to assist in understanding the field. Even more recently, there has been an increasing interest in how technologies interact with education due to the large paradigmatic shifts caused by the COVID-19 pandemic, when digital technologies became a solution to the threat of disruption to schooling. For this thesis, a strong secondary motivation and opportunity for exploring the topic of TEL integration, was to understand what has changed in education and for teachers since the beginning of the pandemic in 2020, and how these changes may have affected teacher attitudes to TEL in the longer term.

The dominant education discourse is one that considers technology, TEL and secondary STEM (science, technology, engineering and mathematics) subjects to be closely interrelated and interdependent (Davies et al., 2013; English, 2016), and the inference is that English language arts (hereafter English), which are more text based and interpretive, may be less dependent on TEL for teaching and learning. This focus on technology use in STEM subjects may be reflected in the focus of the field and its literature. Therefore, a third gap was identified within the TEL field in its application and relationship to the teaching of secondary English. This provides an opportunity to explore TEL with a specific cohort of secondary teachers who may have had experience with integrating and innovating with digital multimodal pedagogical approaches by deploying specific technologies when teaching English (Borsheim et al., 2008; Howard et al., 2015). Indeed, there may be an interesting confluence of the ‘culture’ of English arts (Grossman & Stodolsky, 1995) via values, attitudes and beliefs that intersect with those of education technology. To explore this may provide a deeper understanding of TEL in a secondary English context.

Significance, aims, and research questions

Significance

As alluded to above, the first two decades of the new millennium have already demonstrated how technology, its affordances, and the skills through which to master them are seen as crucial for effective participation in modern society. For example, teachers the world over have had to adapt to greater TEL integration into their daily practices and may further contend with increasing pressure for more comprehensive digitalisation from stakeholders and the education technology (EdTech) industry. In this context, a critical understanding in relation to the enablers and barriers to further integration of TEL, and how these constructs can manifest within schools and education systems, is necessary (Alvarez, 2019; Decuyper, et al., 2021).

Informing such critical understandings in this thesis is the premise that there will be further and inevitable TEL integration into daily school operations due to stakeholder influences. This is because teachers may often experience external pressures from school leadership teams, parental expectations, education departments, curriculum and assessment bodies, as well as pressure from the EdTech industry. Some of these pressures are relatively new and evolving, for example, parental/guardian expectations regarding the increased use in teaching of iPads and Learning Management Systems (LMS). These pressures and influences have been critically explored in some of the literature to be discussed in Chapter 2, but of note are Feenburg and Jandrić (2015), Ramiel (2019), Selwyn, (2011), and Selwyn et al (2020), who suggested that cautious and critical approaches to EdTech products in all levels of education are necessary to counter the dominant narrative of “inherent positivity” (Selwyn, 2011 p.713) that becomes a characteristic of the “neo-liberal transformation of education” (Feenburg & Jandrić , 2015. p. 6)

The term critical is utilised above, in the dialectical sense that evolved from the Frankfurt school of philosophy into a critical theory of subject and society (Oxford English Dictionary, 2021a; Jay, 1973). For research aiming to provide more nuanced understandings of technology use in education settings, care must be taken to adopt a critical stance that is neither techno-utopian, nor techno-skeptical. The literature makes clear there should not be blind or uncritical acceptance of ubiquitous technology use in schools. In fact, many of the voices cited immediately above advise caution regarding the uncritical acquiescence to the ongoing pressures of the EdTech industry. Nor should the academy and practice be blinded by the turn to technology mediated learning as a consequence of the pandemic response. A critical perspective assists in the evaluation of this turn and its effects on the profession. However, as curriculum development, pedagogical theory and practice are constantly evolving, the challenges of TEL integration provide an opportunity to re-conceive the strategies required to teach students and support the needs of teachers and students. It is envisioned that this thesis contributes to such a re-conception.

In the Australian context, there is some opinion that comprehensive integration of TEL in schools, and the opportunities that may be offered by it, had yet to be accomplished throughout the decade up to the watershed pandemic year of 2020 (see Abbott, 2016; Bate et al., 2012; Brown et al., 2020; Flack et al., 2020; Males et al., 2017). Earlier studies such as Abbot (2016), Bate et al., (2012), and Males et al., (2017), all took place after the Rudd Government's Digital Education Revolution (DER) in 2011 (Chapman & Buchanan, 2013; DESE, 2008) through which the integration of ICT in schools became national government policy. However, many obstacles were encountered and the results of such a revolution have been debated (Bate et al, 2012; Carter, 2019; Keane & Keane, 2018; O'Mara et al., 2017; Males et al., 2017). The

political, social, economic and cultural barriers that contributed to an unequal TEL experience for Australian teachers and students over the past decade were still evident in 2020, as emphasized in various reports (Brown et al., 2020; Flack et al., 2020; Graham & Sahlberg 2020, 2021). In particular, Graham and Sahlberg (2020, 2021) suggest that sociocultural, economic and behavioural barriers to digital technology integration were still considered to perpetuate and indeed amplify in this pandemic era due to the wide reaching and comprehensive effects of the COVID-19 virus.

Research aims

This thesis aims to understand the complex relationships that exist between teachers and technology, and its deployment, specifically in Western Australian secondary English classroom settings. It also aims to investigate the factors that may influence teachers' use of technologies in such settings. Furthermore, in answering the research questions, this study aimed to support teachers and their practice in the field, by exploring advances in TEL theory in relation to their lived experience. Lastly, for this researcher, and due to the necessarily small scale of this research project, it is envisaged there may be scope for expansion into a larger design for scholarship at the doctoral level.

The research questions

The iterative process of composing and constructing the research questions benefited enormously from the review of the literature (see Chapter 2), and as explained above, three knowledge gaps were identified that evolved into three research questions.

- 1. How have secondary English teachers experienced TEL during and after the COVID-19 pandemic lockdown periods?*

2. *What are English secondary teachers' beliefs, attitudes and values in relation to using TEL?*
3. *How does technology-enhanced learning affect the pedagogy of secondary English teachers?*

Epistemology and ontology

As a novice researcher, I recognise that my educational and social experiences shape how I think and construct knowledge (epistemology), and further, shape my conceptualisation of reality (ontology). Similarly, I believe, that, for all human beings, our ontological perspective is socially constructed (Mertens, 2005), involving ideas that originate in the European philosophical traditions of phenomenology and hermeneutics. However, beginning in my formative teenage years, I have always carried a perception, an awareness of the other, and with it, the possibility of different points of view. This translates into a belief in reality's multiple and elastic potential. Such awareness was heavily influenced by two deeply inspiring secondary teachers at school: one a Media Studies teacher and the other an English Literature teacher. These two teachers exposed me to the ideas of John Berger (1972), Marshall McLuhan (1964, 1967, 1989), Greimas (1970) and Claude Levi-Strauss (1978), as well as the post-modernist ideas and traditions of absurdism in the literature of Albert Camus, Samuel Beckett and Tom Stoppard. Alongside my interest in English Literature, I was very much aware of my aptitude for visual literacy during my high school years, through popular culture and the visual arts that resonated with me. My journey into the world of English Language Arts continued in the mid-eighties as an undergraduate Film and television major at Curtin University, where I discovered the revelatory writings of Roland Barthes, Michel Foucault and Noam Chomsky, and gained a Bachelor of Arts degree in the process.

On reflection, it is no great surprise to see that I made a long career out of my interest in communication, visual language, and mass media within the broadcast television industry. In my professional career, I not only made a living out of my visual literacy and the grammar of television as a medium (Fransecky & Debes, 1972; Messaris & Moriarty, 2005), I also experienced digitalisation (Bloomberg, 2018; Brennen & Kreiss, 2016) in many levels of the communications industry. In some ways, I retained a front seat to significant changes in the way both old and new media operate and the effects these changes have on societies and cultures the world over. However, I also remained inquisitive about multimodal communication, its conventions, ways of reading and multiliteracies. Television is now considered 'old media' and struggles for relevance in the digital age (Scolari, 2018). So, it is with the subjectivity of a pre-digital living through this era of change, that I attempt to explore the profound effects of technological change on the education landscape. This contextual detail attempts to provide the reader with a sense of my epistemological and ontological positioning for the conduct and design and explication of this study. Such a positioning colours and frames the construction and intent of the research questions, the choice of interview style, and the analytical choices that coherently aligns with qualitative and interpretivist traditions.

This introduction has presented the background to this thesis, along with the research opportunities, aims, and questions. It also outlined the positioning of this study in regard to a constructivist-interpretivist epistemological and ontological approach to research. In doing so, it has provided context and understanding as to why such inquiry into technology is relevant to contemporary education research. This thesis consists of five further chapters. Next, I conduct a literature review that identifies the research gaps alluded to above and provides detailed justification to the study. Chapter three describes this study's research design, including the

methodological basis and reasoning for the structure of the project. Chapter four presents the results from a thematic analysis, emanating from the interview data. The penultimate chapter, Discussion, interprets the findings with a sociocultural theoretical lens and explores further links to the literature to respond to the three research questions. Lastly, the concluding chapter summarises the conclusions, discusses the limitations of this study, and foreshadows future research pathways.

Chapter 2 Review of Literature

Introduction

This chapter presents a review of the literature on teaching with technology and technology enhanced learning (TEL). In doing so, this literature review has two aims, the first to take a thematic view over the global field of technology-enhanced learning to create an understanding of the contemporary contexts of TEL. Second, the chapter aims to identify gaps, differences and commonalities in the literature that inform the research questions of this study, and aid in the design of future research regarding teacher experiences and perceptions when integrating TEL in Western Australian schools.

This review begins by providing a background to the contemporary contexts of technology use and identifies key theoretical and conceptual developments that are foundational to the field and discusses how these concepts continue to influence scholarship in the area. Next, the review examines how the field has, over the previous two decades, come to a general consensus over some terminologies and conceptual approaches that describe teaching with technology. This is followed by a brief comparison of selected TEL literature found in global, national and local-level contexts, exploring similarities and differences to identify gaps in the literature and provide possible pathways for further research. The review then shifts focus to the literature on teachers, pedagogy and technology, and examines the barriers and enablers to technology integration in secondary education. Finally, the review explores two contemporary conceptual frameworks that may provide some future direction for twenty-first-century secondary education research.

Contemporary Contexts

Education systems globally have been adjusting to the rapid changes in society, culture and the increased dissemination of knowledge that digital technologies have brought to humanity (Ertmer, 2005; EU Council, 2006; UNESCO, 2012). Such adjustments can be observed at the global, national, and state level, continuing through to the local school level. In the Australian context, changes have been observed by schools, teachers and parents regarding the nature of childhood, student learning and socialisation in this digital age. Gallop et al., (2021) and Graham and Sahlberg, (2020, 2021) report significant concern that technology has fundamentally altered and is continuing to transform individuals, society, and education. Such concern is driving not only evolution in teacher practices, but also change in school cultures and leadership team approaches in relation to technology (Abbott, 2016; Ávila & Pandya, 2013; Lamb & Weiner, 2021; Tawfik et al., 2021). Such evolution in school technology cultures is seen as key to supporting teachers' intention to integrate technologies into their approaches (Pegrum et al. 2013). It is also clear that technology and education are now significantly interrelated, perhaps more so than at any other time in human history.

Despite some nations having achieved rapid and successful integration of technology with learning, other countries have reported more fragmented and mediocre success over the past two decades. Education research literature over a similar time period generally supports the view that technology-enhanced learning (TEL) has not been the 'digital silver bullet' to drive improvement in educational outcomes globally. Numerous studies identify these early expectations from the 1990s (Alvarez, 2019; Boyle & Cook, 2004; Conole & Dyke, 2004; Heeter, 1999; O'Mara et al., 2017; Jandrić, 2018; Selwyn et al., 2020; Smirnova et al., 2018), but these projects combine to paint a picture of unfulfilled promise when seen from the vantage point

of 2021. Consideration should, as Selwyn et al. (2020) suggest, focus not on the facts of technological change, but on how pedagogical practices may not have kept pace. It is also suggested that further exploration into the types of sociocultural and other barriers Blume (2020) and Drossel et al. (2020) have identified as constraints to further integration of TEL in modern education settings, are necessary to further understand why education technology is not the ‘digital silver bullet’. Before detailing the findings of this literature review, it is beneficial to briefly describing how the body of literature was explored in the context of educational technology.

Review methodology

This scoping literature review was based on searches across multiple databases using keywords such as technological literacy, computer literacy, educational technology, teacher competencies, that resulted in 275 peer-reviewed articles. These articles were then filtered for historical relevance and contribution to discourse in the field of education and technology. Due to the nature of the keywords, there was a wide spectrum of articles that represented studies in all levels of teacher practice (K-12 and higher education) and although the terminology has evolved, some concepts and theoretical frameworks recurred often. Consequently, it became clear that over time, the work of certain authors had been accepted as foundational to the field; for example, Mishra and Koehler’s (2006) Technological, Pedagogical, and Content Knowledge (TPACK) framework was the most frequently referred to, with 44 article citations, and Puentedura’s (2006) Substitution Augmentation Modification and Redefinition (SAMR) model was the second, with 19 citations out of 275. It is evident that both frameworks and models have been influenced by Gibson’s (1966, 1979) seminal work on affordance theory and each has had a wide impact on the field of education and technology by focusing on the skills and content

capabilities necessary for TEL. It was also evident from such a wide-ranging set of articles that sociocultural theory was an approach that many authors drew upon for analysis of TEL, in particular the seminal works of Lev Vygotsky (1978, 1981), and subsequently those of Wertsch (1993, 1994, 1998) and Leontiev (1981), were heavily influential in the evolution of education technology and pedagogical research. In addition, there has been important research into more subjective enablers and barriers that determine technology use by teachers (Bower, 2019; Ertmer et al., 2011; Hobbs, 2019; Suarez-Rodrigues et al., 2018).

The terminology of the field has been wide and disparate, and it has taken some time for some agreed and common terminology to emerge. In fact, despite the term being already in use for at least ten years (Heeter, 1999), TEL was adopted by the UK Higher Education Funding Council for England (HEFCE, 2009) and by the Universities and Colleges Information Systems Association (UCISA) (2008) to describe the acts of teaching with technology. Whilst it is acknowledged there are some etymological and ontological limitations (Bayne, 2015; Kirkwood & Price, 2014), the term has now endured for over two decades (Bower, 2019; Bower & Vlachopoulos, 2018; Passey, 2019). For the purpose of this literature review, technology-enhanced learning (TEL) is defined as the facilitation support and discovery of knowledge through the use of digital technology. This technology can be hardware and software, such as, but not limited to digital applications (apps), mobile devices (smartphones and tablets), e-learning software, interactive whiteboards, Learning Management Systems (LMS) and digital dashboards, as well as overarching networked learning environments (Habib & Johannesen, 2020; Kirkwood & Price, 2014; Passey, 2019). Indeed, when exploring the use of TEL and the wide range of digital tools available to facilitate and support learning, consideration of the

specific sociocultural contexts of school, classroom, and teacher should be made as these may have greater influence than may at first seem evident.

A paradigm shift

To reflect upon the year 2020 and how COVID-19 changed the world, is to acknowledge that societies, sociocultural and education systems all experienced profound impacts. For education, it came in the form of a response to the COVID-19 pandemic: the emergency pivot of education systems the world over towards home learning and teaching via the internet (Abaci et al., 2021; Bouffard, 2020; Connolly et al., 2020) that would provide some continuity of learning for students. The terminology that describes the responses of governments and education authorities in the face of significant disruption is that of crisis management: ‘emergency response’, ‘pivot’ and ‘continuity plans’ all invoke the need for public reliance on institutions and social systems during a time of crisis. Education is a case in point because education is a human right as codified by UN Declarations (United Nations, 1989) and international treaties (UNICEF/UNESCO, 2007). However, recent epidemiological studies have already begun to question the efficacy of, and justifications for, school closures during the pandemic. For example, Viner et al, (2020) conducted a review of the epidemiological modelling and data from China, Hong Kong and Singapore, suggesting there were negligible benefits to be gained from closing schools as a public health policy response.

Just as many nations had varying degrees of success in controlling the pandemic, education systems also experienced great variance in outcomes from the emergency pivot (Blume, 2020; Borup & Archambault, 2020; Gudmundsdottir & Hathaway, 2020; Thompson et al., 2020), with some commentators describing a “lost year” (Bazelon, 2020) that has seen impacts such as access and sociocultural inequities highlighted further (Allen et al., 2020; Brown et al., 2020; Flack et al.,

2020; Hall et al., 2020). Other jurisdictions have experienced minimal disruption to learning and returned to face- to -face teaching within weeks or months and emerging literature is beginning to explore the multiple and varied effects of the pivot (Hodges et al., 2020; Joia & Lorenzo, 2021). This is true of contemporary studies published in the UK, the EU and North America (Giunco et al., 2020; Gourlay, 2021; Gudmundsdottir & Hathaway, 2020; Moore et al., 2021; Reich, 2021; Trust & Whalen, 2020). However, a growing number of Australian research studies and reports, notably Brown et al., (2020); Flack et al., (2020); Gallop et al., (2021); Graham and Sahlberg (2020, 2021), have also explored the pivots in 2020 and 2021 and the impacts on the provision of education at all levels.

Of note are Gallop et al.'s (2021) *Valuing the teaching profession - an independent inquiry*; and Graham and Sahlberg's reports *Growing up digital Australia phase 1(2020) and phase 2 (2021)*. All three reports highlight the significant effects of the pandemic on teaching and learning and give voice to stakeholders such as teachers, parents and principals through the reporting of stakeholder survey data. Both teams of authors convey an understanding that considerable reflection on this time of disruption is warranted, not just at the macro social and systemic level, but also at the micro school and classroom level. Whilst Gallop et al.'s (2021) inquiry report for the New South Wales Teachers' Federation had a wider remit than a focus on the effects on the pandemic, it also investigated pedagogical, sociocultural and technological issues raised by teachers in relation to student learning, teaching and stakeholder support during the emergency response online teaching (henceforth, EROT) period. Similarly, Graham and Sahlberg's (2020) phase 1 Gonski Institute report, had a wide remit that focused on data from Australian educators regarding children in their classrooms growing up in digital Australia. However, Graham and Sahlberg's (2021) phase two report discussed the data from a survey of

Australian parents and guardians, combining impacts of digital technology and the COVID-19 pandemic and the subsequent implications for Australian educators, guardians, parents, and policy makers. Amongst many salient findings, Graham and Sahlberg's phase 2 report found that "COVID-19 changed everything" (p. 2). Consequently, they found that parental attitudes towards digital media and technology had shifted from scepticism and suspicion at the time of the pandemic outbreak in 2020, towards a pragmatic acceptance, following the events of 2020 and 2021 in Australia. Certainly, there is lack of literature exploring how teacher attitudes and beliefs may have changed since the EROT period, and how such change may impact on further TEL integration in schools. This gap in the literature is explored by *research question one*.

Turning to the local context, there was little contemporary literature from the last two years that explored technology integration experiences in the Western Australian education system. Further inquiry into how curriculum, school, and teacher practices may have adapted may be necessary to identify new themes, adaptations, and pedagogies that may inform future practices in the field. However, having identified a lack of recent Western Australian literature in this field, the review drew attention to the earlier, notable exceptions of Bate et al. (2012), Parker et al. (2013), Maor (2017), and Males et al. (2017) whose pre-pandemic studies explore Information and Communication Technology (ICT) integration and mobile learning impacts on student outcomes in Western Australia. Considering the findings of both Bate et al. (2012) and Males et al. (2017), these studies suggest a level of parental dissatisfaction with the classroom laptop use, and negligible student performance increases through mobile technology use respectively. Together with the body of Australian education technology literature, one can infer that the Western Australian experience of technology integration mirror that of the national experience, specifically that such integration has been complex, uneven, and mediocre (Abbott,

2016; Cochrane, 2020; Kervin et al., 2013 Orlando, 2014). Therefore, it is important to further investigate how technology integration has possibly evolved, or not within the context of secondary education in Western Australia.

The field matures

The field of TEL has evolved over the past two decades to agree on terminology and key factors of influence, but it is within the realms of framework and theory that diverse viewpoints can and should ignite robust debate. This can be evidenced in the early discussions around ICT and affordance theory (Boyle & Cook, 2004; Conole & Dyke, 2004; Hutchby, 2001), to the recent theoretical debates around the concept of post-digital (Cascone, 2000), (described as the era beyond the earlier digital revolutions of the 90s and early 2000s) and its influences on education (Arndt et al., 2019; Jandrić et al., 2018; Jandrić et al., 2019) and the philosophy of technology (An & Oliver, 2021; Surry & Baker, 2016). Surry and Baker (2016) articulated a desire to move the field beyond the old debates surrounding usage and prohibition, and the dialogic between the techno-enthusiasts and the techno-sceptics (Castañeda, & Williamson, 2021), towards a contemporary post-digital (Cascone, 2000) field of education; one that infers an acceptance of the role that ubiquitous digital technology plays in pedagogical practices (Jandrić et al., 2019). As Selwyn (2014) suggested, this shift requires a change in focus away from the advantages and affordances of educational technology “the state of the art”, to “the state of the actual” (p. 15), that explore the grey areas of the field where binaries of black and white, or pro and anti are not reflected in the realities of technology use in schools.

Globally, there has been an acceptance of technology’s potential to greatly transform education and society (An & Oliver, 2021). However, a cautious and critical approach was exemplified in recent studies such as Arndt et al. (2019), Bower, (2019), Castañeda and

Williamson, (2021), Falloon, (2020), Selwyn, (2013), and Selwyn et al. (2020). This critical and cautious approach has also been reflected in the formation of theoretical frameworks through which to understand the complexities that exist in the field of TEL. Examples of frameworks include the aforementioned, Technological, Pedagogical and Content Knowledge, (TPACK) (Mishra and Koehler, 2006), the Substitution, Augmentation, Modification and Redefinition (SAMR) model (Puentedura, 2006), and more recently, the International Society for Technology in Education (ISTE) standards for educators framework (International Society for Technology in Education, 2017). As conceptual and organisational frameworks, these three models focus on the technological skills and capabilities deemed necessary for teachers. Such models also represent an evolution in how the Academy understands the complex relationships that occur between teachers, students, schools and technology as well as the sociocultural contexts in which these relationships occur and the impacts these all have on the learning process. I will return to the idea of TEL framework evolution later in this literature review when looking at recent development towards a more comprehensive framework for the future, but first will briefly examine how sociocultural contexts impact TEL integration.

Local national and global contexts

In jurisdictions across the world, schools and teachers make pedagogical choices every day about TEL. Importantly, Western Australian schools are given relative freedom to make such pedagogical choices in alignment with their own socio-cultural context and within the boundaries of the Department of Education's third-party services policy (Western Australia Department of Education, 2020). However, these choices also sit within the context of the National Curriculum requirements and national pedagogical aims as codified by the *Alice Springs (Mparntwe) Education Declaration* (Education Council, 2019). Significantly, the

Western Australian third-party providers policy categorises external application (app) providers by the level of permission required by a school community for each application to be used. For example, Microsoft Office applications require no parental consent for use in schools, but a service such as Pinterest has a ‘Do not use’ classification. However, Padlet, YouTube and Google Maps have a ‘bundled’ parental consent level where consent is sought once at the beginning of the year for a range of applications that may be used in classrooms.

These pedagogical choices may be influenced by a range of observable factors, for example, the teacher choice of an app or software that utilises lower-order student skills rather than one that affords more independent learning activities or critical thinking skills that may be more challenging for students (Puentedura, 2006). In making this choice, a teacher may be heavily influenced by the school’s culture of trust in the students to work on-task and in an effective manner with independent digital-based learning (Abbott, 2016; Blundell et al., 2020). Indeed, it is evident from the literature that teacher trust in students when using technology in class is a significant and recurring contemporary theme (Abbott, 2016; Blume, 2020; Blundell et al., 2020; Mansfield, 2020; Nikolopoulou, 2020), and while the noble aims of inclusive, co-constructed knowledge environments, in theory, may be achievable, the pragmatic realities of classroom management and safety may result in regulation overriding some teacher pedagogical options.

When considering the complex relationships students have with technology and devices and issues to do with authority, self-regulation and student distraction, it should be noted that in WA, one area of prescriptive regulation is the prohibition of unsupervised mobile digital devices during school hours (Western Australia. Department of Education, 2019a; 2019b). This type of regulatory prohibition is increasingly common in western liberal democracies (Selwyn &

Aagaard, 2021). However, this type of policy may impact on the way teachers view technology because it taps into larger technology narratives and it may further problematise the issue of teachers' trust in students regarding device use, even when that use is supervised in classrooms (Buchanan et al., 2019; Hobbs, 2019; Nikolopoulou, 2020; O'Mara et al., 2017). This type of blanket school hour ban on mobile phones is now Education Department policy for five Australian states and implemented across all education sectors. However, the Gonski Institute report phase 1 (Graham & Sahlberg, 2020), advised against such blanket bans as a response to the challenges that devices represent because the education system must:

...help children adopt and learn ways of living responsible, safe and healthy lives in the digital world around them. This is not achieved by allocating blame or banning technologies (like smartphones), but by mindful education and working together on smarter sustainable solutions (p. 2).

Graham and Sahlberg (2020) acknowledge that blaming devices "is not the smartest strategy" (p. 28) and suggest that the quotidian nature of technology use in modern society means that teachers, schools, and parents, all need to present mindfully positive and healthy ways for students to interact with powerful technologies, such as smartphones. This positive pathway may need to include more techno-social pedagogical approaches towards the teaching of digital self-regulation skills, agency and self-motivation and this would require input from all stakeholders. Graham and Sahlberg (2020) make clear that quick fixes, such as mobile phone bans, are not proper solutions to the problems regarding the safe and responsible use of technology in school settings and beyond.

Indeed, Selwyn and Aagaard (2021) highlight their concern, not only that the blanket bans on mobile phone use in schools represents a growing trend of digital education curtailment,

but they also express concern at a lack of academic response to such prohibitions. In suggesting future scope for such academic response, Selwyn and Aagaard (2021) focus on five areas of concern that are associated with the banning of phones from schools: technology addiction, digital distraction, cyberbullying, surveillance capitalism, and the environmental sustainability of digital education. Each of these five areas can be viewed as sociocultural technology narratives that are contemporary touch points and contested topics of debate in the modern digital era.

In Australia, extant challenges and anxieties around ubiquitous and everyday use of TEL in schools have been documented (Abbott, 2016; Buchanan et al., 2019; Crook et al., 2017; Kervin et al., 2013; Males et al., 2017). However, these studies demonstrate that many schools and educational institutions are nowhere near close to, what Cascone (2000) termed post-digital (see also Arndt et al., 2019; Jandrić et al., 2018; Jandrić et al., 2019). The post-digital viewpoint is a general assumption that this modern era is so intertwined with ubiquitous technology, it becomes invisible. I contend that this post-digital viewpoint, whilst valuable in some instances, is situated far in advance of current technology use in schools. This disconnect between the approaches of the Academy and practice may encourage further research and debate within the field that may offer advancement towards a theoretical perspective that holistically explains how key factors interrelate in the real world and they influence TEL in schools. Further exploration may illuminate why uniform and universal adoption of TEL is yet to be achieved, have implications for the field and represent fertile ground for education research.

National Policies and approaches

Returning to the Western Australian context and noting that there is a paucity of literature in the field of TEL, (with the exception of the aforementioned Bate et al., 2012; Males et al., 2017; Maor, 2017), this limitation contrasts with the vast number of studies into the field

globally. It may be instructive to compare what is known of the Western Australian experience with technology in schools to what is found overseas. For example, in her study of Greek secondary teachers and their perceptions of technology use, Nikolopoulou (2020) described how teachers are largely wary of introducing mobile devices (smartphones and tablets) into classrooms and are reticent to integrate technology further than is deemed necessary. This Greek experience and technological context may be similar to the Western Australian experience of technology integration. In both jurisdictions, state schools are afforded some freedom in meeting national curriculum standards and requirements, despite the neoliberal landscape that has focused on specific content and skills in relation to professional practice (Australian Curriculum Assessment and Reporting Authority [ACARA], 2018; Nikolopoulou, 2020; Western Australia. Department of Education, 2020). In Western Australia, individual schools and their leadership teams have the freedom to implement as much or as little technology into their pedagogical approaches as deemed necessary. Of course, this freedom is qualified and curtailed by the aforementioned mobile phone ban in state schools.

Similarly, the Greek position is that mobile devices have been banned by legislation since 2018 and this is still in force at the time of writing (Nikolopoulou, 2021); however, according to Nikolopoulou (2020), the national curriculum only references ICT within the context of some secondary subjects, but crucially omits any reference to mobile technology and devices. By contrast, most Australian states do allow mobile technology and devices to be used, but only when under teacher supervision and using the Education Department's own safe internet browser. However, it must be said there is a growing body of studies that contest the pathway of prohibition and curtailment of device usage in educational settings. Similarly, psychologists, educators and academics continue to debate the 'pathologization' (Billieux et al., 2015. p. 122)

of technology and device usage by using the terminology of addiction to describe the possible habitual distractive effects of digital devices (Cerniglia et al., 2017; Pies, 2009; Selwyn & Aagaard, 2021). Few studies or reports exist that explore problematic mobile device usage in Western Australian or Australian schools, with the notable exceptions of Beland and Murphy (2016) Buchanan et al. (2019), Graham and Sahlberg, (2020, 2021). However, apart from agreeing there is an extensive problem to be addressed, systematic and stakeholder inclusive solutions have yet to be adopted, apart from the simplistic yet popular ban on mobile phones.

Nikolopoulou (2020) concluded that the use of technology in Greek schools is “negatively affected by the current legislative framework” (p. 259). It is clear such policies have real effects on teacher attitudes and perceptions about technology and the relationships that teachers, schools, students and parents have with mobile devices and digital technology. There are observable anxieties, frictions and contradictions to be explored by future research. One question that this Greek study does not fully explore, and may be valid to ask is: what specific motivational effects do such prohibitions exert on teacher use of mobile technology? It is a suitable line of inquiry because teachers do allow and utilise such devices for learning in both Greece and Australia, and both cohorts of teachers will therefore need specific ‘digitally aware’ class management techniques to ensure safety and effective learning. One could extrapolate that local regulation around these devices may also negatively impact on technology integration in Western Australian schools, and to return to the idea of a contemporary ‘post-digital era’, the Greek and Australian contexts illustrate it will take some time to reach a ‘post digital’ level of operationalisation in schools (Jandrić et al., 2019).

Teachers, Technologies and Pedagogies

Teacher self-efficacy is a recurring thematic factor in the field of TEL and a significant body of literature highlights how subjective self-perceptions, such as views on self-efficacy and belief systems are central to the process of TEL deployment in classrooms (Abbott, 2016; Kervin et al., 2013; Lloyd et al., 2015; Orlando, 2014; Suárez-Rodríguez et al., 2018; Saudelli & Ciampa, 2016). Moreover, it can be said that these teacher subjectivities should not be identified and analysed separately as independent factors, rather they need to be understood as complex interrelating co-factors in positioning teachers to the technologies they use and the pedagogical positions they take in using such technologies. In this regard, Ching and Wittstock (2019) state that “it is possible for technology to drive pedagogy, or (more accurately) to mediate teaching as an activity” (p. 164), and therefore technology and pedagogy can be closely interrelated. By describing the possibility of technology mediating teaching, Ching and Wittstock (2019) invoke the seminal works of Vygotsky (1978; 1981) and Wertsch (1993; 1994; 1998) in regard to mediational theory in human cognition and indeed, much of the large body of literature on educational technology frames its use within a sociocultural theoretical perspective. This perspective assists in understanding the complex relationships humans have with technology.

Furthermore, Ching and Wittstock (2019) state that this concept of a bi-directional interrelationship runs counter to the prevailing idea that pedagogy alone should drive technology use. According to the authors, a process of dialogic negotiation between teachers and the technology they use in class, shape practices and pedagogies; simply how “teachers and their tools shape one another” (p. 178). The premise that the authors base their research on is that “any use of a tool or technology in human activity shapes that activity, often in profound ways” (p. 164). What Ching and Wittstock (2019) describe also derives from much earlier sociocultural

theorists such as Rogoff (1995) and Wertsch (1998), who maintain that it is necessary to focus on the individual intentionally acting through choices, rather than on the tools or individuals alone. Harrison et al. (2014) highlighted the differing and often mismatched pedagogical goals of schools, that prioritise ubiquitous learning with technology and the departments and teachers, who integrate technology “only where useful” (p. 350). Such misalignment of pedagogical goals may be influenced and subject to sociocultural, political, economic and individually subjective, conditions that may be found in education systems the world over.

Of critical importance here, is the interrelationship between teacher and technology, which can be described as a process of appropriation (Laffey, 2004; Rogoff, 1994; Shin, 2014). For example, when a teacher devises a technology-based context or lesson plan, then prepares the resources, rehearses and deploys such technology in class, this is a processual act of appropriation- a term that draws upon the Bakhtinian concept of a dialogic process (Bakhtin & Emerson, 1984) embedded in sociocultural theory, as it applies to the contexts of teaching and learning. Such applications of sociocultural theory were further developed and were widely influential in education theory (Matsov, 2009; The New London Group, 1996). In this brief example, a new technological tool that has been devised, constructed or coded by another actor is now made to be their own, modified by the individual teacher intention, usage and style of delivery.

Ching and Wittstock (2019) described this process, of new technology adoption by the participants, as a three-phase process of individual “appropriation, resistance and transformation” (p. 167). This process can be iterative and perpetual, as observed when teachers may encounter new LMS dashboards, with visual metrics, analytical tools and novel software. Such a process of exploration and adaptive learning with new technologies for, what were previously analogue

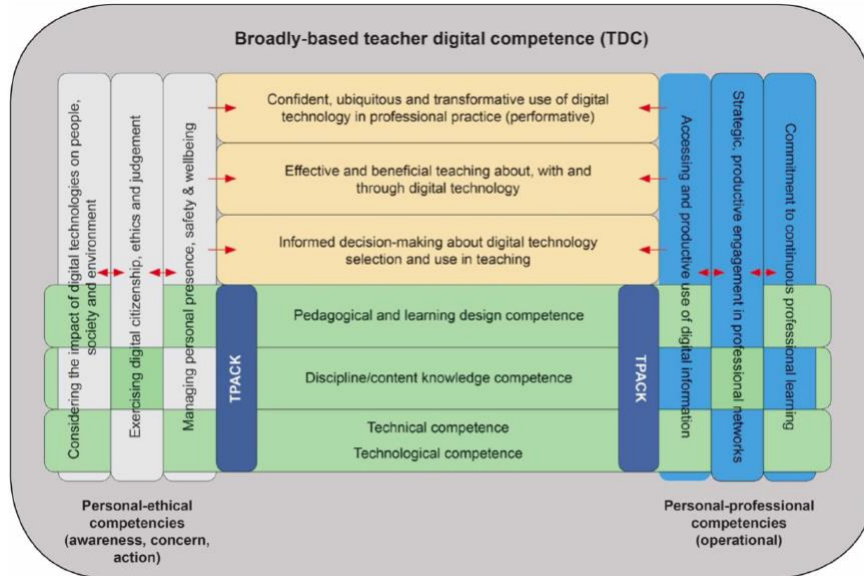
tasks, is a form of appropriation and eventual transformation. This also links into, and reinforces, the concept of the agentic self as explored and described by Holland, (1998) and Hull and Katz (2006). Therefore, the theme of teacher self-efficacy is a highly influential factor in technology integration in schools. When Ching and Wittstock (2019) describe how teachers and their digital tools shape and transform each other, this closely aligns with affordance theory (Hutchby, 2001; Hammond, 2010; Wertsch, 1998). Another factor that influences teacher adoption and deployment of TEL and is related to the process of appropriation is what Smirnova et al. (2018), identified as “the entry effect” (p. 232). This determining entry effect may be encountered more often due to the ongoing evolution of technologies that continually offer teachers new ways to explore their curricula. Smirnova et al. (2018) also suggest that educators may be prone to resist new digital technologies when they lack the background knowledge and understanding to have agency over those tools. It is clear from this scoping literature review, there are many observable determinants to be explored and this close interrelationship between teacher and technology is a critical area of scholarship in TEL.

A new framework for the twenty-first century

Within this review, there is a body of literature that explores the nexus between teacher technological beliefs, attitudes and usage. Specifically, previous research has established that teacher beliefs and attitudes are key determinants in TEL integration (see Abbott, 2016; Albion & Ertmer, 2002; Drossel et al., 2020; Falloon, 2020; Janssen et al., 2013). To better understand the interplay between technology use and teacher subjectivities, Falloon (2020), categorised these attitudes and dispositions as “personal-ethical and personal-professional competencies” (p. 2458) within his *Teacher Digital Competence (TDC)* model (see Figure 1).

Figure 1

Teacher Digital Competency (TDC) framework



Note: From “From digital literacy to digital competence: The teacher digital competency (TDC) framework”, by G. Falloon, 2020, *Educational Technology Research and Development*, 68(5), p. 2459. <https://doi.org/10.1007/s11423-020-09767-4> CC License

Falloon’s concept is an expanded TPACK (Mishra and Koehler, 2006) model that can be used as a framework for planning at curriculum, subject and lesson plan levels in both secondary and tertiary education and to further understand the interrelated nature of knowledge, beliefs, attitudes and technology deployment. This model was developed as a holistic digital competence framework with two main objectives; first, to support teachers in the field to develop their students’ and their own digital competencies and second, to be a comprehensive framework that moves teacher education beyond prevailing deterministic notions of technical and literacy skills into a more integrated broad and sociocultural view of education technology.

The literature suggests that an important pathway to further effective integration of TEL in schools is in preparing undergraduate teacher education students to have competencies for

operating in technology-mediated environments. This premise is reflected in a significant body of the literature that recognises the higher education sector as a major stakeholder in the future use of TEL (Borthwick & Hansen, 2017; Claro et al. 2018; Falloon, 2020; Guzman & Nussbaum, 2009; Maor, 2017; Ottenbreit-Leftwich, & Ertmer, 2010; Valverde-Berrocoso, 2020), given the significance of TEL to educational outcomes in the modern era. Therefore, it is necessary to note that (beyond the scope of this small-scale study), the institutions of teacher education have an important influence and vital role in understanding how teacher skills, capacities, competencies as well as personal and professional values are formed, embedded and then operationalised as part of pedagogical practice.

As alluded to earlier, Falloon's (2020) TDC framework (see Figure 1), offers the higher education an enhanced version of Mishra and Koehler's (2006) widely accepted TPACK framework. TPACK is a model to guide educators at every level when making choices regarding pedagogical, technological, and content knowledge. However, despite TPACK's wide acceptance in the field, it has been criticized for prioritizing skills and content without consideration of the wider sociocultural aspects of digital technology use and its impacts. Falloon (2020) reports that TPACK has also resulted in a propensity for schools and teacher education to develop pedagogical and content knowledge separately from technological knowledge in a siloed way, rather than designing courses or lessons with a fully integrated approach. Such criticisms were also highlighted in earlier studies (see Drossel et al., 2020; Ndongfack 2015; Saudelli, & Ciampa, 2016). However, in this respect, Falloon's TDC model (2020) represents an integrated approach that encourages student teachers and educators alike, to develop competencies "beyond didactical application of digital technologies to a more holistic view encompassing personal and societal considerations" (p. 2458). Time will tell how this comprehensive framework gains

acceptance in the academy and in practice; however, its practical application may provide a basis for education to address some of the complex issues, barriers and enablers to TEL integration.

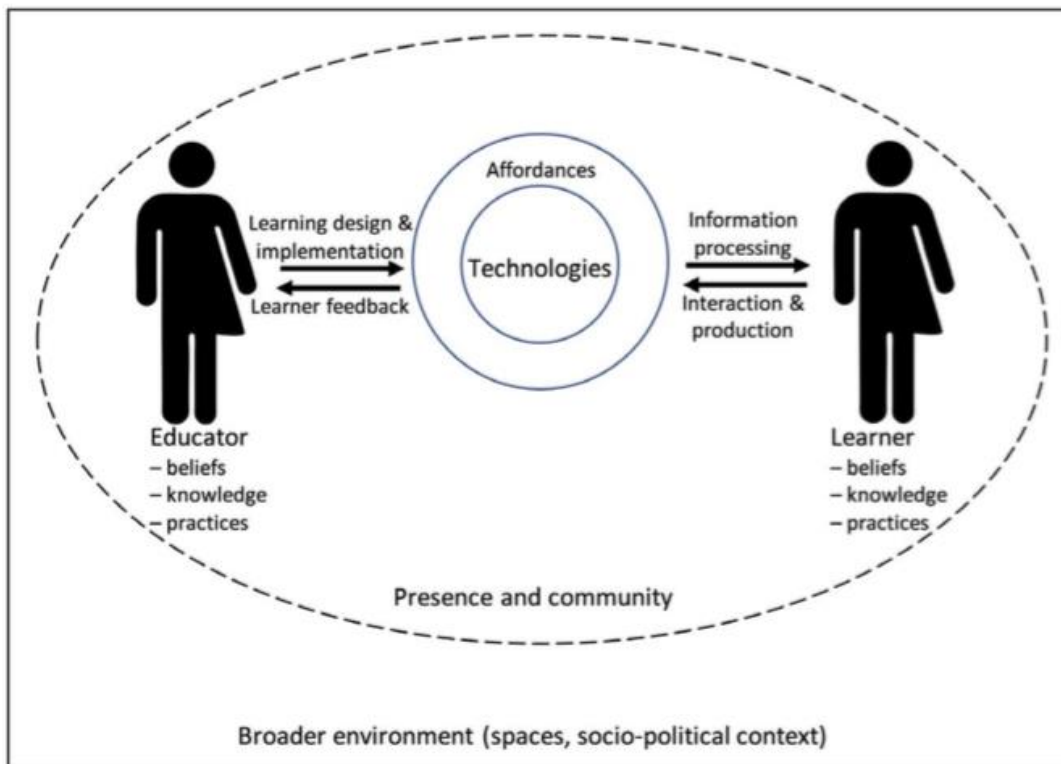
Education research and technology-enhanced learning

Recent education research literature has attempted to provide an integrated approach to what has been a siloed, multi-stranded and fragmented theoretical evolution within the field of TEL (Blume, 2020; Bower, 2019; Falloon, 2020; Segal & Heath, 2020; Valverde-Berrocoso et al., 2020). Indeed, these authors all identified deficiencies in prevailing theoretical approaches to TEL and its integration into practice, including a lack of focus on broader, but equally important sociocultural issues when investigating technology and education. However, such concerns have been previously voiced (see Feenberg, 2002; Feenberg & Jandrić, 2015) and derive from a critical theoretical tradition that acknowledges how sociocultural values intersect with technology based on the works of Daniels (2008, 2015, 2016), Engeström (2001, 2014), Vygotsky (1978, 1981) and Werscht (1993, 1994, 1998, 2002). This type of approach enables the possibility of more culturally and socially aware critical discourses, based on a mediational understanding of technology rather than “deterministic approaches to learning technology research” (Bower, 2019. p. 1036).

Bower (2019) proposed his *technology-mediated learning theory* (see Figure 2) as a conceptual framework that illustrates the complex interactions between teacher and learner, when mediated by technology affordances.

Figure 2

Technology-mediated learning theory



Note. From “Technology-mediated learning theory”, by M. Bower, 2019, *British Journal of Educational Technology*, 50(3), p.1042 <https://doi.org/10.1111/bjet.12771>CC-BY license.

Crucially, Bower (2019) contextualised these interactions within broader socio-political spaces that house individual presence and community, shaping beliefs, knowledge and practices of both teacher and learner (see Figure 2). To date, no research has been published that explores the application of this theoretical framework, but the model provides an opportunity to further conceptualise and understand the complex interactions that occur during teaching and learning with technology. There are similarities with the aforementioned *Teacher Digital Competency* framework by Falloon (2020) (see Figure 1). Both authors recognise the need to develop “a comprehensive understanding of the complex issues associated with technology-mediated

learning and their interrelations” (Bower, 2019. p. 1046), and both models explore the factors that influence teacher TEL learning design and implementation.

However, it is in the design and conceptual perspectives of both models where there is divergence. Bower (2019) explicitly locates the educator, technologies and the learner within a “presence” (be it physically or digitally) and a “community” that exists within the spheres of socio-political and cultural spaces (p. 1042). Falloon’s framework is teacher centric with technology as a ‘disembodied presence’ that needs to be mastered by teacher competencies, whereas Bower’s model takes an even broader perspective of the TEL processes- one that places technology at the centre of the teaching-technology mediator-learning model of TEL. Bower (2019)’s model illustrates how multi-directional influences can occur when technology mediates learning, but Falloon’s model does not factor in the student/learner beliefs, knowledge, and practices in the learning process because of the focus on teaching capabilities. However, the detail that Falloon’s model provides by categorising teacher competencies into either personal-ethical and personal-professional, offers a way of exploring how technology impacts on people, society and the environment, as well as the impacts on teacher professional development, networking and communicating scholastic information. These two frameworks may create new possibilities for research because they represent significant advancement in the theoretical and conceptual understandings of teaching with technology.

Conclusion

This review of literature has identified some of the transformative effects technology has, and will continue to have, on education. However, the review also highlighted a significant body of literature that contests the idea that the digital revolution is over, and the modern era is now ‘post-digital’, especially when looking at secondary education in Australia. The review also

suggested that wider society struggles to understand and make sense of the benefits and risks of technology use, within and outside school settings. It also found that serious and contested educational issues, such as student digital device distraction, should not be addressed with simplistic and symbolic curtailment. Finally, the review highlighted two recent conceptual models that illuminate the many complex relationships within the field of TEL. As educators, scholars, teachers and learners, we are only just beginning to understand the potential power of the technologies we develop and the possible consequences for human cognition. It is hoped and anticipated that these models will further guide and support stakeholders, teachers and students of the present and future as they redefine twentieth-century education.

Chapter 3 Research Design

Introduction

In the previous chapter, the review analysed the literature and found evidence that despite the expectations of the academy, state, national and supranational educational institutions, and the commentariat, the prevalence and integration of technologies in teaching practices is uneven and at times, contested. The review also identified that TEL integration has been challenged by many factors. These factors influence TEL decision making at all levels from the Department of Education to sectors and schools, specific subject departmental cultures through to individual teachers, all who express belief systems that orientate to positions on TEL integration. Therefore, the research aim is to explore and understand the factors that may influence secondary English teachers' TEL integration. Deciding how to achieve this aim required an approach that would gain the interest and trust of the teacher participants, and authentically honour and privilege the professional voice of each participant. This chapter has four sections. First, it details the study's methodology and explains how the research design aligns with the qualitative paradigm in which it is positioned. Second, the ethical basis and protocols are outlined. The third section describes the participants, the recruitment process and the sociocultural contexts. Section four outlines the methods adopted to create the data set, specifically, the semi-structured interview protocol, the idiosyncrasies of online interviewing as a method, the interview process and data collection, concluding with an explanation of the analysis methods.

Methodology

A qualitative approach

The acts of teaching, learning, constructing knowledge and meaning are all situated in social contexts, which are dependent on values and beliefs (Durdella, 2019; Pajares, 1992; Patton, 2015). It is this constructivist-interpretivist ontological perspective that positions this study in the qualitative paradigm. As Mackenzie and Knipe (2006) contend, this qualitative determination flows from the researchers' epistemological and ontological beliefs that align with the view that knowledge is socially constructed, values and beliefs are intrinsically and extrinsically culturally constructed and reality is not a priori, but interpreted and multiple (Blaikie & Priest, 2017; Durdella, 2019; Walter, 2019). This study aimed to account for and explore, the differing teaching contexts, multiple (personal and professional) voices, and the interpreted (narrated as re-told) experiences of an exemplar group English teachers. From the interactions between the researcher and participant, knowledge may be co-produced that builds an understanding of the conditions that may create participant opinions, belief, attitudes, and values (Frisoli, 2010). In this respect, by design, this study is congruent with James and Busher (2009)'s suggestion that qualitative research explores the "interplay of multiple views and voices. It allows for the construction of reality and knowledge to be mapped out" (p. 3). What follows is an explanation of 'the methodological map' chosen to navigate and investigate this knowledge, the 'reality' underpinning it, as well as the research methods and instruments selected to assist in addressing the research questions.

As described above, teaching with technology is an activity situated within a socially constructed space, with specific sociocultural aims. Therefore, this inquiry into the conditions and circumstances of TEL, is positioned within a qualitative constructivist-interpretivist

paradigm. With this research tradition in mind, the first design step was to decide how, and by what means, the data would be collected and analysed. Three choices were made in this respect: firstly, that the data collection instrument would be qualitative narrative interviews of the participants and secondly, that narrative inquiry would be the approach to the overall method of data collection. Thirdly, a sociocultural thematic approach to the data analysis was also deemed appropriate for this study. When combined as a methodology, these choices are effective because they permit the exploration of how participants construct their meanings and narratives from lived experience (Denzin & Lincoln, 2013; Durdella, 2019; Robert & Shenhav, 2014). In narrative inquiry, participants tell their stories with deep context, as opposed to the often decontextualised forms of data collection, such as quantitative surveys and questionnaires, which can be seen as empirical methods where the interaction is less participatory.

Considerable thought was also given to the physical spaces in which the interviews would occur. With sporadic COVID-19 outbreaks arising in the Perth area throughout 2021, the safest course of action (that would also meet stringent and shifting institutional ethical requirements), was to conduct all interviews online via Microsoft (MS) Teams. This decision had methodological and practical consequences. In their study, Chiumento et al. (2018) illustrate the limitations to social construction of the space, rapport building, role performance and disembodiment when conducting online interviews (p. 8). The authors noted a lack of methodological precedence for online interviewing and suggest that specific strategies to mitigate and manage these limitations should be contemplated. Therefore, when preparing the interview protocol for the pilot interview, careful consideration was given to incorporate this knowledge gained in the research field, further detail of which is presented later in this chapter when discussing methods.

Narrative inquiry

For the novice researcher, narrative inquiry as methodology and narrative analysis as a method can be bewildering due its terminology and methodological traditions, and both can be appropriated by a wide range of disciplines and ontological perspectives (Bochner & Riggs, 2014). Robert and Shenhav (2014) identified this fluid state in the field of narrative analysis and presented a typology based on two fundamental questions and assumptions about key elements that are present in all studies employing narrative analysis (p. 2). This typology forms the basis of a theoretical and epistemological foundation of narrative analysis. The first question explores the “status of narrative” by framing it as either an elemental part of the fabric of human existence, or just one “representational device amongst others” that humans use to make sense of the world (p.2). The second question concerns the “perspective on narrative” (Ibid.): is it the characteristic of a methodological approach, or a specific “object of investigation” (Ibid.)- or is it both? Indeed, Robert and Shenhav (2014) equivocate that it may be both. However, what is clear to the novice researcher is that the approach to the type of inquiry will trigger methodological implications for analysis and interpretation of the data.

This qualitative research project has as its central basis a belief that knowledge and reality are constructed and multiple (Mertens, 2005). Therefore, the choice to use thematic narrative inquiry as an interpretive method of understanding the phenomena of TEL is significant. As a narrative researcher within the qualitative paradigm, I acknowledge the power of the story because it is a human instinct to narrate (Mishler, 1995). When narratives are interpreted, they can move beyond everyday interpretation of seemingly mundane events. The process of narrative analysis can unlock more profound levels of metaphoric meaning from fragments and reminiscences that act as “exemplars of other similar, but never identical, stories”

(Conle, 1997. p. 210). These exemplars combined within this study to paint a larger picture of educational change.

It is necessary to briefly discuss how this study's understanding of narrative influenced the interview (data collection) and analysis phases. Narrative as an object, can refer to the characteristics of a sequence or succession of events (Hinchman & Hinchman, 1997; Wells, 2011). At its most granular and post-modern level, it can be a singular random event which is given context in a sequence of random events (Olivola & Oppenheimer, 2008; Radvansky, 2012) or it can be more of a 'classical' coherent sequence of events (beginning, middle, and end). However, no matter which definition one takes, these events are re-told, recounted and repackaged into words to be interpreted by both researcher and participant during and after the interview. In my view, these words may just be fragments, reminiscences or memories, or they may be conversations, stories with structure, stories about stories in the form of larger social narratives.

In re-telling stories, human beings attempt to satisfy the need to find patterns of understanding and ways to see the world and human experience (Auerbach, 2009; Gee, 2014). However, purists, or narratologists from the classical school (Robert & Shenhav, 2006), would not view this fluid and open definition of narrative as valid, as they see narrative coherence as a defining attribute (Page, 2003). This restrictive view of narrative excludes the ambiguous, incomplete and often unresolved stories of life. In rejecting the classical school's restrictive approach and adopting a post-classical approach to the fluidity of narrative, as described by Robert and Shenhav (2006), this study would search for narrative coherence, but not count it as a necessary characteristic for defining what a unit of narrative data should be. Such a post-classical

approach to the characteristics of narrative provides a wide scope for analysis and interpretation of units of data that are seen to be narrative fragments.

Narrative analysis

As alluded to earlier, my choice of thematic narrative analysis was made because I recognised the story as integral to expressing human temporal experience (Corvellec, 2006; Pinnegar & Daynes, 2007). I was also aware that the richness of the stories told would be determined by the quality of the relationships created between the researcher and the researched (Kvale & Brinkmann, 2015). Just as the participants' stories, memories, and insights were recorded as significant data of interest, equal importance was focused my own research experiences, and narratives that were documented post-interview, in the form of researcher memos and a journal. Such reflexive and iterative responses to each of the six interviews (plus one pilot interview) were included in the data set because of the interpretivist approach this study employed. Mackenzie and Knipe (2006) declared the interpretivist-constructivist researcher: "recognises the impact on the research of their own background and experiences" (p. 196). Such additional data points were useful when exploring which questions were effective in elucidating a narrative response. This approach also had an important secondary function for the novice researcher; to improve upon and further cultivate agile interviewing skills.

Ethics

The ethics code and protocols for the conduct of this research were approved by the Murdoch University Human Research Ethics Committee (approval 2021/115) in mid-July of 2021. Ethical protocols do more than protect the interests of the university, the participant and the researcher; they codify standards for relationships and methods in executing the study. Furthermore, researchers and scholars agree that the rights of the participants should be central to

the study (Creswell & Creswell, 2018; NHRMC, 2018). The ethical approval process reminds the researcher that to conduct research with human participants is a great privilege. It also ensures that the principle of ‘do no harm’ is adhered to. Beyond this simple maxim, the researcher must consider the risk of harm to the participants, no matter how small or seemingly insignificant in nature.

Ethical protocols required clarity of purpose and intention on the part of the researcher. Ethics are also key to the research process itself, and I contend that transparent and honest communication between researcher and participant was a key factor in promoting participant trust in the research team, the process, the data, and how it was to be used. For example, participants in this study were given an information letter (See Appendix A) detailing the purpose and nature of the study, the three participant rights (the right to withdraw, to confidentiality and to review) and an opportunity to ask questions about the project. Once the participants were satisfied they had enough information, they were asked to sign and return the informed consent form supplied to them. This procedure was carried out as per the ethics’ approval protocol. Confidentiality refers to the duty researchers have to protect the participants’ identity, places of work, other colleagues, actors or other locations that may be linked back to a participant. This study specified that participant anonymity would be guaranteed through the use of pseudonyms for all names, proper nouns and places of work.

Trust is a key element in the relationship between the participants, researcher(s) and for authenticity and veracity of the overall study. The concept of trust in the ethical framework is deeply embedded in this research design. Because this qualitative study employs a narrative inquiry methodology, and the participants’ voices are central to the viability of the data set, trust in the data collection instruments and storage were key to making the participants feel

comfortable to be open with their teaching experiences and tell their stories. In this respect, participant perceptions and experiences of how this study's ethical approaches were demonstrated were a central basis for effective interviews and the creation of quality data.

Finally, to demonstrate the transparent and open data collection process, this study gave each participant the right to review and approve their transcript for accuracy and accountability. It was agreed, in collaboration with the supervisors, participants would be given a summary report of findings approximately six months following the thesis submission date. These ethical strategies were also essential in promoting participant trust in the research process.

Participants and recruitment

Participants

Conle (1997) uses the term “exemplar” to describe stories that “when taken altogether, ...might give us an exact picture of the change of the whole” (p.210). Ignoring the epistemological problem with the word “exact”, this suggests exemplar to be representative or archetypal, which may contain a widely accepted appearance of ‘truth’, depending on the epistemological perspective. This study, drawing on a purposeful sample of six English teachers, aimed to compile interview data with sufficient quality of participant reflection to interpret and make inductive conclusions. Individual participants’ professional and personal experiences allow scope for in depth qualitative analysis and may allude to other contexts of secondary English teachers.

The six secondary English teacher participants (plus one pilot participant) recruited for this study, were predominantly female (five female and one male), and between the cohort, had professional experience ranging from two to twenty years across all school sectors: state/public

(dual sex), independent (single sex girls or boys) and independent faith-based (Catholic single sex girls and Anglican dual sex). All teachers taught a combination of lower school (years 7 to 10) and upper school (years 11 and 12) English, English Literature and as well as English language arts within the International Baccalaureate program, across both lower, middle and senior school years. Therefore, across the participant cohort, there was a wide range of educational technology experience ranging from the 90's early digital revolution through to the current digital era.

Recruitment

Once HREC approval to conduct this research was granted, the participant recruitment process began with a dual strategy of informal networking for an initial set of participants and post-interview participant referrals from that first set. In a research setting, this type of referral strategy is also known as “snowballing” (Coleman, 1958; Heckathorn, 2011; Noy, 2008). The first networking and recruitment strategy took place in two locations: firstly, at the Western Australian Institute of Education Research’s annual conference, and secondly at the Murdoch University’s College of Science, Health, Engineering and Education, which resulted in the recruitment of four potential participants. However, there were two exceptions to this strategy: one participant was referred via an informal social network (a friend of a friend), who then recruited another participant who was deemed to be “younger and better with technology”; and another unsolicited participant contacted me, and indicated an interest in participating, having heard about my study from a colleague. In total, ten potential participants expressed interest, who then received an introductory email containing the approved information letter (see Appendix A) and informed consent form (Appendix B). Six participants responded with confirmation of

participation, having signed and returned the consent form, thus fulfilling the ethical requirement for participant informed consent.

Method

Qualitative interviewing can take many forms. For example, interviews can be structured, semi-structured, ethnographic, narrative or biographical. The narrative interview has a focus on the representational aspects of story context and identities of the self. It is also interested in the structure of stories as well as the affective content that is encoded through linguistic and paralinguistic means (Edwards & Holland, 2013). The aim of the interview protocol was to create the conditions where participants could openly re-tell their narratives of teaching English with technology. To achieve these conditions, the researcher should create rapport, emotional safety and possess a degree of reflexivity (Rosenthal, 2004). As indicated earlier in this chapter, to conduct a narrative interview, one needs to understand what a narrative actually is, and the multiple ways it has been defined. This study takes a post-classical position (Robert & Shenhav, 2014) on what constitutes a narrative, which includes the random fragments of stories and meanings, that are often incomplete and unresolved forms of narrative (Edwards & Holland, 2013).

It is well understood that during research interviews participants will self-regulate and self-censor their answers. However, when recalled in an interview setting, narratives are often re-told with intentionality by the participant. This knowledge may affect how a researcher might interpret a participant answer in any given moment, and after the interview. This is where the interview skills of immediate and agile interpretation come into play.

Semi-structured interview protocol

Drafting the protocol. Semi-structured interviews normally comprise of a sequence of questions that are general enough in scope to elicit a broad response from the interviewee. This allows for subsequent impromptu or planned questions, to elicit more detail from the participant, in the form of probes and follow-up questioning, for example, to inquire about further detail, chronology, clarifications, or explanations (Kvale, 1996; Schatzman & Strauss, 1973). This requires a certain amount of agility, improvisation, and creativity on the part of the researcher-interviewer. A sequence of formalised and prepared questions constitutes the structured part of the protocol, and the semi-planned, but improvised follow-up questions represent the semi or loosely structured section.

Careful attention was made to the sequencing and function of each question. It is generally accepted as best practice to begin with simple ethnographic “tell me about yourself” type of question to build trust and rapport, both of which create emotional safety for the participant and the interviewer (Jacob & Furgerson, 2015; Mitchell & Irvine, 2008). Creswell (2014) suggested that other advisable features of a semi-structured interview are, an opening “grand tour question” (p. 247), core questions that explore the topics of the research questions and a section of possible prompts and follow-up probes (Ibid). Some authors deem it important to wind down and “let go of the interview” (Edwards & Holland, 2013), rather than let it end coldly and abruptly, which may later colour, or influence the participants’ perception of the research experience. In the interests of both participant and researcher, such sequencing and procedural suggestions from the literature were integrated into the protocol design (see Appendix C).

This study's three research questions provided the key words around which to draft and structure the interview questions. These questions had to be phrased with care to be open; the type of question that would invite an unguided and reflexive response from the participant, rather than a closed question that may invite a simple yes or no response. Specific areas of teaching experience were explored within the questions and the terminology needed to be both specific and evocative enough to elicit a deeply reflexive narrative response. Once the question drafting process was completed, the researcher experienced an odd feeling: a lack of power. As Wengraf (2001) notes: "general deductivist strategic theory dictates giving up control at a tactical level to the person being interviewed" (p. 3). However, the researcher must make some assumptions about encoded meanings that may be shared by both questioner and listener, including words and phrasing that may trigger a useful, expected or unexpected response from the participant.

Ultimately, the quality of the data collected would depend on the quality of the questions and the answers given at each interview. After several iterations, six semi-structured questions were approved and deemed sufficient as an interview protocol elicit the kinds of narrative responses that support analysis, consideration and discussion (see Appendix C).

Online interviewing as a research site. As explained earlier in this chapter, a decision was made to conduct all interviews online via video conferencing software, specifically Microsoft (MS) Teams, to mitigate any possible disruption to the interview schedule by a COVID-19 lockdown and due to its versatility as a recording method. However, James and Busher (2009) suggest the move to online interviewing which displaces the research site to an online context, may present some challenges that are absent in face-to-face interviewing. In qualitative interviewing it can be argued that the choice to mediate face-to face interviews with video software may result in some loss of data (non-verbal cues, eye contact and nuances of

expressions), and create barriers to building rapport (Chiumento et al., 2018; Markham, 2004). However, if the researcher has awareness of these issues and can mitigate some of the effects on the data collected, virtual, or online interviewing has the potential to produce high-quality, rigorous, ethical qualitative research (Lobe & Morgan, 2021). Indeed, the ubiquitous use of video conferencing software during the COVID-19 pandemic added an extra layer of familiarity for a large part of the population, increasing what Howlett (2021) describes as a “new digital and socially meaningful space for our interaction” (p. 7).

Pilot interview. Piloting the interview is an important part of the design process because it tests the effectiveness of the questions and the researcher-interviewer interaction (Preece, 2006). Six interview protocol questions were drafted that would function as gentle prods to the memory, to enable the comfort and trust of the participants, so they felt confident to re-tell stories from their past experiences (Majid et al., 2017). A pilot interview (which was audio recorded) was the first chance to put the questions to a participant and to see and hear the responses. As a novice researcher, this pilot was also the first attempt at qualitative interviewing.

This pilot resulted in three major insights. Firstly, the pilot process increased an understanding of the performative role of the researcher-interviewer and how a balance must be struck between creating a good rapport with the participant and having a degree of researcher distance in terms of conversational tone and vocabulary. The second insight was how to gently balance the need for participants to have the time and space to narrate stories of lived experience with the researcher's need to adhere to the question's premise and topic at hand. The third insight was that the verbal stylistics of questioning typology, phrasing, and syntax needed further refinement. Indeed, to follow (and sometimes deviate from) a script in a real-life situation is a learned skill to be perfected.

One further improvement that arose from the pilot was the importance of giving early information to signpost the structure and general content of the interview to inform the participant and manage participant expectations. The interview protocol was amended to include a brief overview of what kind of subject matter would be covered in the hour-long interview. In subsequent interviews, this amendment functioned as intended and all six interviews proceeded with relaxed and reflective participants.

Reflexivity. In the tradition of qualitative research, it is common for a researcher field book or journal to be used to record memos, thoughts and observations of the data collection phase and interviews (Durdella, 2019; Watt, 2007). In this study, a researcher's journal containing field notes was maintained to record reflections directly after each interview and commentary on the overall process (Durdella, 2019; Glesne, 2016). From the researcher's point of view, this may mean understanding and confronting one's own biases and blind spots, however objective one may qualify their approach to interviewing. Watt (2007) suggests that as the qualitative researcher is the "primary data collection and analytical instrument" (p. 82), reflexivity is essential. Part of the reflexive role of the researcher requires a degree of self-awareness and introspection that is a part of ongoing willingness to learn within the research journey. As illustrated in the previous section, a reflexive response to the pilot interview experience was vital to improving the interview performance and effectiveness of each question. This continued to have an influence on the quality of participant responses and therefore the data set.

Data collection

The interview data were collected over six weeks in July, August, and September of 2021, via Microsoft Teams. These were recorded, transcribed and the completed transcriptions

then sent to all participants for accuracy checking and approval. Research conventions regarding authenticity and ethical conduct require the novice researcher to be mindful of the need for authenticity during the interviews process and with handling the resulting transcription data, as well as throughout the project as a whole. No corrections were made by the participants. This type of authentic interviewee participation to verify the accuracy of what was said, was a key part of the ethical protocol of this study.

As a novice researcher who is aware of my positioning as a white middle-class male and postgraduate student with a keen interest in education and technology, I have a sociocultural context, which may or may not accord status in the eyes of the participants. However, my status (or lack thereof) as an outsider-researcher who is not currently a practitioner (e.g., a Western Australian English secondary teacher) may influence the data (Shah, 2004). These factors were considered when preparing for, conducting the interviews and analysing the data. However, there are also benefits to be found as an outsider-researcher. As Dimmock (2002) suggested, outsiders can offer alternate and fresh perspectives as well as illuminate salient differences and similarities in culture (p. 37). Therefore, the sociocultural positioning of this study and this researcher, situated at a university that has a strong presence in teacher education in Australia, may have an effect on the purposeful sampling of the participants and their interview interactions. However, it became evident through the recruitment process that all participants were motivated to participate by knowing they were contributing to the production of knowledge both within the discipline and practice, as well as for the opportunity to share their stories and experiences with a researcher.

Narrative researchers have often alluded to the effects of story retelling; the act of narrating a story can change the perspectives of both the teacher and researcher participants

(Clandinin & Connelly, 1995; Conle 1997; Elbaz- Luwisch, 2007). In the context of this study, the aim was to listen closely and document stories that may contain nuggets of subjective truth for teachers, and what is true for teachers in the field may indeed be exemplar for professional knowledge. In this study, participant motivations were articulated during initial contact emails or during the interviews themselves. Some participants had studied to master's level, which may have inspired specific motivation to participate, and all articulated an authentic and positive interest in the research project and its findings. The importance of active interest in participating is underlined here because participant motivations may influence the effectiveness of the interview, what is communicated during the allotted time frame and how comfortable participants may be in recounting stories about their classroom experiences.

In the context of an interview, some teacher participants may choose to preference and recount some stories over others. It is possible that some stories resonate with deeper meaning and contain more common or archetypal features than others for teachers. Other stories may not fit neatly into pre-conceptions and beliefs about what is good teaching and what is not. Therefore, it may be worthwhile to investigate what has not been said by the teacher participants; those implicit meanings and discourses that are silenced but may be visible for those who have the theoretical tools to see. As Elbaz- Luwisch (2007) points out, educational tradition and the culture of school systems can turn teachers to self-censor their own narratives to conform to the prevailing (currently a neoliberal) paradigm. Exploring this disconnect between the official professional perspective and the lived realities of the classroom may be key to understanding the forces that drive significant change in education, of which technological advancement is the juggernaut.

Coding the data

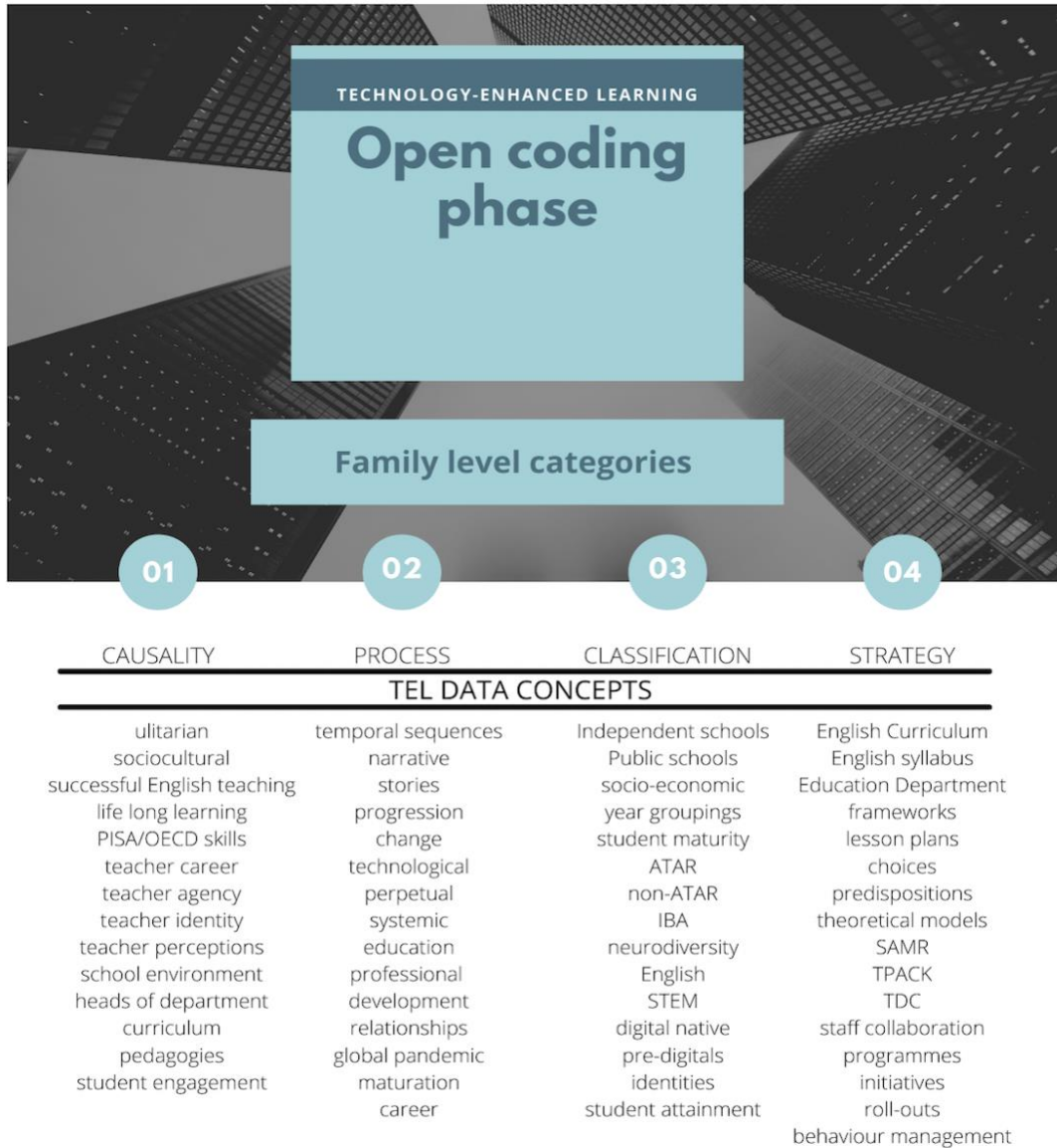
There are a number of different coding methods within the qualitative narrative research paradigm, and for this project and its context of teacher stories, a thematic narrative approach was identified as appropriate. Within this approach, a phased coding method was utilised to identify thematic categories in the interviews, which involved utilising the three phases of coding; open, axial and selective, that Strauss and Corbin (1990) identified. Over the past three decades, this three-phase process has become widely accepted as the central analytic approach to data coding in grounded theory (Glaser & Strauss, 1967; Strauss & Corbin 1994), although it must be stressed that this is a non-linear process of constant refining for both codes and categories. NVivo 12 coding software was used, in the first instance, to create the open coding stage code book of 60 different codes, the NVivo term for basic units of specific terms from the transcripts. What the coding literature does not prepare the neophyte researcher for is how messy and iterative the coding process is, due to the commonalities between categories and indeed, overlapping categories that contain the same and synonymous terms.

Open coding phase. Open coding is the first phase in deconstructing the data; here, the researcher preliminarily examines the data, breaking down large sections of the data sets or units of broad concepts and categories at the ‘family level’ or as Glaser (1978) described them, coding families. At this point, the coding process is one of conceptualisation and categorisation, and Glaser offers four broad categories of coding families: causality, process, classification and strategy (p.81). At this phase, the researcher can let their enthusiasm and analytical tendencies run away with them- as Dey (2004) points out, the more codes within each family category, ‘the better’ (p. 85). This phase of creation and discovery should generate as many ideas and codes as possible within each family that have conceptual and direct links to the data. In this first phase,

the code book was printed out to assist in the classification process. Codes were listed and grouped into related categories with repetitions and close code similarities merged into one code for clarity. The working data codes totalled 60 specific codes spread across the four Glaserian coding families. See Figure 3.

Figure 3

Open Coding Phase



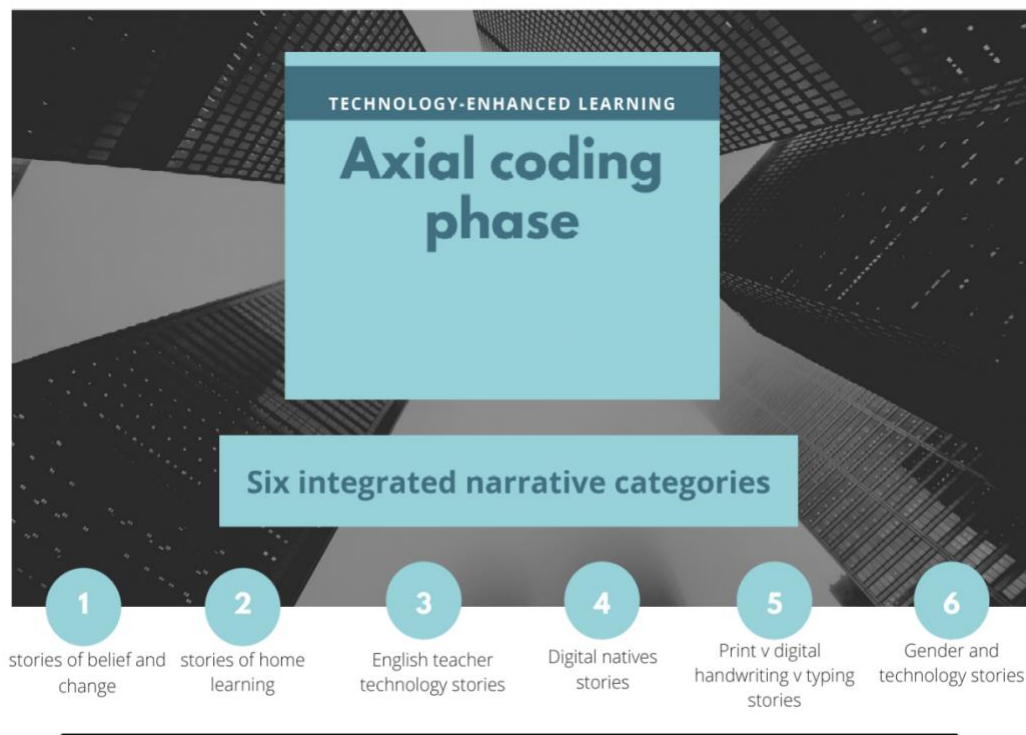
Note: This original TEL data coding figure is based on the conceptual works of Glaser (1978), and Strauss and Corbin (1990).

Narrative axial coding. The axial phase of coding is concerned with integrating the family categories by how they interact and connect; these are causal connections that lead one to identify ‘how things work’ (Dey, 2004, p.88). This process reveals not only connections but also

the ‘structure(s) properties and (inter)actions of those agencies that possess causal power’ (p. 90). Indeed, in this phase, the coding can reveal interconnectivity, structures, and power at a conceptual level that may be later analysed using theoretical frameworks relevant to the study. However, in this study, the goal of axial coding was to create primary categories and sub-categories where necessary (Dey, 2004) that may illustrate interactivity and causal connections. The phase one open codes were grouped into six narrative categories: stories of teacher beliefs and change; COVID-19 home learning and teaching; teacher technology stories; English Department stories; stories of digital natives; stories of print versus digital/handwriting versus typing; stories of gender and technology. See Figure 4.

Figure 4

Axial Coding Phase



Note: This original TEL data coding figure is based on the conceptual works of Glaser (1978), and Strauss and Corbin (1990).

Some codes and categories overlap, can interact, and invite comparison, which is a key part of the axial coding process when the researcher inspects how the interaction between categories works in terms of the conditions, strategies, and consequences in the data set (Dey, 2004). In this axial coding phase, the focus is on the narrative categories and codes because these participant stories are spoken and encoded with layers of meaning, which may illustrate wider, interrelated concepts and depict interaction as espoused by grounded theory (Glaser & Strauss, 1967; Strauss & Corbin 1994). Beginning with the most personal and illuminating of narrative categories, stories of teacher TEL beliefs about change, and their related codes, were categorised into belief sub-categories of cognitive, affective and behavioural elements that Rokeach (1972) identified. From this categorisation, it became apparent that all teacher participants had orientations to technology and overarching systems of belief that have been built up over time and experience. Beliefs are human constructs that may change over time with life experiences and learning. Rokeach (1972) defined belief as a proposition related to a specific context or to knowledge that can create 'predispositions to actions' (p. 113). Rokeach identified the three components that create beliefs: cognitive, affective and behavioural phenomena, and he suggested that over time, a class of beliefs can build into attitudes and value systems. In this study, short stories of teacher beliefs, attitudes and values were identified as narratives because they indicated journeys of evolution in teacher beliefs as well as cognitive, affective and behavioural journeys concerning technology use in English classrooms.

The second axial coding narrative category, COVID-19 home-learning and teaching experiences, contains short vignettes about the effectiveness of home learning, and these illustrate contemporary reflections from the field that are also anchored in a range of beliefs. The

data highlighted the practical challenges participants encountered verifying student presence, student accountability and the memorable observation that it (the WA experience of a short two weeks of remote home learning) as a ‘waste of time’. The third axial coding category, ‘English teacher technology stories, contained a rich seam of participant narratives. These narratives were small vignettes of heartfelt achievement with multimodal learning, but also vignettes that revealed problematic technology use in class, disruption, distraction and visceral failure. The fourth narrative category contained stories of digital natives, a culturally distinct generation of people identified by Prensky (2001), who were born in the digital era and who have grown up through early childhood and beyond with digital technology. All participants expressed opinions, stories, experiences and assumptions around the concept of digital natives. One participant, in particular, Peter, a middle-aged male teacher, spoke eloquently about the issues surrounding ‘pre-digitals’ (as Peter described himself) teaching digital natives and generational change in education. During the interviews, some teacher participants compared student digital native stories to the still fresh, narrative memory that pre-digital teachers have of life, school and culture with technology three and four decades earlier.

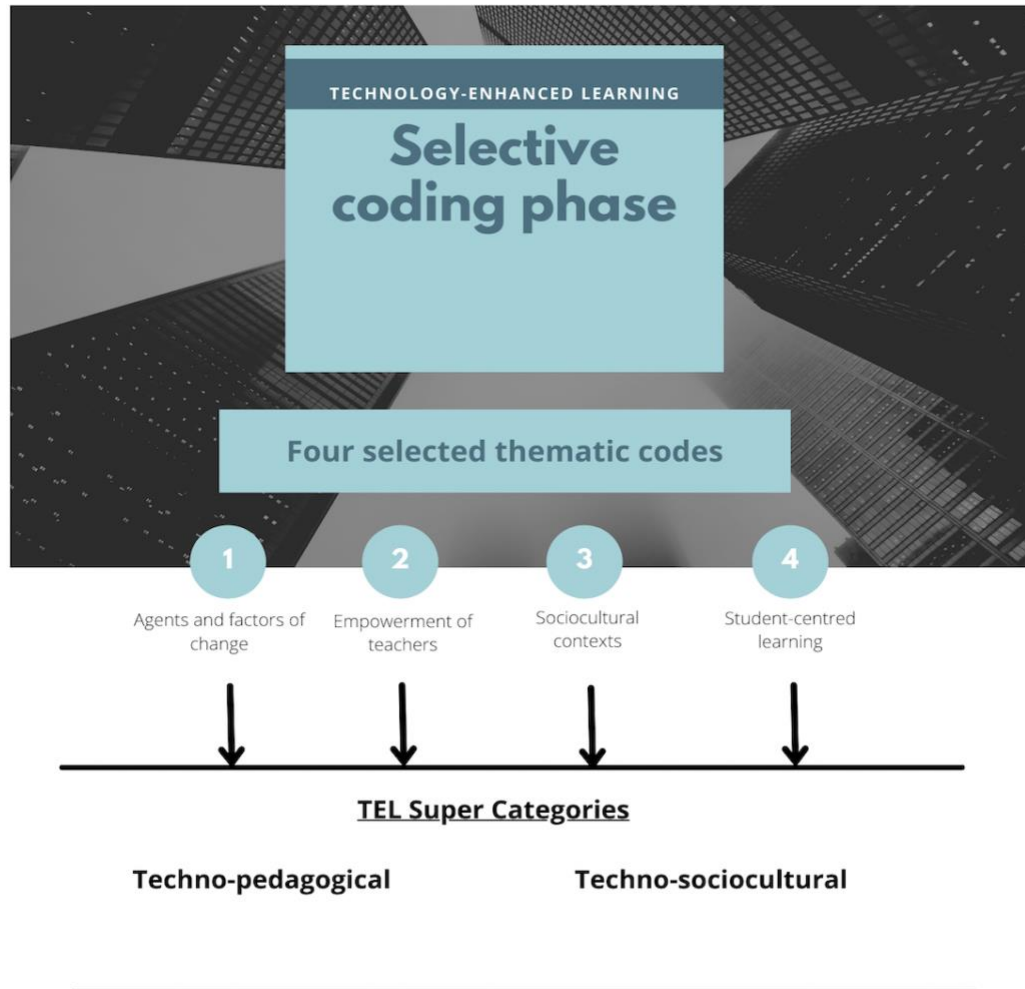
The fifth category of the axial stage was print versus digital stories, which is closely allied to the previous narrative category of digital natives. This category grouped all narratives relating to print and digital texts, and the acts of reading, composing, writing, typing and comprehending. In this category, some of the participant stories illustrated strong opinions and attitudes regarding concerns about the differences of reading in both printed text and digital text. These attitudes are likely to be strongly linked to teacher concerns about handwriting and typing. The sixth and smallest narrative category is that of gender and technology stories. Issues surrounding gender and technology were not explored in this research; however, this area may be

of significance to other studies. I will refrain from detailed commentary, but it is clear that some participants articulated thoughts on gender issues as well as perceptions and implicit meanings regarding gendered interactions with technology in the classroom. See Figure 4 for an outline of the categories of the axial coding phase.

The third and final coding phase: Selective coding. After careful consideration, the six axial codes were then grouped into four selective codes (Strauss and Corbin, 1990): 1): agents and factors of change, 2): empowerment of teachers, 3): socio-cultural contexts, and 4): student-centred learning. These were then classified into two larger code super categories of techno-pedagogical data and techno-sociocultural data (see Figure 5).

Figure 5

Selective Coding phase



Note: This original TEL data coding figure is based on the conceptual works of Glaser (1978), and Strauss and Corbin (1990).

These final two code groupings were chosen because they were identified as overarching themes that frequently occurred within the data set, and which have the potential to illuminate multiple layers of meaning during the narrative analysis phase.

Conclusion

This chapter began by detailing the methodological basis of this study, which is positioned within a constructivist-interpretivist paradigm. From there, the interlocking choices of research design and method were presented and described. Qualitative interview transcript data was co-constructed with the assistance of a small group of secondary English teachers. The data was organised using three levels of Glaserian (1978) coding, with the first level representing a systematic breakdown of the data into codes. The second level organised those codes into thematic code groups, and the third level further organised those groups into two large thematic categories. These codes and categories all assisted in providing thick descriptions (Geertz, 1973; Ryle, 1949) that enable the qualitative researcher to move beyond surface level understandings and facilitate deeper interpretation through context, emotions, intention, motivation, trueness and meaningfulness (Ponterotto, 2006). The next chapter presents the findings that were revealed from the data analysis phase.

Chapter 4 Results

In the previous chapter, I presented the methodological positioning of this study and described how my chosen methods align with a qualitative-interpretative research approach. I also described how this positioning informed the design of the ethics protocol and data collection process. This fourth chapter introduces the results of the data analysis process and in so doing, presents the two major themes and sub-themes that emerged, with illustrative examples for each. The chapter then concludes with a general summary of the results.

The following five sections present the recurring themes and motifs identified as significant units of meaning in the data. The concept of theme appears across disciplines and can be found in literature, art, psychology, biology, to name but a few. It most commonly refers to the subject and an idea that recurs in, or pervades, a work that has a unifying function (Oxford English Dictionary, 2021b). Similarly, the concept of the motif as a distinctive, significant or salient theme or idea is the most common usage. Mello (2002) describes motif as “a cognitive format that links sections of the complete story together” (p. 237), to be seen in terms of patterns, a prevalent element of a wider theme. Such an understanding of motif can also be found across the disciplines, for example, in Literary Criticism and Cultural Anthropology, in a similar way to describe a recurring topic or idea within a larger, more generic category of a theme.

The application of these two terms, theme and motif, to the data set, assisted in grouping what were seemingly disparate elements and aided the categorisation of data points. The motifs began to coalesce into four themes that were then categorised under two larger, overarching parent themes of techno-pedagogical and the techno-sociocultural data. As two categories of themes, these provide a way of identifying and classifying the data. However, these should not be construed as mutually exclusive and separate. What is clear from the analysis is that many

sub-themes and motifs can be categorised under both parent themes of pedagogical and sociocultural data. In fact, seen as a whole, the data set demonstrates that pedagogy, and how it is enacted, is sociocultural by its nature.

The two main themes are explored in the following sections. To present the results of the analysis and in the interests of the conceptual continuity of this thesis, the themes and motifs are presented under each research question topic.

Pandemic teaching: Paradigm shifts

Theme 1: Teaching with technology in a time of sociocultural change

The interview questions about teaching during the pandemic lockdown period were designed to evoke first-hand experiences. Participants spoke of a range of emotions, opinions, and beliefs, that indicated some considerable reflection on what had transpired during this time of online teaching. All participants identified the COVID-19 home learning experience as a major accelerator of change in education and society - this was the most significant of all the teacher reflections.

Exceptionally unique. Some participants spoke of how the online teaching period in WA was short and unique when compared to the rest of the world. In this respect, the motif of unique and exceptional times was highlighted in the responses of Emily and Elizabeth to the question about COVID-19 lockdown online teaching. Emily described the “...*whole unique, online learning experience*” (p.28) as a less than satisfactory experience for teachers: “...*it was two weeks of, ah, it was really quite tough, so we have great sympathy for the rest of the world, particularly our Eastern states at the moment. They’ve been doing it for months*” (p.25). Due to

the short lockdown period and relative success of Western Australian authorities in mitigating the spread of the virus, sympathy for the rest of the world and the Eastern Australian states was the dominant expression from the participants.

A short time later in the interview, Emily expressed her belief that the regular pedagogical interactions between teachers and students were not the same in this online pandemic context, because of student accountability.

It was quite a painful two weeks for us, because accountability was more on the teachers than it was really on the students, because we were just constantly following up trying to get them to, to do their work. And then even when we got back, I don't know how many of them completed that. It was almost like we had to re-teach everything that we had done over the period. (p.27)

In the above extract, Emily uses an emotive term (painful) to highlight the difficulty she felt in teaching via videoconferencing software (MS Teams) and checking student work. She underlines her concern that it was sub-optimal learning, suggesting that they [teachers] had to re-teach all content presented during this COVID 19 period of emergency teaching.

In contrast, Elizabeth recounted a more positive experience with her online teaching at an independent boys' school. In the following extract, Elizabeth makes comparisons and draws links between global and local experiences:

It certainly makes them, think, and young people tend to think about their own experiences and things that made them think more broadly, more globally. Because obviously we were watching what was happening in the UK and the US and Europe, and for them [her students] to then think it's actually going to impact

me as well and thinking, comparing their lives to other students, in that this place isn't even Melbourne....that's what I'm always saying to them is, they've got to think: this is why we study texts about other cultures, you know that you can't just stay in your own bubble sort of thing. So, yeah, I said that they really rose to the challenge, actually (p. 22).

In the above extract, Elizabeth positively reflected on her students' learning in a broad sociocultural context. Interestingly, Elizabeth drew a direct pedagogical link between the English syllabus texts she teaches with, and the pandemic experiences her students observed. She invoked a pedagogical aim that encouraged her students to make such links regarding cultural experiences, and in so doing, she articulated a belief in the cultural importance of studying English texts. Elizabeth then finished her short narrative with a positive appraisal of her students' capabilities.

Elizabeth also stated her belief that students were not disadvantaged by the lockdown response in WA during this unique pandemic period: *"I think the impact wasn't enough that it might have any long term, certainly, no long-term educational disadvantage. And I don't think [there was] much long-term psychological disadvantage"* (p.22). Reflecting about the possible short and long-term effects on student learning during lockdown, Elizabeth articulated her belief that the time frame was brief, and in one respect, fortuitous, due to the examination period *"It was only about two weeks, but for us, it was just prior to exams. So, in a way, that was kind of good because they [the year 11 and 12 students] were under pressure"* (p19).

In contrast, one participant, Peter, was particularly sceptical about the rigour of the new online teaching context: *"...we were making the false assumption that if kids were in front of us, if they looked engaged, if they could basically just mock it up for 15 seconds, that was going to*

be sufficient for some sort of valid education context” (p. 4). This observation goes to the heart of Peter’s belief that teaching in the online context, problematized both teacher authority and student accountability. Peter elaborates:

I literally had girls that were out [of the lesson], for quite some time at [an independent girls’ school], came back and hadn’t done a lick [of work] ... we’re probably just glad if we manage to take attendance, talk for a while, get them to do a task and submit something. But it’s pretty low-level learning. (p. 5)

Similarly, Diana narrated a short vignette to illustrate her concerns about accountability, concluding with a blunt assessment of the EROT period:

...and they [the students] weren’t really, you know, feeling accountable. And they weren’t. They were like, ‘oh, we pretend’, like the girls were OK. But when I taught an all-boys’ school, they said that ‘we weren’t really, you know, even doing the work’: ‘Miss, we were playing games on the side...we were doing this’. So that was interesting. And I feel like it was just a waste of a week. It just felt like a waste of the week (p. 5)

According to Diana, at single-sex schools during this EROT period, both boys and girls failed to keep on-task and in some cases, did not even pretend to be accountable for their own learning. Similarly, in the online teaching context, Mary observed in her students, a lack of “*independence and willingness to go beyond being spoon-fed...*” (p. 6). For lessons, video conferencing did not appear ideal for younger male students because they lacked maturity for self-regulated learning. Unsurprisingly, Mary observed a higher level of maturity with her older year eleven and twelve male students:

...the maturity of the boys was not there, but for the older boys, the year eleven's and year twelve's, I felt that I taught the exact same way that I would in a class. I just did a video lesson for the entire lesson and just ran it like that (p. 7)

The above extract from Mary, combined with Peter and Emily's observations, also above, regarding checking student work, suggest that the issue of online student accountability was likely to have been problematic across the education system during this two-week emergency teaching period and was not limited to lower socioeconomic schools or younger year groups. It is also Peter's assessment that in this context, the learning achievement level was sub-optimal for all his students.

Preparation and planning. In Western Australia, there was a very short window of time in which to prepare learning materials and pedagogical approaches to teach all school subjects, including English. Emily described it in the following way: *"So, we took a week to prepare. We took one week of extra holidays to prepare. Got all our resources and everything into the system, ready to go" (p. 24).*

In comparison, Elizabeth recounted how MS Teams, as a videoconferencing software, was completely new to her English department and there was very little training in its use, which led to her hesitancy with the swiftness of the changes:

... [Teams] was a completely new platform for all of us, and we had very little training because, of course, that lockdown first lockdown happened quite suddenly. We had to get all that done overnight. So probably the teachers were so much more hesitant (p.20).

Early in the home learning period, Elizabeth found that her hesitancy and lack of agency using MS Teams contrasted with her students' agency and comfort in this online context. In fact, Elizabeth commented that her students were able to scaffold her own technological knowledge:

They [the students] were showing me things that I didn't know, like operations, that I didn't know how they worked...and again, it's that sense of comfort that they have, like, 'you can do this sort of thing'. And I'm navigating it going: 'I don't want to lose this call' or whatever in the early days yet. So, the learning curve for them seem to be smoother than for me (p. 23).

Similarly, Diana spoke of how her two-week EROT experience changed her professional practices and her reluctant attitude towards using technology: “...professionally, for me, it just ma[de]...helped me overcome, sort of that, reluctance to use remote learning, and online learning” (p. 5).

Mary, who described herself as somewhat “tech-savvy”, spoke of how the blanket approach of using “video lessons” for all age levels of students, did not work because of differing levels of student maturity, that was required for self- regulated learning:

...doing video lessons with the younger students did not work well at all [...] because it was meant to be used for collaboration for adults rather than teacher and student.

In summary, the above five examples illustrate how the participants experienced the rushed preparatory week for emergency online response teaching and give a glimpse into how these teachers viewed the possible differences in their approaches to this new context. The next subsection presents the motif of systemic change.

A story of wider systemic change. All participants identified the COVID-19 home learning experience as a major accelerator of change. Not only did this situation force teachers to modify the way they communicated and presented content to their students, it also created the need for new approaches. Many participants also critically reflected on the effectiveness of the short pivot to home learning and the possible longer-term effects of home learning during lockdowns. Elizabeth detailed her observations of broader systemic change in educational institutions and how this cascaded into changed behaviours and practices at the secondary school level:

So, another thing with covid. What's happened is universities have lost overseas students completely. The situation is that a great proportion of students are getting early offers, which are based on ATAR, so they know they just have to get over 80. So, a student that maybe potentially could get a 95 takes the brakes off: 'I'm just going to cruise' often, particularly in English. They just go: 'All I need to do is pass' (p. 13).

According to Elizabeth, these top-down assessment decisions, made at a state department level, seemed to have a negative impact on the learning behaviours of her year twelve students. Elizabeth ends the short vignette above with her view that these behaviours are a challenge to her teaching approach:

So, a focus for me has been trying to provide really engaging lessons. It actually almost makes the job harder because [I have to] to keep them engaged. So, mixing it up all the time is really important...but it's kind of about how do I keep it fresh? And so, technology is very advantageous because we would have talked very differently ten years ago (p.13).

As expressed above, Elizabeth believed that the Australian Tertiary Admissions Rank (ATAR) policy had a direct and detrimental effect on student engagement with curriculum content and, consequently, her teaching efficacy. Despite the temporary nature of this situation, because the securing of a place at university had already been awarded to many students, Elizabeth perceived specific challenges to the job of maintaining learner engagement. Therefore, Elizabeth asserts that this teaching context required a more innovative and agile pedagogical approach, that involved “mixing it up” and “keeping it fresh.” Part of her strategy would be to integrate some form of technology into her lesson planning, as to do so was deemed “advantageous.” Elizabeth completes her narrative by making an historic comparison, suggesting that ten years ago, “we would have talked very differently” about the strategies and affordances available to use technology in classrooms. Elizabeth’s ‘now and then’ narrative suggests ‘how far we have come’ and how teacher pedagogical choices have widened.

Theme 2: Technology becomes a pedagogical lifeline

Although EdTech platforms such as Canvas (www.instructure.com/en-au/canvas), MS Teams (<https://teams.microsoft.com/edustart>), Zoom (www.zoom.us), and SEQTA (www.seqta.com.au) were generally used before the pandemic, they were relied upon more heavily by the participants during the emergency online teaching period. Indeed, these platforms became part of a strategy of positive adaptation for teacher participants, despite any pedagogical and technological beliefs they may have held prior to the pandemic.

Positive adaptation. For some participants, the pivot to online teaching was a large shift that required considerable adaptation compared with the more regular and didactic instructional approaches to learning. For example, Elizabeth recounted a largely positive experience with her year twelve English classes:

...the kids took to it so easily, [they]gained that confidence in the way they naturalised, that sort of learning [it]was really impressive. And their ability to communicate via kind of questions, conversations, I could split them up into small groups and have them come back, that sort of thing. They managed that really well, in fact, probably better than many of the teachers (p. 19).

Similarly, Diana spoke of her initial sense of comfort with teaching in this new context:

“...within, the first hour I was comfortable because I could sense the kids were comfortable, like they were very comfortable” (p. 5). Elizabeth and Diana’s sense of comfort and naturalisation with the new online context contrasts with Peter’s stated view, as detailed in his first extract presented above, that teachers who were “pre-digitals”, were too easily impressed with the surface impressions of online learning and by the achievement of basic functionality.

Nonetheless, Emily reported her school’s success during the emergency online teaching period, and credits this to using SEQTA: *“...we delivered our, lessons really, really well because we had the SEQTA” (p. 26).* For Emily, this EdTech platform enabled her school to deliver successful online lessons, with the experience, *“making us more mindful of the content that we put into SEQTA...[it] has improved our lesson planning” (p. 26).* This would suggest a post lockdown legacy of positive adaptation and deeper teacher engagement in the use of SEQTA, going forward.

A suboptimal experience for teachers, students and parents. As a pedagogical response to the threat of disruption in education, the online delivery of classes in WA and globally, can be seen as a large-scale experiment that has yet to produce long-term results. However, earlier in this chapter, Diana and Peter both articulated a belief that the home learning experience was “a waste of two weeks” with only “low level learning” achieved. Similarly,

Emily agreed and further speculated that in the home learning context, a degree of parental and guardian input was necessary:

And I guess that at year seven, eight and nine level, it's your parents that probably still need to be pushing you and encouraging you and making sure that you're doing the right thing because you're just not able at that age to do that for yourself (p.6).

In the above, Emily articulated a belief that year seven to nine students do not have the skills of self-regulation and independent learning, especially in the home learning context with less embodied teacher oversight. This may result in deeper reliance on parental oversight during the EROT period that may or may not be forthcoming for a variety of reasons. In a regular year of schooling, the degree and possible effects of parental input and cooperation may be less noticeable. In a pandemic year with periods of home learning, Emily suggests, that the effects of limited parental participation are very noticeable:

We are from a quite fairly low socioeconomic area. And I'm just mentioning that because parental involvement can be limited, and I feel like that was a factor in that whole unique, in that whole online learning experience. As I said, they praised us for the online learning, but in terms of partnering with us to make sure that their students were doing the work, that was probably a little bit limited (p. 6).

Emily did not specifically articulate the words “working parents”, but implicitly drew an inference that parents in a relatively low socioeconomic context would have “limited” time for involvement and “partnering” with teachers in student learning. Such “parental

involvement” and “partnering”, in her view, would have helped with the issue of student accountability. The above extract is also an illustration of how, in terms of this study, the organisation of thematic categories can overlap and co-exist between sociocultural and pedagogical realms regarding teacher conditions, expectations and aims.

Transposition and substitution. In this new online teaching context, some participants taught to camera, with very little alteration to their instructional approach as seen in Mary’s admission that she taught in exactly the same way as before EROT. In contrast, Peter held a broader and differing view of online teaching:

We were treating the online context as if it was equivalent to a face-to-face context. We're taking a face-to-face mindset and applying it to an online context and failing to recognise the goalposts have moved enormously, and we haven't changed our technique (p. 5).

Peter’s opinion is compelling because it recognises that the contexts of both modes of teaching are different to from those of the online context. Consequently, this new online context may require a change in teachers’ instructional techniques, approaches to assessing student work, and an understanding of how the online mediation of communication fundamentally changes regular teaching processes.

Teacher TEL beliefs, attitudes and values

During the interviews, all teacher participants were comfortable in sharing their personal and professional beliefs, attitudes and values regarding teaching with technology in their English classrooms and school departments. In the following section, themes reveal both sociocultural

and pedagogical beliefs about how compatible technology is with the teaching of English in secondary schools, beyond the functional uses of word processing software.

Theme 1: Sociocultural beliefs

Participant technology beliefs. Participants talked of pressure, both professionally and personally, to keep up with technological change and advancement. The challenge of staying abreast with technology was a motif that recurred frequently in the narratives of all participants. For example, Peter reflected on technology and change, and provided an opinion on the narrative trajectory of technological change: *“I think that it’s going to ultimately change a great deal of what education is and means, and I think we’re in the infancy of that at the moment”* (p. 9). In this short quote, Peter articulated his belief in the profoundly transformative potential of technology to change education and provided a temporal context to his description of how he views this process of change. As the interview progressed, Peter continued to reflect about the rate and pace of technological change in his teaching practice:

...it’s been a history of going through different platforms that have then become, um, superseded by subsequent platforms. And that’s the frustrating part of education so I would take it all the way back to, uh, Wikis. And then it was, uh, Lib guides, and then it was, OneNote, and then it was SEQTA, and now it’s sort of a combination of different platforms (p. 10).

In the extract above, Peter reflected on the evolution of digital platforms and how his current practice combined a variety of different platforms to accomplish his professional duties. Later in the interview, Peter explained how he felt “pressure” when trying to keep up with such evolutionary changes in technology: *“There was the pressure to take it up, but even then, it’s still*

an ongoing process, still ongoing learning” (p. 27). Peter alluded to his “ongoing process” of professional and personal learning as a strategy to alleviate “the pressure” of keeping up with the demands of professional technological advancement.

While Peter’s reflections highlighted the professional context, Elizabeth shared a short narrative of home life with her adult offspring, providing a glimpse into her personal perception of her technological competencies and how this may cross over into her professional experiences. In the following extract, Elizabeth highlights her perceived technological inadequacies, and she characterises herself as a Luddite, a 19th century English term synonymous with a person opposed to new ways of working with technology (Oxford University Press, 2021):

And I’m often really proud of something I’ve done. And my kids are like: oh, Mum, you know, you’re way behind, you know? And I do actually use...my kids are all in their twenties, I use them to go...’ Oh, how do I do that?’ Or ‘help me with this formatting’, that sort of thing. So, yeah... [I’m a] bit of a Luddite! (p. 6).

There was, however, a sense of irony to her self-description of technological Luddism, for later in the interview, Elizabeth revealed a sense of agency with other classroom-based technologies.

Conversely, Mary spoke of a belief in her technological literacy, and she characterised herself as an early adopter of technology in both professional and personal contexts: “*I’m pretty technologically literate. I’ve always been an early adopter of all the various different forms of technology that we can use” (p. 3).* Mary continued her remembrance of the early days when technology use for English high school contexts was not commonplace, apart from interactive

whiteboards: “...the digital interactive whiteboards. I mean, obviously, that was over 10 years ago that I was using it. I found the technology quite clunky and cumbersome. And in the English high school context, it wasn't really used that much” (p. 3). For Mary, this reveals her technology design preferences regarding speed, ease of use, and seamless integration with pedagogical approaches. Consequently, these preferences were viewed as important criteria for technology deployment in Mary’s English classes.

Later in the interview, Mary recalled her high school student days, using her first laptop and how her teachers optimistically prophesied about technology in the future:

I did have a laptop when I was in high school as well. It was a big, chunky thing! [laughter]. And they [the teachers] were telling us when we were at school, that we would only have to have the laptop, and it would replace textbooks. And, yeah, that was wishful thinking! (p.18).

In the above extract, Mary reminisced about her earlier experiences with technology, and she expresses her clear memory of the physicality of her first laptop, as if to highlight the advances made in the miniaturisation of modern technology. In narrating her story about her schoolteachers, Mary also employed humour (and a little sarcasm) when discussing the beliefs and expectations her teachers had for the future of textbooks back in the 1990s. One can speculate how this narrative from Mary’s past may inform her current beliefs about technology and the primacy of physical textbooks.

In summary, to compare Peter, Elizabeth and Mary’s extracts, reveals a range of beliefs regarding technological change, from problematic and difficult, to easy and possibly transformative. Peter felt pressure to adopt and frustration with continually redundant

technologies, making it hard to keep up. Furthermore, he also provided a deep reflection on what these changes may mean for the discipline and the sites of learning in both the professional and home spaces. Elizabeth, it can be said, also has difficulty keeping up with technologies and is aware of her lack of technological knowledge. However, Mary, who appears to be an early adopter of new technologies, describes what she sees as key criteria for new technology use in her classrooms. Mary also offered a brief opinion about the primacy of printed text and how it still has a key role to play in education. This a strong belief that all participants articulated in the data. This range of participant beliefs suggests that a personal willingness and purposeful curiosity to explore new technologies is key to professional development.

Personal and professional beliefs: home and school contexts. As alluded to above, the advent of portable technology and software blurs the boundaries between the professional and personal contexts for teachers and students. Teacher participants spoke of beliefs that can be situated in both the professional and the personal realms and these can inform attitudes and values that teachers hold about technology use in education. In particular, two participants (Emily and Peter) made noticeable statements, which illuminated how differently these teachers articulated their beliefs about technology and teaching.

Emily reflected on her technology integration in class:

I wouldn't say we just were totally relying on the technology at all. We still believe in explicit direct instruction, standing in front of the class delivering the lesson properly and then allowing space for the technology part of the lesson as well (p .9).

In the above extract, Emily made three belief statements: The first is that “we”, the teachers, do not entirely rely on technology for instruction. Second, Emily professed a belief in explicit direct instruction that is different to technology mediated learning and third, a belief that ‘explicit, direct instruction’ was the “proper” method for “delivering” a lesson. Emily then qualified her commentary with the admission that they “allow” a space for “the technology part of the lesson”. Here, it can be argued that Emily’s terminology describes a pedagogical sense of dichotomy, separation, and a tolerance for technology as if it were an indulgence and not an integral part of her pedagogical approach.

In comparison, Peter, in the following three extracts, presents his beliefs regarding technology and education, and how the application of one is integrated within the other:

- *“I would argue that there is not a single element of my teaching or my management that doesn't involve some aspect of technology” (p. 2)*
- *“For all the technology that we have at our disposal, the technology is only as good as what you do with it” (p. 4).*
- *“I don't think that technology is itself inherently problematic. I think it's actually that we're just in the early stages of how we apply it” (p. 10).*

These three statements illustrate how, firstly, Peter believed that technology pervades all areas of teaching and administration. Secondly, only human agency and intention creates technological value and consequently, technology is neutral. Thirdly, Peter argued that there is no inherent problem with technology itself; the problems may occur in its application and what stakeholders do with it.

Pre-Digitals immigrants teaching Digital natives. Some participants articulated an awareness of the terms “digital native” students and “pre-digital” teachers. These sociocultural concepts evoke a form of generational identity via distinctions and points of difference that separate one generation from another. Since Prensky (2001) coined “digital natives” (p. 1) and “digital immigrants” (p. 3), these terms have been widely adopted in popular parlance to identify the generation of “digitals” born after the turn of the millennium and the prior generation, those “pre-digitals”, or immigrants, who had to learn and adapt to technology later in life. Three participants speak of this generation of digital natives and their beliefs surrounding such an identity. Firstly, Mary expresses a belief that teacher expectations do not match the reality of student capabilities:

I do find that there is this large expectation of the students to be digital natives, and they really have no idea [her emphasis] how to use anything beyond the basic functions of software. So, I do often have to teach them, like using the comment and track changes features in Microsoft Word, for example, or the annotating functions in Preview (Apple iOS preview mode) or Adobe Acrobat (p. 20).

In the above, Mary expressed her belief that teacher expectations of digital native student capabilities are beyond the reality of her teaching experiences. The expectation is that digital natives have greater technological capabilities because they grew up using technological devices. Mary described this as an expectation, an assumption, indeed, a hope, that this generation of students will be somehow more adept with technology, but her experiences tell her that this is not often the case. In the above example, Mary used her knowledge regarding greater technological affordances (commenting, track changes and annotating functions), to scaffold her students’ knowledge; and in this case, she has confidence that she is the “knowledgeable other”.

Diana has a similar perception of her digital native students:

I think the majority actually don't seek to go and develop their skills or learn more. It's just because what's popular at the time and what keeps them socially connected or in the know. I think I've got three in one class who are actually IT savvy, and they go and find all the latest software or games and they up-skill themselves (p. 26).

In the above extract, Diana observed in a majority of her students, a lack of independent motivation for developing digital skills or learning beyond the basics. Furthermore, if her students did have any motivation to learn more and go beyond the basic functional uses of technology, it is only the need for social connections and social knowledge that drives the development of technology skills. In contrast, Peter perceived the generational divide a little differently.

Early in his interview, Peter clearly positioned himself as a member of the pre-digital native generation, in opposition to his students: “...we were a good example of pre-digital natives teaching digital natives” (p. 4). Peter then goes on to express a belief that pre-digitals assume the literacies (“skills and content”) of their generation are more worthy than those of younger generations:

The tendency is, so often, for pre-digital natives to assume that the skills and the content that they were most familiar, is inherently superior, and for the digital natives, that's one of the reasons why so many kids are disengaged and disenfranchised from education as well. (p. 8)

Peter ended his reflection with a reasoning behind his causal belief statement, that links an attitude of superiority and the sanctity of old literacies to student disengagement. This may allude to the intergenerational tensions around what constitutes “skills and content”. Although Peter did not use the terms multimodal or multiliteracies, by oppositional reasoning, this is what he is describing. The salient inference is, there are pathways for digital natives to learn through these new literacies due to their familiarity with these modes in terms of skills and content. This belief is linked to one further opinion from Peter about the generational differences regarding the constant performative aspects of adolescent life spent on technology and apps:

...it [technology] is still central and fundamental to their lives, absolutely, and constant. I think that's one of the things that we're not aware of, perhaps as being pre-digital. We don't realise that there's this constant conversation that's happening in their lives, the minute they wake up to the minute they go to sleep, that's analysing and interpreting every little minute aspect of their social lives (p. 19).

In the above extract, Peter articulated how central, fundamental and constant apps and technology are to digital natives' lives. This observation illustrates how the phenomenon of always on technology (Cellan-Jones, 2021; Murphy et al., 2021) drives a need for ‘always on’ social performativity in digital native adolescents and young adults. The description of a constant conversation throughout their waking hours, a socially performative conversation that analyses and interprets every aspect of their social lives is particularly apt.

Digital beliefs enable or disrupt? Teacher participants in this study could not be characterised as technophobic. Quite the opposite, in fact there were positive stories of

pedagogical success and innovation from the experience of these English teachers. However, there was a mix of beliefs in both the innovative potential and disruptive power of technology use in English classrooms. For example, Elizabeth commented:

We're able to develop better programmes, more detailed programmes. It means that there's less differences. Obviously, all teachers have their own ways of managing a classroom. But it's so much more open in terms of, you know, you'll see that someone else has done a particular aspect of the text that you hadn't thought of, so that it[technology] actually makes you a better teacher (p. 12).

In the above extract, Elizabeth recognises that as a platform for connecting teachers and English departments, SEQTA has a positive influence on the quality, detail and coherence of content knowledge across the department and its classrooms. In a second example of positive innovation, Diana told a detailed story of how, during a year seven English class project, in which each student created video autobiographies, she successfully integrated iMovie (Apple's desktop video editing and production software) in the assessment rubrics:

Then I learned more about it. Then they became more confident. But anyway, the final product was amazing. They kept this iMovie of themselves, which was like an autobiography, and it was amazing. They kept it all the way to year 12, and when they graduated, they played them as well. So that was really lovely. But I remember it just being, like one of the hardest experiences of my teaching career (p. 33).

The extract above suggests that Diana and her students successfully overcame gaps in their technological knowledge to create individual, multimodal productions, which highlighted

autobiographical expressions of student identity. These productions, once kept beyond the formal needs of assessment, grew into a record of student growth and development, which attached new meaning and context to the originals. This iMovie English assignment task is an example of facilitating student self-expression and visual literacy by leveraging digital technology.

All participants spoke of experience with and belief in the disruptive potential of technology in classroom learning. For example, in the extract below, Anna re-tells a story from a time before the ban on mobile phones in schools was instituted, during which her authority was challenged by a student. It is a vivid narrative of disempowerment, and her emotive description highlights the impossible situation Anna found herself in.

...they would refuse to hand their phones over, and you go through all the warnings, they'd still refuse to do it, so it would then go to the next step. You refer it to your head of department, and then you would get slammed for escalating the situation, when it's just the kid has refused to cooperate and then they turn, start shouting and abusing you, and then you get slammed for apparently escalating the situation when you're just trying to enforce the school policy (p. 7).

Anna's vignette highlights difficulties surrounding behavioural issues and device use, technologies and apps in schools. In particular, issues regarding student accountability, the degree of trust in student self-regulation, and departmental/school leadership support were evident in Anna's commentary. There may be many reasons why neither departmental nor administrative support was not forthcoming, but no further detail was offered. Nevertheless, Anna felt motivated to share this story of disempowerment during the interview, because the event appeared to be encoded in Anna's affective memory. This type of memory event is important as it may function to inform longer-term attitudes towards using technology.

A second example of the disruptive potential of technology occurred in Diana's heartfelt admission that one particularly bad experience using laptops in class, ruined her love for teaching. Diana described how, in a large class of students, multiple technological disruptions affected the lesson and her professional attitudes:

So, there's a few government schools I've been to where we had 32 [students] in a classroom. I'm constantly walking around. I spend more of my time like: 'get off your laptop', 'put it away', you know, 'now you have to do it on paper and pen.' And that, just causes a disruption in the flow of my lessons. And you know, it's sometimes: 'oh, I don't have my, 'it's not charged! It's this! It's broken down. I remember having, twenty of those [interruptions] that lesson, like it was just awful. It just ruined my, love for teaching to be honest. But now, working in a school where technology is well looked after, only eighteen to twenty kids in a class, it's so easy. Maybe you'll have one or two and see them like doing this with their, on their laptop, playing games. And you just shut it down and they quickly stop. You know that they won't do it again. They can be pretty disciplined in that way (p. 9).

In the above extract, Diana recounted an emotive story of her worst experience of teaching with technology; a lesson with twenty student technology interruptions. For Diana, this was a strong affective signature memory, that raised doubt in her ability to retain control and flow of the lesson and ended with her frank admission that the experience “ruined her love” of teaching. However, Diana closed her narrative by drawing a direct contrast with the independent school where she now teaches, where there is (unspecified) technology support, smaller class sizes and a degree of self-discipline in the students. In the example from her current school, Diana describes

empowerment and positivity due to the effective management of technology, as well as other sociocultural factors, such as smaller class sizes and students' compliant behaviour. In the technology experiences presented above, specific teaching with technology memories may build into attitudes and systems of belief regarding TEL.

Theme 2: Pedagogical Beliefs attitudes and values.

Participant beliefs about how and when technology should be integrated were evident throughout the interviews. Five major pedagogical beliefs were identified. Firstly, there was a recurring belief that English was different to other school subjects, and this suggested the participants perceived limited scope for deeper use of technology in the pedagogical approaches of English teachers, beyond the functional use of word processing and displaying content. Second, participants articulated a belief that English department support and encouragement are necessary for innovative, or in some cases any, teaching with technology to occur. Third, the adoption of Learning Management Systems such as SEQTA has improved communication and pedagogical outcomes. Fourth, there was a strong belief in the primacy of handwriting in English literacy, suggesting that less class time using technological devices may promote better and more legible student handwriting. Finally, there appeared to be an acceptance of the popular belief that technology (both devices and apps) has addictive potential that may be detrimental to student development.

English is not so technological. During the interviews, all teacher participants expressed a firm view that the subject they teach, English, was an integral and unique component of the Australian curriculum. Participants often differentiated English from other school subjects by utilising terms such as “abstract” “subjective”, “content-based”, “not black and white”. This

conceptualisation of English as highly interpretative, reflects a pedagogical belief that teaching the skills of interpretation is a key curriculum aim. In turn, these beliefs and attitudes towards English seem to influence teacher perceptions about technology use in English classrooms. In the following example, Mary compares the use of Education Perfect in the context of preparation for the National Assessment Program-Literacy and Numeracy (NAPLAN), to the software's possible use in delivering English content more broadly:

...it [Education Perfect] was fantastic for the year nines for NAPLAN. But in terms of other content, delivery doesn't really work because it's more skills based than content based for English. That's where I find there's so much difficulty with English, because our colleagues are doing such fantastic stuff with technology like Quizlet and Socrative and some of those websites that only have limited functionality in English in terms of terminologies, you know, in comparison to the human biology or chemistry where you've got to memorise things, and maths where they've got Mathspace, so kids can work through the problems and get instant verification, if they're right and wrong. You know, a subjective subject like English...? (p. 14).

In the above extract, Mary left her question open and unanswered, but it is clear that by comparing the skills and content of human biology or chemistry, which can be learned by rote memorisation, she sees teaching English as more difficult. Elizabeth had a similar experience, which she described as follows:

...in meetings, you get stuff quoted at you: 'Oh, the STEM teachers are doing this...or the IT teachers are doing this'. And often you're almost a bit defensive of the humanities disciplines [...] that really doesn't suit our way of learning (p. 7)

In the above, Elizabeth recounts an emotive reaction to hearing how other disciplines may innovate with technology. However, she qualifies this by stating her belief that English has a different “way of learning” that is pedagogically distinct from the sciences. Such firm pedagogical beliefs in the positioning of English were also highlighted by Diana and Peter in their short commentaries. Peter stated: “...one of the issues with English is that because it's more abstract and subjective than some of their other courses” (p. 17). Similarly, Diana opined: “And with English, especially, you know, how it's not black and white?” (p. 3). It is clear from this combination of teacher opinions that pedagogical beliefs surrounding the subject of English shape which technologies are used in secondary English classrooms and how they are used to strive for particular aims. These pedagogical beliefs may have their origins in places of teacher education, but they are also sustained and supported by the beliefs, attitudes and values of each school’s English department, as the data illustrates in the next section.

English Departments: The space for (dis)empowerment. Despite reported successes, the data also revealed stories of fragmented and sub-optimal professional development and, in some cases, a lack of support from English departments for digital innovation. Every school has a unique culture and collaborative environment that are reflected in the organisation's structure, down to individual departments. These cultural factors have the potential to either foster a collaborative environment or hinder it. The data presented in the following extracts do not imply direct criticism of any school, and are presented in the spirit of exploration and scholarly interpretation, to explore sociocultural enablers and barriers in technology integration

All participants highlighted in their stories how important the learning culture of both school and English departments were to their own sense of empowerment. Such cultures may have a degree of impact on teacher preference to use technology in English classes or not.

Teachers may or may not feel they have the backing or approval of their departmental colleagues to use technologies in innovative ways, which may increase or decrease teacher empowerment. Diana, a participant who had a range of teaching experience across many education sectors, articulated this very early on in her interview: “...a lot of it's, based on socioeconomic factors and the culture of the school, the English department, and I guess what the HOD [Head of Department] believes what we should use, and what our goals are” (p.1). This is an explicit link between the “culture of the school and English department” and technology use in English classrooms. In the following examples, participants frequently display a willingness to innovate with technology use, but such innovation may be stifled by the attitudes and cultural orientations of the English department.

In some instances, participants recounted narratives that frame a school or English department in a particular way. This orientation was either toward a ‘traditional culture’ or an ‘innovation culture’. For example, in the extract below, Diana narrates her recent experience at a “traditional English department” meeting, where she suggested a digital audio-visual project as a student assessment.

Recently, I'm at a new school, it's an all-girls school, and they [the department] are a little bit more traditional, like in the English department. And so we don't really use that much technology... even when I mentioned something the other day and it was about a new assessment using, iMovie, where they actually had to create an autobiography, but using iMovie, um, they just all looked at me with blank faces and then moved on to something else, like, and I just thought, 'okay, they don't want to integrate technology' (p.7).

Surprisingly, this Catholic school's English department uses little technology. This may be due to the specific culture that has evolved within the department over time. However, Diana's vignette of being ignored at a departmental staff meeting brought to life her statement that this 'traditional English department' did not have much inclination to integrate technology in their pedagogical approaches. Diana's colleagues appeared to be actively silencing the possibility of multimodal teaching and learning with iMovie by shifting to the next item on the meeting agenda.

The departmental culture surrounding teacher technology use is also influenced by the professional development culture at each school. Most participants specifically talked of professional development (PD), professional networks (within English departments), professional exploration, innovation and, in some cases, successful application of software and technologies. A contrast can be drawn between Diana's description above, of a traditional departmental culture and Mary's enthusiastic description of staff PD sessions below, in which teachers across the disciplines share technological knowledge in the following two extracts.

So, one of the things that we do on our PD days, um, at least once a year, usually twice a year is we have these little carousels, where we go to different sessions of about twenty minutes, half an hour, and teachers demonstrate what they're doing in their classroom and how they're using technology (p. 13).

This short narrative indicates a school culture that supports teacher innovation and experimentation with technology across all subject areas, and a commitment to sharing knowledge between teachers and departments. Mary continues with her story about what she discovered at that PD session: "I heard about the Explain Everything iPad app, so I'm pretty keen to have a go at that" (p. 13). Mary describes a school environment that supports teacher

innovation and collaboration through the sharing of professional knowledge, and she is the only participant to do so. Mary's experience of the PD session is described in language ("I'm pretty keen to have a go") that is engaged, enthusiastic and reflective of an open attitude towards teacher technology PD. However, another participant, Peter, critically reflected on the need for more attention on skills, objectives and PD structure, and was largely critical of PD sessions.

One of the things that really struck me about the way it's been managed in schools. There hasn't tended to be, even at the [independent girl's] school, uh, a set strategy for developing those skills in people. It's simply been a matter of: 'there's this this platform. go and play with it'. And it fascinated me that hasn't been made to be a focus of professional development in itself, that with specific skills as specific objectives. And quite often the people doing that informing of teachers themselves are not educators. They're IT people, and IT people often are not necessarily the best people for conveying that information to people because they teach as if the person already knew or should know, which is not teaching (p. 24).

In a concise way, Peter described a lack of strategy and planning for teacher PD with specific skills as objectives, even, in his experience, at higher socioeconomic status (SES) schools. Peter described how the acquisition of new technology and software knowledge was often "simply" achieved by experimentation or "going off to play with it". This description illustrated Peter's opinion regarding a lack of strategy to support and develop digital skills in teachers.

Belief in LMS technologies. Learning management systems (LMS) featured in all teacher interviews, with a majority of participants using SEQTA, some Connect, and some a

combination, in conjunction with other platforms, such as MS Teams for curating and organising materials and content. Most participants expressed a positive orientation to the ubiquitous use of LMS's in the profession. Focusing on the data regarding SEQTA, participants cited increased teacher collaboration opportunities as the most frequent improvement. Other affordances were mentioned, such as real time information sharing and how separate interfaces for parents and students facilitated tailored communication and feedback. As highlighted in the following, SEQTA was not spared criticism from some participants, but the data points to an overall satisfaction with the platform. Beginning with Emily's opinion that her school is heavily reliant on the platform for all lesson planning and administration, Emily then goes on to describe the real-time communication affordances of three separate interfaces.

We're very systems driven school. We rely quite heavily on a programme called SEQTA for all our lesson planning, um, and all our behaviour management, pastoral care notes, enrolments. Everything goes into the one system. There are a few interfaces. So, we use SEQTA Teach, and that kind of translates into SEQTA Learn for the students and SEQTA Engaged for the parents, so the parents actually have the option to download it to their phones as well, so they can see information in real time at all times (p. 3).

Emily characterised her school as “systems driven”, which is heavily reliant on the SEQTA platform for planning, administration and communication. However, she went on to contrast SEQTA with the previous LMS the school used:

It was not as user friendly; it had the limitations in that it wasn't very collaborative, and also that parents couldn't see information real time either. So, moving to SEQTA has been a change for us, but a change for the positive,

because you just go and do everything you need to, in one system, and then it's spits it out in the various formats in the various areas that require the information so, honestly, it's a positive change (p. 3).

Emily articulated the positive change via improvements to collaboration, information sharing and the tailoring of that information for teachers, students and parents/guardians. In contrast, Diana's "traditional English department" and school culture seemed to affect the orientation she articulated towards the SEQTA platform. She characterised her department as "not that into it", despite perceived benefits. Diana spoke of three affordances: feedback, record keeping and student revision, as benefits of the platform. However, Diana qualified her minimal and restrained assessment of SEQTA by highlighting feedback as "the only way I think it is beneficial":

I guess, in the English Department, they're not that into it, but I do see benefits. It just depends on, yeah, it's hard. But like I said before, the only way I think it's beneficial is just the feedback, especially with English, the regular feedback and record keeping and using SEQTA. Like all of that, all our lessons are on there, record keeping, just having everything that they can go back and revise. And that's probably about it (p.16).

Diana described her English department's indifference towards SEQTA, despite her personal acknowledgement of the platform's effectiveness.

Elizabeth was another participant to employ an unusually restrained vocabulary in her description of how LMS's are deployed in a school setting and the professional implications of

such deployment. In the following extract, Elizabeth describes how teachers interact with SEQTA in terms of function, resource curation and professional obligation:

We share the course outline, we annotate, bring things into it, add lesson plans that we can all share in that regard, so that we've got a bank of information and file that we can use. We are actually obliged to put up, certainly at least an outline of content on Connect or SEQTA so that parents can access that. So, then it becomes collaborative. The parents of the students are looking, students can see it (p.10).

Elizabeth described the detail of her professional engagement with the platform using the word “obliged”, which infers a form of mandatory compulsion. It is an unusual phrase that also infers a sense of ‘top-down’ change that can often be the case when new software or operating systems are introduced in the workplace. This phrasing may hint at a professional orientation to new technologies and software that may require new working procedures and processes as a result of the platformisation of education.

Beliefs surrounding handwriting and assessment. As alluded to in Chapter 3, participants discussed and framed firm opinions on the value of handwriting, reading printed books, and the future of handwriting in the digital age where handwritten examinations are still a significant mode of assessment. These opinions appear to be shaped by the realities of K-12 student assessment policies, and it is this examination policy in the Western Australian English curriculum, that seems to be problematic for most teacher-participants when deciding to use TEL. Consequently, this issue appears to be a determining factor in how, or even if, digital technologies (both hardware and software) are used in Western Australian English classrooms. Presented below are three participant excerpts that articulate a firm belief in the enduring value

of handwriting in the future of literacies and academic achievement and how it affects technology use. Emily, who characterises her approach as “old school”, voices a firm opinion about the cognitive value of handwriting:

I feel personally that handwriting is important, because if you're sitting typing out notes, for example, it's very passive ... you're actually just regurgitating what you're, you're seeing ...handwriting actually makes you think about the words that you're writing, I feel, so you really have to concentrate and really have to think about the spelling, think about the way that you're writing it, think about the content and things like that. So, yeah, I personally, still feel old school handwriting should still be encouraged (p.14).

Emily's short exposition articulated her perception that typing is a “passive” activity, in contrast to the more active skill of handwriting, which requires “concentration”, “thinking about spelling”, syntax, and content”. In concluding her statement, Emily characterised handwriting as “old-school”, placing this traditional skill in the past, rather than the future, but in her opinion, a skill that should be encouraged in the present. Similarly, in the following, Elizabeth and Diana speak of pedagogical tensions between handwriting on paper and typing on a device. Diana indicates her awareness regarding the need for balance, due to the differing pedagogical requirements of assessment programs, such as NAPLAN (years 7 and 9) and ATAR exams (years 11 and 12).

We're constantly talking about making sure that we have enough balance in our classroom, everyday lessons, that they're typing up things, but they're also handwriting... We're very aware, and we constantly talk about that, making sure we have the, the balance, because we're very aware that NAPLAN is online. So,

they need to get familiar with that and type quicker and editing and so on. But they also need to prepare for year eleven and twelve ATAR exams, right? On pen and paper, So, yeah, we constantly have got that battle (p. 12).

Diana's utterances indicate an awareness that speed of student typing skills needed for success in NAPLAN online assessments are not required for ATAR examinations. Diana described this as "a battle", a source of pedagogical conflict that requires a balanced approach to both forms of communication.

Elizabeth articulated her view that the clarity, speed and legibility of student handwriting was an issue for many schools and her approach to this battle was to limit the use of technology to support students to write more. This approach for the senior years of high school, is seen as necessary for students to maximise their chances of achieving good exam results. Such an approach may also influence the sociocultural standing of a school; because of what high stakes assessments such as ATAR represent for annual school rankings, as well as for students.

So, I try to limit the use of technology in the classroom because I want them writing a lot more because I'm at an all-boys school. I think that's exacerbated even more that they don't write a lot. They don't write in other disciplines much at all. So, their clarity, the speed and the legibility of their handwriting has become an issue at many schools (p. 3)

All participants expressed a strong belief in the cognitive value of handwriting. However, it is clear from all participants that the current status quo of online English NAPLAN testing and handwritten ATAR English exams are problematic for students and teachers, despite efforts to strike a balance between both modes of communication.

Addictive potential. Participants highlighted the belief that technology could be potentially addictive. This personal belief would also seem to influence the participants' professional attitudes towards the use of technology in their English teaching. This category of interview data also relates to teacher participants' beliefs about student wellbeing and agency via the concept of digital citizenship and ethical responsibility, student maturity and self-regulation. The concept of digital citizenship can include online behaviours relating to identity, safety and wellbeing, and these are distinctly personal concepts that help to create agentic actions in the online space. The two stories presented below invoke contentious issues that are prevailing narratives for parents; however, these types of narratives are not always given due prominence in wider public discourses. Diana and Peter narrated stories of screen time control and the possibility of screen addiction in students. Both participants raise contemporary, professional, and personal concerns that are of interest to all stakeholders, including parents/guardians and teachers.

Peter mentioned online ethical conduct in the context of his experience with his son (a year eight student), and he spoke of his concerns over boys with unfettered device access, and the possibilities for technological obsession and screen or app addiction:

It was like, he [Peter's son] was obsessed with gaming, he was on his laptop constantly, and he still is, it still is very much an issue. And then, of course, there's access to pornography, there are weird social models, that he's given, access to all sorts of conspiracy theories... there are definitely, a lot of social issues associated with boys and technological obsession. I feel that perhaps at schools, we, we're not paying attention to that (p. 19).

In sharing this personal story, Peter illustrated how personal beliefs can overlap and align with professional belief systems. In the above extract, Peter attempted to make sense of his son's obsession with gaming and other possible harms that technology might enable. His concern was expressed in terms of "social issues" and "access" from both a personal and professional perspective. He was obviously invested in, and aware of, these issues as both a father and teacher. Peter did not offer any solutions; however, he stated a belief that schools are not paying sufficient attention to these significant ethical and social challenges. Such a belief that schools are currently not doing enough to deal with such wider socio-technical issues, assumes that schools should and must have a role in addressing these challenges in the first place. Student wellbeing is of central importance to education and falls directly under a school's remit, despite the sometimes overlapping and even competing responsibilities between home (parents/guardians) and school.

Diana spoke of observing technological addiction in terms of student reactions when faced with device confiscation: *"They feel addicted to it. They can't not look at their phone or their laptop. When you take it away, they're actually relieved when I confiscate it"* (p. 10). Articulating her professional concern as a teacher, Diana implied that students could form addictions to devices, such as phones and laptops, and may feel a sense of relief from compulsive behaviour. In the following, from a perspective of teacher professional concern, Diana recounts an interaction she had with a parent, who complained about excessive laptop use at school:

...if you talk to parents, parents will come and complain to us and say: 'the kids are using too much of their laptop at school'. And then I said, 'well, when do they use their laptops at home? They said, 'from the moment they get up at seven in the

morning at the breakfast table. So, you're telling us[teachers] to stop it, but you can't manage it (p.11).

Diana makes a valid point about parental control and management of screen time, as parents/guardians may not always be successful or interested in managing the supervision of devices at home. However, the fundamental question should be about more than 'managing' but rather about the positive reinforcement of psychologically healthy behaviours, involving productive and controlled use of technology. Implicit in Diana's words is that parents/guardians and teachers may observe a problem with screen time issues, but neither have the tools nor the knowledge to work with the students and move towards desired outcomes. This may be partly due to the blurred boundaries between school and home.

TEL effects on pedagogies

Theme 1: Sociocultural effects of TEL

Within the data set, the techno-sociocultural theme provided a rich category of anecdotes, narrative fragments and opinion statements that revealed how participants have made personal and professional adaptations because of advances in technology. When considering the extent of such adaptations on the pedagogies of participants, much of the sociocultural category has been presented earlier in this chapter under the headings: *COVID-19: Teaching with technology in a time of change*, *Personal-professional beliefs* and *Pre-Digitals vs Digital natives* and *Disruptor beliefs*. These will be further explained in the discussion chapter. However, one part of the data set takes a broader view of EdTech and its effects on the profession, viewing technology as potentially driving a re-configuration of what education is.

Re-configuring Education. All participants have worked through the digital revolution era, a period in which many technological changes have occurred within the profession. Some

participants discussed their personal-professional opinions about what such change means for education and how it should adapt. In the following extracts, Emily, Peter, and Mary articulate what they see as changing in the profession and provide some hints as to the possible adaptations that may be necessary for future teaching practices. When first asked about how she saw the future evolution of teaching English, Emily invoked a dystopian outlook of the future and commented how there may be fewer teaching positions due to a shift to online teaching. Emily then qualified her comment with a belief statement about the place for teachers to facilitate learning, specifying that, in her view, explicit direct instruction is a key teaching method.

It could turn, grow totally technological and online and whatever. And then I guess teaching jobs would be fewer as well, because, if you know, everything was online, and [...] they wouldn't need the role of the teacher. I still, think there's definitely still a place, for explicit direct instruction and, you know, teachers facilitating the learning process (p. 29).

In the above opinion, Emily implicitly subordinated online teaching (and by extension, self-directed independent learning) to traditional direct instruction. However, the verb “facilitate”, which depicts another function of the teacher, suggests a re-framing of Emily’s pedagogical orientation towards more inclusive and constructivist modes of instruction. In contrast, Peter took a broader and deeper view of how technology will ultimately change the fundamental definition and purpose of education for society. In the extract below, Peter reflected on what he described as a “shift in the landscape” or technology’s inevitable and permanent influence on the re-framing of education:

There are definitely challenges. It's not so much a matter of whether it's a good thing or a bad thing, I mean, it's inevitably here to stay. But I also think that a lot

of the policy and process has been driven by people who weren't born to it and so, as a consequence, are inclined to therefore sometimes naively think that it's inevitably a good thing [...] and not necessarily to have that robust educational discussion about what we can take from this that's great? And what should we be mindful of? I feel like we have just given it [technology] this general approval, that it's generally a good thing, and as a consequence, we overlook all of the places where it's not. I think that it inevitably has shifted the, the whole landscape for education (p. 22-23).

In the above commentary, Peter articulated his belief that technology and its effects are “here to stay” and that education needs to be “mindful of” the not-so-great, or negative aspects, which may be overshadowed by the focus on the affordances of “good things”. Peter concludes with a declaration that the “whole landscape for education” has shifted. In Peter’s opinion, this shift was inevitable; the inference is that robust discussions in education need to account for and adapt to shifts that have already taken place.

Theme 2: Pedagogical effects of TEL

Techno-Pedagogical themes were largely situated within participant narratives around independent, self-regulated learning using digital devices, the internet and software/apps for learning. Participant narratives also framed technology use for learning as student centred by nature because the student with a laptop has access to the accumulated knowledge of the internet from which to curate information and learn about epistemology. For each student, this may require new skills of self-directed learning and research, the evaluation of information, and digital citizenship; these can occur in a collaborative group or solo working context. Such skills

directly match those twenty-first-century skills which the OECD (2018) and UNESCO (2011) identified as necessary for new generations to lead productive and engaged lives.

Mary was the participant most at ease with TEL integration in her English classes. She described her ideas for deeper technology integration in her classes, despite the barriers that often prevented her from doing so. Mary articulated an awareness of the Puetendera's (2006) SAMR model and acknowledged that, in most cases, in her class, technology rarely moves beyond the affordances of substitution. " *I'm probably still on the substitution level. I have lots of ideas about the augmentation, but it's a case of time. I just don't have the time to be able to do a lot of the things that I would like*" (p. 12). Mary suggested that the higher pedagogical goals of technological augmentation, modification and redefinition are currently not within reach. For the final three levels of the SAMR model, teachers may have to use a range of instructional methods, rather than the traditional didactic instruction, or passive learner approach. Later in the interview, Mary hinted at what this instructional approach was like when she deployed technology in her English classrooms to mediate student learning about a particular text:

The way that I teach usually is getting the students to give me the information anyway, and then filling in the gaps. So, the technology allows that a bit easier. If I'm teaching them particular text, I've got it projected on the screen, and I'm getting them to highlight the language devices that they can come up with. And I'm annotating as I go, and so they can copy what I've got. And so that that collaborative function is a lot better[...] I might get the kids to do, a little research task on a poem and present that to the class and that, that sort of thing as well. So, a more group and independent [approach], rather than the didactic chalk and talk, teacher knows everything (p. 25).

In the above vignette, Mary shifted the learning task and responsibility to locate language devices on a projected example of text, to the students. This required the students to apply their language device knowledge by identifying and interpreting within the text. Using an interactive screen in a collaborative way, Mary displayed the text in question, and the students highlighted the language devices. In this case, they were annotating the text and illustrating the language devices in the printed text. This example is more than pure substitution because the learning is collaborative and interactive in real time. Mary concludes her vignette with an explicit preference for both independent and group research tasks, over the “chalk and talk” approach of didactic teaching. Other participants in this study also invoked this close association between TEL and student-centred learning.

Similarly, during his interview, Peter described his pedagogical focus as student centred-learning; however, there were difficulties with engaging his students, and in his view, technological access to the internet may in fact be a barrier. In the following extract, Peter articulates his opinion regarding the lack of intellectual engagement with independent, student-centred learning that he observed in his classrooms. Peter attributes this disengagement to the “massive access to information” (the internet) available to students. Further, Peter states that, in his experience, students do not easily transition to “student-centred learning” from the didactic ‘sage on the stage’ approach. Peter concludes that while the focus of his teaching is to be student-centred, the students interpret this approach as “more work for them”, resulting in the lack of engagement previously identified.

I have found that the massive access to information has actually made a lot of students less intellectually engaged. They quite often ask fairly simple things, and I will say, ‘why don't you look that up?’ ‘Why are you asking me?’

That information is available to you' [...] a lot of my focus now is more on student-centred learning as well [...] They're central to their own learning, but actually getting them to make that transition is harder than I would have thought. I would have thought it was more engaging for them, but it looks like more work for them sometimes (p. 11).

In the above extract, Peter described the shift in his teaching and pedagogical approach as a transition for both teacher and students that was more challenging than originally anticipated. He recounted how he would attempt to relocate the responsibility for inquiry learning onto the student, however his students resisted this as extra work. In the above, Peter described his students' hesitation to work and lack of curiosity as being "less intellectually engaged" and that his expectations regarding student engagement with their own learning were not met. It is not clear from the data which age level classroom Peter was discussing, but inevitably issues to do with maturity and age-appropriate levels of instruction came into focus. The point that Peter seemed to be making is that despite all of the possible digital information and technology at the fingertips of students, they still rely on the 'sage on the stage'.

Conclusion

This chapter presented the findings that were grouped into the two parent themes of techno-pedagogical and techno-sociocultural data. As thematic categories, these two themes provided a way to identify and classify the data. They also provided a basic structure through which to view the stories, reminiscences and commentaries of the teacher participants.

The chapter began with a presentation of the data related to the COVID-19 home teaching experiences of the six participants. It then moved on to introduce the data that illustrated the

teacher beliefs and attitudes regarding TEL. The chapter concluded with the findings regarding technological influence over participants' pedagogies. The two thematic categories represent the apex of a 'thick' matrix of the data set. These themes were identified as prominently exhibiting narrative structures, affective signatures and depth of meaning. In the next chapter, these findings and insights will be discussed and further unpacked in relation to the literature, a proposed *Teaching with technology model* (Figure 6, Appendix D) and the research questions.

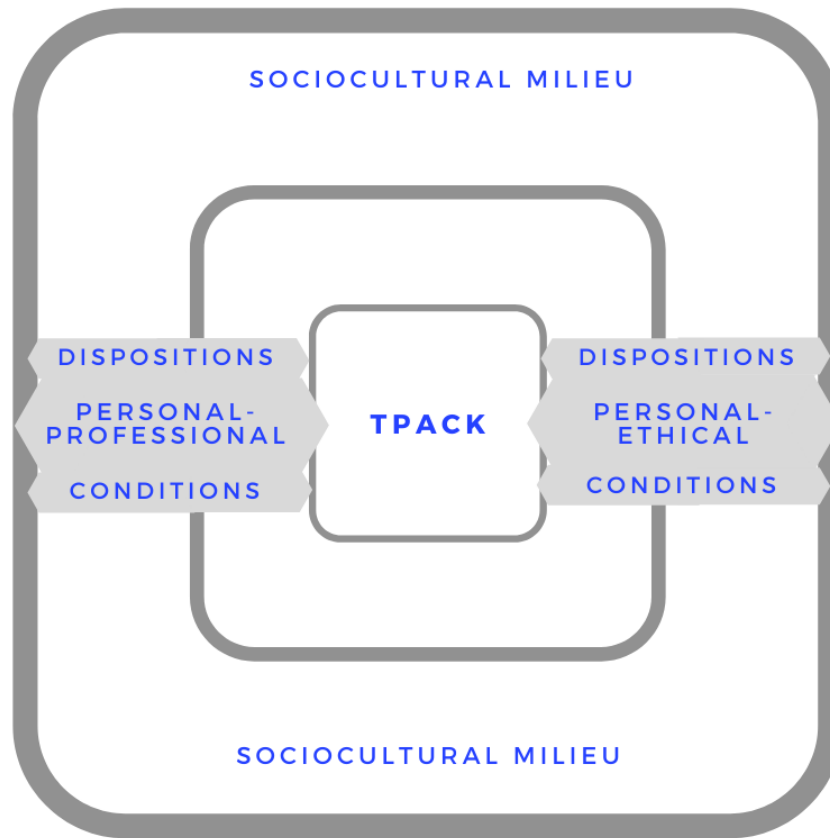
Chapter 5 Discussion

Introduction

The previous chapter focused on findings that accrued from a narrative analysis of the interview data, which explored secondary English teacher experiences with TEL, as re-told in their own words. Four themes were found to be significant and then categorised into two overarching themes: techno-pedagogical and techno-sociocultural. These thematic findings were illuminated by teacher participants' narratives of change, teacher (dis)empowerment, wider sociocultural context of teaching English in a time of technological change, and teacher experiences with student-centred learning and technology. This chapter comprises three main sections; each addresses the three research questions by exploring and focusing on two selected themes. To interpret the findings, the discussion will draw on a sociocultural theoretical lens (Vygotsky, 1978), while referring to extant literature and the *Teaching with technology model* (see Figure 6).

Figure 6

Teaching with Technology Model



Note. This extended model is based on Bower (2019)'s Technology-mediated learning theory and Falloon (2020)'s teacher digital competency (TDC) framework.

This model, which at its core, centres on Mishra and Koehler's (2006) teacher technological pedagogical and content knowledge (TPACK), suggests that the first central layer and second layer of personal-professional and personal-ethical conditions and dispositions, are affected by the wider sociocultural realm, or milieu and vice versa. Such a conceptual model represents a constructive framework through which to understand and discuss the findings. Before embarking on a discussion of the research questions, a brief recapitulation of the study's aims and theoretical perspective will further explain the discussion to come.

Addressing the Research Questions

As identified earlier, the research aim of the present study was to explore factors that contribute to uneven TEL adoption in Western Australian secondary English classrooms, and as discussed in Chapter 2, problems, challenges and successes regarding TEL integration were identified and explored in the large and growing body of literature. This chapter seeks to derive further meaning from the findings in Chapter 4 by employing sociocultural theory (Vygotsky, 1978), as it evokes an understanding of human development in cognition, and learning, which is fundamental to the construction of identity, language and social structures. This approach provides a way of understanding the complex domain of TEL and the confluence of factors that determine its use. The research questions were designed to explore possible explanations and reasons for uneven TEL integration in Western Australian schools. These reasons may be narrow and functional, to do with teacher agency and technical knowledge, or, as Bower (2019) and Falloon (2020) suggest, there may be broader, sociocultural factors at play. The practices surrounding the teaching of English, as a high-school subject, are nested within wider sociocultural belief systems about what is good education. These belief systems are deeply ingrained into schools and their English departments, and may constrain or indeed, enable innovative teaching and learning with technology.

The following three sections will unpack the two themes in response to the research questions. Beginning with research question one and the emergency response online teaching (EROT) period in Western Australia, the first section will explore and evaluate whether teacher beliefs and behaviours may have changed due to this extraordinary time in history. The second section discusses teacher TEL beliefs, attitudes and values from the findings, and the third,

explores the final research question, how does TEL affect the pedagogy of Secondary English teachers?

Research question one: TEL during and after the COVID-19 lockdown periods

The teacher participants provided personal and heartfelt insights into their experiences during this challenging time for schools, education and the world at large. Their short narratives, and observations from this time of home online teaching and learning were categorised into the two themes of techno-pedagogical and techno-sociocultural. Importantly, the realms of the techno-pedagogical and the techno-sociocultural both influence one another in a symbiotic relationship; one cannot be deeply understood without knowledge of the other, as the following section explores.

Emergency Response Online Teaching. It is difficult to suggest any greater force of change in the current period of human existence than the COVID-19 virus (Khlaif et al., 2020; Smith, 2020; WHO 2020a). Therefore, it is remarkable that, on the analytical surface, both the spread of this virus and its cascade of social effects are perceived as minimal in the state of Western Australia to date. However, a deeper analysis may suggest this is not the case. COVID-19 is said to be a significant agent of change in societies across the world (Bates et al., 2020; Lorente et al., 2020; Valtonen, 2020). As this change is systemic and transformational for society at a macro level, so it is for the discipline of education; all levels (K-12 and higher education) are experiencing technological change that is indeed perpetual and transformational (Graham & Sahlberg, 2020; Rasskazova et al., 2020) and it can be contended that much change across both the pedagogical and sociocultural realms at this time was mediated by technology. The following

section explores this theme of techno-pedagogical and sociocultural change at the classroom level and discusses the possible change effects of this period.

In Western Australia, the lockdown emergency response online teaching (EROT) period was relatively short; however, the overall view of the participants characterised a time of great change at all levels, global, national and local. The theme of change was significant because teacher participants compared online and face-to-face delivery and spoke of difficulties for both teachers and students and sub-optimal learning. This finding aligns with contemporaneous media reports that teachers and parents found EROT insufficient for learning and teaching (Duffy & Kent, 2021). These observations are surprising if one considers that in the twenty-first century, schools and wider society are supposedly in a new post-digital era of ubiquitous digital technology (Jandrić et al., 2018, 2019) for the education of digital natives (Cascone, 2000).

This pandemic period in recent history has also been characterised as a time of immense change on all human levels, for the world, nation-states, social systems and individuals (Daniel, 2020; Khalif et al., 2020; NSWTF, 2020). Indeed, the pandemic itself created a narrative of enforced adaptation in which COVID-19, an external, biological threat, functioned as an accelerator of societal change (Williams et al., 2021). Many countries chose a variety of medical interventions in what many have described as a global scale experimental trial (Bates et al., 2020; Esposito & Principi, 2020; Khalif et al., 2020; Litvinova et al., 2019; Viner et al., 2020). The most common strategies were quarantine and reducing social mixing of populations in what Bates et al. (2020) termed a “global human confinement experiment” (p. 2). However, as Khalif et al. (2020) explain in their study regarding the effects of school closures in developing countries, the virus had varying and ongoing effects on nations of all socioeconomic categories. It is a frequent narrative that globally, COVID-19 has laid bare all sociocultural inequities and

fault-lines in society (Khatchadourian, 2020; Shah, 2021; Stobart & Duckett, 2020) and these effects were especially acute in the global south (Khalif et al., 2020). Other jurisdictions were more fortunate, as in the case of Western Australia.

The Western Australian context. In Western Australia there was a short period of EROT of two to three teaching weeks, supported by four days of PD to familiarise teachers with new technologies and (for some teachers) new pedagogical approaches. The short and rushed preparation time for online teaching was found to be similar for teachers throughout the world and locally across all three education sectors – government, Catholic and Independent (Abaci et al., 2021; Bouffard, 2020; Joseph & Trinick, 2021; Khlaif et al., 2020; Patston et al., 2021). In the WA context, K-12 school lessons were largely facilitated by the use of Microsoft Teams and Zoom video conferencing software on student and teacher internet enabled devices i.e., fixed desktop computers, laptops, iPads and smartphones (CEWA, 2020; SSTUWA, 2020; WA Department of Education, 2020d). Although this technology and software pre-existed the pandemic, depending on a multiplicity of personal, professional and social factors, teachers' prior experience using such tools ranged from extensive to non-existent. This is consistent with the literature on educational continuity in times of crisis.

For example, after a series of seismic events, Ayebi-Arthur's (2017) case study of E-learning and resilience at the University of Canterbury in New Zealand, found there was a range of academic faculty dispositions towards E-learning as an instructional mode. Despite the difference in sector, similarities can be drawn with the secondary education sector in WA. Ayebi-Arthur (2017) suggested that across the organisation, "the higher up you went, the less it [e-learning] was used" (p. 265). In this New Zealand study, e-learning was initially less valued as a teaching method by those in faculty leadership positions and its efficacy was reassessed after

the experiences of the University. Similarly, in the Western Australian English secondary school teachers' context, teachers and heads of department may have had pre-existing beliefs in the suitability of online teaching or may not have been familiar with the possibilities and affordances of MS Teams or Zoom, due to personal-professional dispositions. However, despite such perceptions, teachers were tasked with mediating and facilitating their instruction exclusively in this online mode for an unforeseeable amount of time. Other contemporary discussions around the possible effects of the pandemic on the Australian education system have recently been published. Of note are Gallop et al.'s (2021) (*Valuing the teaching profession - an independent inquiry*); and Graham and Sahlberg's (2021) reports *Growing up digital Australia phase 1 and 2*. Both sets of authors convey that considerable reflection on this time of disruption is warranted, not just at the macro social and systemic level, but also at the micro school and classroom level.

Turning to this study, participants perceived this EROT period as "unique", largely due to their optimistic view of the pandemic (and despite the challenging circumstances), based on how the state government of Western Australia mitigated the worst effects of this worldwide crisis. Wider sociocultural beliefs and attitudes can be seen to influence such perceptions and their articulation in the discourses of the pandemic. It can be argued that these teacher participants' opinions articulated a distinctly Western Australian cultural narrative of exceptionalism that echoed an Australian disposition- the national theme of exceptionalism (Coleman, 2016; Delaney, 2021; Smith, 2020). Since British colonial occupation in 1788, Australia's cultural-historical path has often been expressed by its difference to those norms of other western democracies, most notably in the political, and sociocultural spheres (see Coleman, 2016; Collins, 1985; Horne, 1971). This sense of exceptionalism is a powerful cultural identity

narrative for Australians, and it found articulation in the events and discourses that unfolded during the pandemic (Smith, 2020).

On a state level, this ‘separateness’ also plays out culturally and politically in a way that is inspired by both geography and history (Delaney, 2021; Wahlquist, 2021). Similarly, in the present study, participants expressed a form of home-state exceptionalism by characterising the EROT period as “very lucky”, or “fortunate”, for some communities, and when comparing their experience to that of schools in the UK, US, and the other Australian states. When understood within this sociocultural context, these exceptionalist beliefs are reasonable and further reinforced by the fact that, on all measures, Western Australia has managed to evade the kind of mortality and disruption seen in other jurisdictions to date (Delaney, 2021; Smith, 2020; Wahlquist, 2021). It may be useful to explore how these beliefs reinforce the attitude that teaching practices ‘snapped back’ to how they were before 2020 because of a perception that life returned to near-normal for the Western Australian populace, and therefore, so did teaching practices.

Participants contend with change and continuity. During their interviews, five of the six participants narrated stories from the emergency response and indicated that operationally, the digital presentation of content and materials afforded some educational continuity. These participants explained that as a matter of course, all schools already uploaded most course content (such as homework, unit learning materials, and assignments) on the LMS platforms SEQTA or Canvas. In fact, in 2020, by the advent of the pandemic, most schools and tertiary institutions had deployed a LMS that presented content and organised administrative work (Lambert & Gray, 2020; SIDE, 2021). Given that these LMS software technologies were already

in regular use by March 2020, it is surprising that most participants still reported lower-level educational outcomes for their students.

Arguably, given the participants' perceptions that the EROT period was not conducive for learning, it can be said that the aim of maintaining education continuity was not met. Ayebi-Arthur's (2017) New Zealand study, referred to above, is an illustration of how specific factors can influence the use of online learning in an emergency context. Ayebi-Arthur's study of The University of Canterbury's continuity of teaching capabilities after a series of seismic events found that early deployment and faculty responsiveness increased the use of underutilised LMS software that pre-existed the seismic events. These factors reinforced the faculty's resilience in this situation. Similarly, in the present study, and the context of EROT in Western Australia, participants largely reported the communication of student tasks and availability of learning materials to be unimpeded by the disruption because of deeper reliance on and more frequent use of SEQTA. In other words, the dependence on such LMS platforms for communicating tasks and access to learning materials was much higher than in a time of face-to-face teaching. However, the findings indicated that new possibilities and technological affordances were mediated by both teachers and students to enhance learning. In this new online teaching and learning space, technologies such as SEQTA and MS Teams became the primary mediational communication tool for teachers and students. Bower (2019)'s technology mediated learning theory explored how the affordances of technology, educator and student conditions and broader sociocultural contexts are all mediational and interrelated, and what this means for learning and teaching. The following discussion explores the possible meanings of such technological mediation for teaching and learning.

Technological tools change teaching and learning during EROT. In this context, SEQTA, as an LMS, can be seen as an instrument or tool of mediation (Vygotsky, 1978) with the communication and presentation of learning materials and student progression its primary function. Moll (2014) and Wertsch et al. (2007) have suggested that Vygotsky conceptualised the mediation of learning into five categories: social, instrumental (or tool based), semiotic, anatomical and individual mediation (Moll, 2014 p. 31). Technology and software are used in education to convey meanings and are therefore mediational tools or instruments because these are artifacts that are “created culturally and inherited socially, to engage in human practices (p. 31). Focusing on the mediational affordances of SEQTA, this platform functions to mediate learning by the way it represents information semiotically, using the language of scholastic instruction and sociocultural references that make up the construct of English as a subject (Alvermann et al., 2019; Ball, 2000). These are transposed into the digital platform for the student to read, decode and create understanding and comprehension in order to achieve learning. These mediated instructions invite and require learner engagement and comprehension to complete the learning tasks that are set by the teacher. Such engagement may be enacted by the student or not. Some teacher participants reported a lack of student attention and engagement with online tasks. It may be speculated that such technology mediated instructions are ‘disembodied’ from the physical presence of the teacher, hence why some students may not react and engage the same way.

SEQTA: mediational affordances in a new context. It can be argued that SEQTA mediates content and learning achievement by displaying of units of learning in a sequential linear progression, which is ultimately viewed by teachers, heads of departments, principals, parents/guardians and students. This gives the student a perspective on their cognitive

development that, in pre-digital times, was never as immediately contextualised and complete, in terms of the opportunity for student feedback. SEQTA can act as a channel for communicating feedback and development in a multi-directional way, thereby giving students a voice in the assessment loop. In the context of EROT, the majority of teacher participants relied heavily on the mediational power of SEQTA. Despite this functional success with technology, the data suggests that the overall teacher experience and perceptions were that student learning specific to this period was sub-optimal (NSWTF, 2020; Graham & Sahlberg, 2021). This was evidenced in participant commentary about having to re-teach EROT lessons and “doing it properly”. Such perceptions may be deeply linked to the broader sociocultural conception of what education is and how it is organised with the age-streamed school system. This conceptualisation also manifests itself in the organisational culture and operations of a school (Biesta, 2015). It also is inherent in how schools and departmental subcultures are enacted and the discourses that occur within them. COVID-19 disrupted all of these sub-cultures, their concepts, organisations, and their operations. The EROT response changed the physical context of teaching.

Fundamentally, the aim of education is to provide a safe physical and sociocultural environment for students to have the optimum conditions in which to learn (Weinstein, 1979; Woolner et al., 2018). This environment is by design, built to negate the distractions of other social environments and is invested with and controlled by authority of the state. However, the pandemic and EROT effects changed both the physical and social contexts for teachers and students. The reality of online mediated lessons and the disembodied teacher presence may have diminished teacher-participants’ sense of agency and control of their classrooms and the lessons they presented. It also had effects on student accountability and self-regulation. Participants observed an overall lack of student accountability and maturity to self-regulate their online

behaviour and engagement with the learning tasks. In this vein, the data strongly indicated a teacher perception that in the context of EROT, technology mediated home learning was not effective for student learning. The participants reported teacher-led student behaviour mitigation and work checking strategies; however, these seemed to have limited success. One can speculate this is because the participants could not overcome the lack of embodied presence when teaching is mediated by videoconferencing software, despite having a positive disposition towards it, as has been explored in the contemporary literature.

The importance of teacher readiness and disposition in relation to the pivot to EROT was a strong theme in global teaching experiences and is explored in recent literature on home teaching during the pandemic. Gudmundsdottir and Hathaway's (2020) Finish study of teacher readiness for online learning in the early months of the pandemic response, found teachers to be "moderately prepared" (p. 239) and "willing to make online learning work" for both students and teachers (p.243). Similarly, all English teacher-participants in this study expressed a willingness to make the best of a challenging situation. However, with the benefit of fifteen months of hindsight, most participants were critical-to-negative in their opinions about the effectiveness of their lessons in this context. It is important to consider three conditional aspects of the Western Australian experience; a two-week period of home online learning, four short PD days for teachers to prepare and a heavy reliance on student and teacher prior technological knowledge for communication. These conditions would seem to indicate that the effects of this lockdown experience would be minimal and insignificant.

On the contrary though, there appears to be a consensus amongst the participants of this study, that the experience of 2020 altered the contextual possibilities for education and added to the range of pedagogical approaches available. Participants also reflected on their specific

orientations to online learning and talked about an increase in confidence when using technologies in this way. The interview data also revealed that participants' beliefs about teaching and learning with and mediated by technology were challenged, but ultimately reinforced and not altered because of their experiences in 2020. Nonetheless, as alluded to earlier, a dominant theme in the interview data suggested that normal academic rigour was not achievable and that student learning during this period was sub-optimal. This is in line with literature (Giunco et al., 2020; Gourlay, 2021; Moore et al., 2021; Reich, 2021; Trust & Whalen, 2020), and may be due to several macro and micro sociocultural factors including: emergency preparation and planning, the expectations of the type of learning possible, and student accountability, which are discussed in the following section.

Emergency preparation and techno-pedagogical change. One area of agreement between all participants in this study, is that the preparation for the pivot was rushed and needed more careful and detailed consideration of the types and levels of learning that may be achieved in this new online context. It is worth considering the broader meaning of the pivot to EROT, where a nonconventional educational method became forced upon mainstream education as an emergency response to the pandemic. However, it should be noted that online teaching and the concept of distance education as an instructional context is not new. Online teaching has been discussed since the mid-1990s (Benson, 2002; Dron & Andersen, 2016) and this mode of teaching and learning has been successfully in operation for many years, for example, distance education in Australia and other countries (Bernard et al., 2002; Rehn et al., 2018). It has been suggested that the online learning sector is somewhat stigmatised and seen as a lesser 'pedagogical cousin' to conventional face-to face instruction (Hodges et al., 2020 p. 3). Certainly, the teaching contexts and cultures are quite distinct from each other (Hodges et al.,

2020). However unfair and incorrect, it can be claimed in the discipline of education, that one is seen as mainstream and the other nonconventional, and further, it can be suggested this attitude cascades down through all levels of the profession (Ayebi-Arthur, 2017; Hodges et al., 2020). These are sociocultural, technological and academic attitudes and professional dispositions that may be deeply ingrained during teacher education and reinforced through experience and professional acculturation during practice in the field. Online learning is common to the adult and higher education sectors as well the distance learning sector. However, despite such stigmatisation, some research indicates that, as a method of education and instruction, online learning has efficacy. (Bernard et al., 2004; Means et al., 2014).

To accept that normal, pre-pandemic quality planned online teaching and emergency remote teaching are two different and distinct modes of education, allows for the intentional placement of the teacher experiences and stories of lockdown teaching within this study, as a temporary, unique experience of a particular time and place of emergency. In this study, some participants rationalised their reflections of this period as “unique” and “exceptional”. However, Hodges et al., (2020) suggest caution about directly comparing planned online teaching to online emergency response teaching, as the two are substantially divergent, and the end goals are not the same.

Interestingly, of the six participants, Peter was the only one to recognise that the face-to-face and online modes of teaching were vastly different and that both required differing approaches. Peter’s reflection aligns with the conclusion of Luis-Jean and Cenat (2020), that online learning “is more than just providing students with files and information and asking them to learn the materials” (p. 3). This new context requires a new mindset of personal-professional and personal-ethical conditions/dispositions as a result of technology mediating learning. This

finding is also congruent with Bower's (2019) technology mediated learning theory, where technologies and their affordances mediate and are mediated by the broad environment, educator beliefs knowledge and practices, as well as learner feedback and learner design goals. If the goal is for more interactive, productive and self-regulated learning, rather than receptive learning, then full use of interactive affordances is necessary. As Bower (2019) notes "more static affordances facilitate more receptive learning, while more interactive affordances promote more productive learning" (p1040). These mediational relationships are recursive and transformative, so the direct transposing and mimicking of face-to-face pedagogical approaches to the online context, may give rise to mixed results because of variables such as differing learner beliefs, knowledge, practices and interactions with the shared mediational technologies that may not align with those of the teachers.

As alluded to above, the main issue arising from the findings was a perceived loss of teacher presence, control, and power, alongside an increase in student agency in the online space, which springs from students detailed prior personal knowledge of that digital space. Teacher participants expressed this shift in the teacher-student power balance in their discussions that problematised student accountability during the EROT period. During the interviews, teacher-participants reported that checking student engagement and work was difficult and that the normal practices around this were disrupted in the new context. The transposition and substitution of analogue methods into a digital context failed to recognise and adjust to the new context causing tension and disconnection. However, the new online context may afford different and innovative possibilities for instruction precisely because of the shift in the teacher-student power balance towards increased student agency within the space.

Expectations and approaches. During the EROT period, the basic technological functionality of having students log on, communicate, and indicate a visible presence in an online class did not appear sufficient to support higher levels of learning (Marquart & Russell, 2020). This concern was illustrated by Peter's reflections about emergency online learning, firstly, that it has underutilised potential that should be explored: "I think we're missing a whole aspect that that online technology could produce. At the moment, we're just glad if we manage to take attendance, talk for a while, get them to do a task and submit something...it's low-level learning". The question to ask then is should teachers in this online context expect to achieve higher-level learning? This may depend on the maturity level of the students, the emotional safety aspects of the learning contexts and other socio-cultural factors.

It was apparent from the data that schools planned and achieved educational functionality using digital means to communicate, but deeper engagement with the affordances of the technology were not explored. Peter's extract above partially illustrates what Hodges et al., (2020) maintain are the less than realistic expectations of emergency response teaching, the primary aim of which is not to reproduce an "educational ecosystem" but to create a short-term method of continuity of access to "to instruction and instructional supports in a manner that is quick to set up and is reliably available during an emergency or crisis" (p. 7). To directly transpose pedagogical methods into this new online context does not account for the loss of a significant part of the school and learning experience- that of the social experience of school (Bergdahl & Nouri, 2020; Nasrallah, 2020). This loss is an unspoken element of the EROT. To consider Peter's reflection about teaching in this online context and frame it with the knowledge that this context was more of a hurried attempt to transpose one mode of teaching into another,

and make the best of it, leads to the assumption that this emergency response, as it was formulated, was not enough to support higher-level learning.

Despite the large paradigm shifts that the EROT represented pedagogically and socioculturally, it appears some schools made concerted efforts to create the semblance of a temporal routine in the online space. For example, Emily reported that it was interesting how her school mimicked the school timetable, but in a synchronous digital form on Zoom. By continuing to organise the school day in this way, Emily's school seemed to assist both students and teachers in dealing with this strange new non-physical context, whilst retaining the routine of meeting at a certain time, but in a digital online space. However, this act of substituting a timetable temporal framework and having specific hour long subject based classes does not utilise the other asynchronous affordances of videoconferencing software in structuring a learning environment within a school day (see Borup et al., 2012; Bower, 2008), and is an example of staying within the mindset of synchronous learning spaces of the physical classroom. Bergdahl and Nouri (2020), citing Dalgarno (2014), describe the possibility of polysynchronous affordances with interactions (both teacher-learner and learner-learner) such as planning, peer modelling, reflection, feedback and scaffolding (p. 446). These interactions can occur in multiple directions via multiple channels (e.g., teacher talking-head video, chat-boards, split screening pre-recorded clips, screensharing slides) that can all be recorded in situ for later playback by students and teachers to augment learning opportunities. These polysynchronous affordances were mentioned by two participants in relation to the EROT experience in 2020 and can be interpreted as new knowledge that adds to the pedagogical toolkit of teachers. However, creating and implementing polysynchronous channels and structures need time and thought for effective implementation and operation, and this luxury was not available during the EROT pivot.

The data findings also suggest that not all students worked effectively in the relative physical solitude of the family home. This may be for a variety of reasons. All participants mentioned the level of student maturity as a factor for successful online learning during the EROT. Interestingly, Mary observed that common behavioural traits were in fact reversed during her EROT experience. Students with behaviour management problems were the ones who thrived, and the usually self-disciplined, studious pupils were disruptive and acted up. This reversal effect was also a finding of Bergdahl and Nouri's (2021) Swedish study of lockdown learning in 2020. While this is one observation out of six participants, it may be useful to explore what sociocultural factors have changed behavioural function for these types of students.

In sociocultural terms, the shift to EROT is a relocation of the education paradigm at every level where the usual interrelations are mediated and re-mediated. When considering each level of the *Teaching with technology model* (Figure 6), in the EROT context, there is impact from the pandemic felt on every level. First, the broader sociocultural milieu was dramatically altered. As Meccawy et al., (2021) describe, without exaggeration, global society was in survival mode (see Gurukkal, 2020; Liu & Doan, 2020). Second, governments made policy decisions for the greater good of society and based on medical advice, to minimise the spread of the virus by closing schools. However, by closing all places of learning and shifting to online video mediated teaching, a teacher's personal-professional conditions of the formal, in-class learning domain were shifted to the online video mediated domain, the natural home of the digital native student. This online domain utilises the modes and methods of the informal learning contexts and the personal-ethical conditions that digital native students are highly competent with. Therefore, students were able to utilise their competencies to game the system and fail to engage with the lessons. Third, this shift also impacted teachers' core TPAC Knowledges as they had to adapt

and orient pedagogical and content knowledge and materials to be mediated by digital technologies.

Despite the short EROT period of teaching, the English teacher participants in this study reflected that the period was transformative in the way they saw and experienced TEL. The experience reinforced some beliefs about teacher and student dispositions towards assessment and learning, which may inform future debate about the desirability of high stakes examinations as a way of streaming students into higher education. It is also clear that the problems evidenced in the findings regarding the effectiveness of online teaching have further reinforced a commonly held (and unwarranted) view that face-to-face teaching is the preferred gold standard. The experience also gave participants opportunities to take advantage of new and not so new affordances of technology and integrate them into pedagogical practices, however peripheral and functional. The next section addresses the second research question.

Research Question two: TEL beliefs, attitudes and values

In this study, teacher participants articulated beliefs about technology in general as well as in education specifically. These beliefs exist and operate as discourse within a wider sociocultural milieu, that provides context for how technology functions in and with human society. Five main categorisations of belief were found. First, participants spoke of a belief in the dual role of technology to be both an enabler and disruptor for human thought and action. Second, participants spoke of a belief that TEL in education is potentially transformative, but for the subject of English the potential is less so. Third, a belief that unchecked technology use can form into addictive behaviours. Fourth, teacher participants' belief in a conflict of (dis)empowerment when using technology, and finally, a belief that technology can facilitate effective partnerships with students' parents and guardians. In addition to these five teacher

beliefs, it was also apparent that participants spoke of two deeply held values that underpinned how they conceptualised English as a subject. These were, first, that secondary English is inherently subjective and interpretative, and therefore qualitative by nature, and second, that English is largely a text-based subject that sees handwritten expression as fundamental. Drawing on a sociocultural lens, the next section will consider how these beliefs and values may influence TEL decision making.

Teacher beliefs and TEL. Teacher belief systems around technology and education are formed out of both personal and professional experiences and attitudes that have sociocultural contexts. To explore how these beliefs may influence teacher intentions to deploy TEL is key to understanding why TEL is utilised in this secondary English classroom context. Building on the foundational work of Vygotsky (1978), Wertsch (1985, 1993, 1998) and Cole (1983), Hausfather (1996) explored the values and processes of schooling and education as socialisation and recognised the importance of the social organisation of teaching and instruction in what Moll (1990) termed the “enculturation of the child into the practices of society” (p.1). In this respect, for the present study, it is useful to ask: What are the beliefs, values and practices that English teachers enact with TEL in their classrooms and what kind of enculturation occurs when technology mediates learning?

As this study investigated the technology effects on teaching and learning by teacher actions and behaviours in using technology, it was apposite to explore the behavioural intentions, attitudes, and values that make up the teacher-participants’ belief systems. As Pajares (1992) noted, a large body of education research explores teacher beliefs because of the widely accepted view that teacher classroom behaviour is heavily influenced the beliefs held by that teacher (p.307). This is also true for the technology adoption behaviours of teachers generally, and

English teachers specifically (Alvermann et al., 2019; Higgs, 2020; Lynch et al., 2019). An individual's beliefs and attitudes become internalised over time by a conscious process of ascribing meaning and personal orientations to events via social conditions and acculturation. This process of internalising meaning occurs via direct and specific human experiences and in the representational narratives of such experiences, for example, as in stories and fables (Vygotsky, 1978, Hausfather, 1996, Moll, 1990). This conscious process is key for the construction of identity (Kajee, 2018) where values, beliefs and attitudes underpin human construal of the external world and cultures, societies, schools, English departments and even the subject of English arts.

Similarly, through the lived experience of technology and its narratives, teachers ascribe meanings and personal orientations to a technology experience that align with existing and wider social systems of belief. So, to explore English teacher beliefs, attitudes, and values may provide insights into the wider sociocultural systems of belief and illuminate how such systems are supported by key values in their personal and professional contexts. This is because values operate differently to attitudes and beliefs. Social Cognitive Theory (SCT) offers an approach to exploring and understanding the nature of beliefs and attitudes. SCT, as introduced by Bandura (1977, 1986, 1997) and Rokeach (1972) came to be widely accepted in the domain of education research and its concepts regarding belief structures and the individual that are fundamental. In SCT, values are seen to be more fixed and fundamental to identity, and attitudes and beliefs are changeable according to sociocultural positioning of the individual. These theoretical advances have their beginnings in, and are congruent with, a Vygotskian sociocultural paradigm (1978) that places cognitive development and the education process within a socially produced and mediated context. These concepts are key to understanding teacher beliefs and attitudes and how

they relate and interact with teacher values and behaviours. In the following five sections, the discussion explores how these beliefs are influenced by and influence technology use in the participants' classrooms.

A belief in technology as enabler and disruptor. Consistent technology use in schools is heavily influenced by teacher beliefs, attitudes, and values and all participants talked of a belief that significant change has been occurring in the profession over the previous twenty to thirty years. Teacher participant comments of pre-digital journeys with technology from “chunky 90’s laptops”, and zero teacher technology use, through to contemporary times with technology dominating every aspect of professional life were highlighted. Participants also spoke of having “different conversations” just ten years ago, and the pressure to assimilate changes in order to become “better teachers”. These journeys illustrate teacher technological, pedagogical and content knowledge (TPACK) change, which grows over time as these knowledge areas adapt and evolve, largely driven by new technologies and how they are incorporated into classroom teaching.

The *Teaching with technology model* (Figure 6) also provides a useful way to conceptualise how teacher values are evidenced and enacted, illustrating the wider sociocultural impacts of TEL. How teachers conceptualise TEL, and what their technological, pedagogical and content knowledge values are, provide the core of the model. As highlighted earlier, technological change is seen as the key driver of pedagogical and content knowledge domains within education. Over time, attitudes, beliefs, and values form into personal-professional dispositions that create conditions for formal school-based teaching and learning on the one hand and on the other, personal-ethical dispositions and conditions that includes the realm of informal learning. Again, the recursive nature of this model contemplates how these dispositions and

conditions may then further influence TPACK knowledge and teacher choice. This recursive relationship in teacher technology use and dispositions in the professional space also aligns with what Forkosh-Baruch (2018) describe to be the case for pre-service teachers and the curriculum aims of teacher education to view technology (ICT) “as a lever for better pedagogy, attitudes, experiences, and ICT proficiency” (p.417). Here, technology can provide a means for pedagogical innovation, mediate and possibly change attitudes along with new content knowledge which can further empower teaching (and teachers). In turn, positive attitudes towards and belief in, the benefits of technology use in classrooms, “affect technology acceptance and integration positively” (ibid). Regardless of the pre-service teacher context, this relationship and its effects are the same for professional practice and all levels of education.

A belief that secondary English is less technological. Some participants articulated a belief that most higher order technological affordances, other than direct functional substitution, such as apps with interactive learning, were not suited to English pedagogy. Participants indicated this was because English content and curriculum aims were more to do with students’ interpretive and literacy skills rather than the rote memorisation of scientific facts or formulae often seen in STEM subjects. This belief was also informed by how participants viewed the subject of English and its multiliteracy pedagogy. Such beliefs about the subject of English are situated in the personal-professional dispositions of the *Teaching with Technology model* (Figure 6).

This belief that English teaching does not lend itself to greater technology use seems to be in conflict with the teacher participants’ narratives of multimodal literacy lessons and assignments. That some participants utilised *The Witcher* (Daniel et al., 2019-2021) television series, and the production of multimodal student autobiographies within their English units of

learning, indicates an understanding that utilising the affordances of technologies can engage students in learning with and for literacies. Boche and Shoffner (2017) describe how, in teacher education it is important for pre-service teachers to retain an expanded understanding of literacy that includes multimodal literacies. This multiliteracies mindset acknowledges that, unlike the canons of what was literacy in the past, the understanding modern literacy is of an evolving, varied and constantly changing part of communication and that a range of technologies can “support, alter, and shape literacy learning and understanding” (p. 62). It seems that for the participants of this study, sociocultural beliefs in the value and primacy of print textbooks may be ingrained from a time of their own formal education in English language arts and that these beliefs influence how they conceptualise and teach their English syllabus.

Beliefs about technology use and addictive behaviours. Teacher beliefs in this area are not widely reported or represented in education research; however, this should be a significant area of concern for all education stakeholders. For teachers, there may be beliefs that blur across the two realms of the professional-ethical and personal-professional as indicated in the *Teaching with Technology model* (Figure 6). Indeed, there may be wider sociocultural beliefs that derive from social and scientific discourses which, in turn, have an impact on what teachers believe to be the nature of the devices, the way humans interact with these devices and the potential emotional-neurological effects of such interactions. However, the notion that technology and internet compulsive overuse is actually an addiction is contested both socially and scientifically.

This debate is reflected in discourses within both the wider social and scientific domains (Cerniglia et al., 2017; Kardaras, 2016; Pies, 2009). The discourse within the discipline of psychiatry recognises there is a phenomenon of problematic use; however it does not meet the World Health Organisation’s and the American Psychiatric Association’s criteria of a disorder.

Regardless of this lack of a specific designation, Cerniglia et al. (2017) define Internet Addiction (IA) as a “behavioural addiction that involves human-machine interaction, specifically social interaction that is mediated by machines” (p.174), to the detriment of real-life social interaction and in some cases extreme withdrawal from real-life social contacts. In terms of child development, the authors explore concerns about adolescents’ emotional-behavioural development and the effects of excessive internet and screen/device usage. When viewed with a Vygotskian lens, the cognitive developmental stages of childhood learning and into adolescence are seen as sequential and necessary steps in the development of language cognition and identity (Vygotsky, 1978). If these crucial developmental stages are now mediated by technology, which has its own semiotic basis and different systems of social meaning and values, one can speculate that the nature of that cognitive developmental stage has altered in quality, as well as in the subsequent cognitive outcomes.

Teacher beliefs regarding (dis)empowerment. There can be a strong professional belief that technology use in class can either disempower or empower teachers. Schools are, most often, more than just physical sites of empowerment for teachers; not only in the four walls of the classroom, but in the peer mediated space of the English department, and in the hierarchical control structure of the school and its place in society (Short, 1994). It is suggested that teacher (dis)empowerment is created through the subjective perceptions of teacher presence, agency, authority, and capacity for autonomous participatory decision making, also manifesting through teacher actions alongside the continual mastery of knowledge (Ahrari et al., 2021; Benson, 2017; Elliot, 2009; Short, 1994). There is a strong cultural belief in the role of education and schools to replicate and disseminate knowledge and skills to students through the act of teaching. However,

when considering the role of TEL in the modern classroom, teacher belief systems around TEL may see it designated as both a disruptor and enabler of education.

For example, the simple deployment of student iPads in a class may result in a degree of teacher disempowerment because the teacher is no longer the source of information; they have ceded part of their control over which information and knowledge can be accessed. This belief system may be strongly articulated because of cultural attitudes and discourses concerned with what education, knowledge and information is in the age of the internet, social media and apps. This is often expressed in the binary of formal and informal learning and how the formal educational setting has intellectual dominance.

New digital practices and affordances can indeed empower teachers to innovate with lesson designs, approaches and possibilities beyond the ‘stand and deliver’ mode of teaching. It is possible that teaching with technology can extend the reach and innovate with the conceptions of learning, to move beyond the realm of formal learning into what is described as informal learning. For example, in this study, Peter identified concerns about the disconnect and disempowerment predigital teachers often encounter, identify, and indeed feel, when teaching digital natives. This may be because of a perceived lack of control over what learning students are encountering beyond the classroom. However, all participants were aware that a large part of learning now occurs beyond the physical boundaries of the school, and such awareness may yet become part of future pedagogical change in the teaching of English language arts.

Belief in partnerships with parents and guardians. The interview data regarding the qualitative perceptions of teacher partnerships with guardians/parents were noteworthy because they illuminated the misalignment of expectations between the two stakeholders. Parental /guardian expectations of technology use in school did not align with the realities of learning in

the digital era and teacher expectations of parental authority and control, specifically around safe screen time and online behaviour, did not match the realities of family life in the digital era.

What is evident from this disconnect is that parent-teacher authority and power sharing needs be evenly balanced, coherent and with the wellbeing of students as a central aim. As alluded to above, teacher participants held specific beliefs around the addictive potential of technology and their students use in school time and beyond. The same can be said for parents and guardians.

In *Growing up digital Australia phase 2*, Graham and Sahlberg (2021) reported that parents discern a definite need for more support from schools and they recognize the potential effects of unfettered technology access in their homes and in the relationships within. Specifically, Graham and Sahlberg's (2021) Australian report voices parental concern at the way childhood has changed in terms of negative impacts on physical activity, attention span and interest in playing, but found that Australian parents thought there were also positive impacts on mathematics and reading abilities as well as for social skills and friendships (p. 2). In terms of supportive family strategies to manage device and internet use in the home, more than half of the report's sample group would welcome more support from schools than currently is offered. Such support may be in the form of knowledge and resources, not only to assist parents/guardians to regulate and manage students' use of technological devices and apps but also to help all stakeholders in the education system understand the potential behavioural effects of unregulated screen time.

It may be that not all parents/guardians have the knowledge, time or disposition to be an authoritative and regulatory presence in a student's technology behaviour. This may be the result of wider sociocultural conditions of socioeconomic and interfamilial life in the student's home. However, according to Graham and Sahlberg (2021), there is a growing problem with

compulsive technology use observed in children, adolescents and adults. In the present study, two teacher participants spoke of students expressing relief when an in-class device was confiscated or shut down due to an off-task transgression and a return to pen and paper was mandated by the teacher. This would suggest that the students were aware not only of their transgression, but possibly the compulsive urges behind such off-task behaviour. It seems that honest and informed discussion between teachers, students and parents/guardians about these issues may aid in understanding how better agency with and mastery of self-regulation is a key life skill for all concerned, not just in the realm of technology use.

Summary. This discussion of research question 2 suggests that TEL may have a significant influence on the range of pedagogical choices that English teachers have at their disposal. Technological affordances can open new possibilities for inquiry learning and collaborative knowledge creation, and a growing ecology of EdTech software is available for teachers to innovate with (Falloon, 2015, 2020; Selwyn et al., 2020). When deployed with a specific pedagogical approach and aim, TEL can offer English teachers a diverse range of modalities and literacies. As Boche and Shoffner (2017) state: “in addition to diversifying content and expanding outcomes, technology influences the pedagogy needed to successfully engage adolescents in literacies” (p. 62). There is further pedagogical potential to be realised by deeper and more complex engagement with software and hardware in the English classroom. However, this finding is qualified by three key factors arising from the data analysis. First, the data suggest that English teachers will preference deployment of print text versions of literature in class over digital versions. Second, upper secondary English teachers will preference handwriting in class over typing on a device. Third, teacher attitudes towards the units they teach, the English curriculum, multiliteracies, and methods of instruction, all inform teacher

decision-making about TEL deployment. These three qualifications over the degree to which TEL changes the pedagogical methods of teachers, are interpreted as significant barriers to further evolution towards ubiquitous digital technology use in secondary English classrooms in Western Australia.

Research Question 3: TEL and the pedagogies of secondary English teachers

There is abundant literature to support the view that TEL can be and should be a transformative force of change in English secondary education; however, this is currently not the case due to several influencing factors. This final research question explores these influences. Using a sociocultural lens informed by Vygotskian theory regarding human cognition, technological development, and society (Vygotsky, 1978), this section addresses the third research question by utilising insights from the two themes and linking these insights to the TEL literature. The discussion explores how techno-pedagogical and sociocultural concerns may exert significant influence over teacher choice when deploying TEL, and further, may suggest why ubiquitous technology use in secondary school settings is still to be achieved.

Technology and sociocultural narratives. The pervasive narrative of technological change was highlighted in the interviews and this narrative provided both situation and context for teacher participant beliefs. Participants articulated a belief that technology was driving much of the change seen in education and the subject of English. However, it was also clear that such change was also inhibited by the constraints and traditions of the subject, its curricula and departmental aims, as enacted by the English syllabus. In short, what English teachers believe about their subject may constrain TEL integration. Teacher beliefs also exist within wider sociocultural contexts that may influence how teachers conceptualise technology. The narrative of technological change is significant because teacher orientations toward change exist within a

larger narrative arc of perpetual and positive technological change in human society - a perspective that Castañeda and Williamson (2021) recognised as techno-utopian (see also Rushkoff, 2002). The narrative of technological advancement and change has been examined and described across multiple domains and disciplines (for example, Arnt et al., 2019; Brayford, 2020; Eaglin, 2019; Jandrić et al., 2018; Smith, 1993). There is much disagreement in the field of techno-social philosophy over how to account for the historical and temporal advancement of technology and its effects on humankind.

With respect to this study's findings, how English teacher-participants perceive and respond to the narrative arc of technological change may significantly contribute to building teacher attitudes towards TEL deployment (Abbott, 2016; Nikolopoulou, 2020). Indeed, teachers' personal and professional attitudes to technological change may have a cumulative effect over time that coalesces into fixed belief orientations and values about education. Both positive and negative teacher attitudes towards TEL change were evident within the data set of this study.

Teacher-participants talked of "moving in the right direction" and the constant cycle of new and obsolete platforms that is "the frustrating part of education". Elizabeth reflected that just ten years ago, English teachers worked independently and might have informally, and in an ad hoc basis, shared lesson materials once a week at a staff meeting. Now in the digitally connected workspace of SEQTA, English teachers are sharing, refining, commenting and working in collaboration, on a daily basis. This was articulated as a positive change to practices in Elizabeth's English department. Indeed, dashboard technologies are always evolving with new affordances and functions available to teachers and stakeholders. The findings suggest that the

predigital generation of teachers may possess a degree of awareness of the broader social narrative of evolutionary and perpetual technological change.

SEQTA has been successfully rolled out at scale in Western Australian schools and is one example of EdTech Learning Management System (LMS) dashboard evolution, designed to and advertised as improving the entire experience of school-based education. "Every day we help schools succeed to make students' lives better" states the website of the EdTech company that administers SEQTA (Education Horizons, 2021). Undoubtedly SEQTA is a leading brand in the LMS market. According to Capterra (2021), SEQTA:

...is a collaborative teaching and learning ecosystem that reduces administration and makes learning visible. The LMS provides teachers with a range of tools and insights to effortlessly support great student outcomes. The scope of SEQTA is broad and includes - Attendance, Wellbeing (Pastoral Care), Rubrics, and Parent and Student Portals.

In a wider view, SEQTA can be seen as part of the digitalisation of previously in-person teacher roles and processes, such as planning units and lessons, recording and presenting student assessments for teachers, departments and schools as well as students and parents/guardians. It is for parents/guardians in particular, that SEQTA plays an increasingly crucial role in including and engaging interest in student progress and welfare, by leveraging the inclusive and instant communication loop that the platform allows. As Willis and Exley (2018) highlighted, the role that digital technology platforms can potentially play in bridging the common disconnect that teachers and parents/guardians experience between the settings of home and school is important. In this study, participant descriptions strongly emphasised that, due to its messaging and

commentary affordances, SETA fulfilled this role of connecting the two settings and bridging the disconnection.

However, such software-based platforms appear as operational changes that are often characterised as ‘top-down innovations’, which schools introduce (see Emily. p. 5) and infer a loss of teacher agency and choice. In the data, new software and platforms are presented as improvements to which teachers are “obliged” to adapt to, as Elizabeth detailed in her comments about dashboard technology: "we are actually obliged to put at least an outline of content on Connect or SEQTA" (Elizabeth p. 10). The use of the term “obliged” is interesting in the discourse around EdTech software implementation as it infers a sense of diminished agency. Similarly, McGarr and Engen (2021) note that EdTech software discourses focus on serving “wider organizational management reforms” (p 2.) and levels of decision making that lessen teacher agency. The professional imperative here is about implementing new software and practices as necessary additions to the professional role of the teacher.

Teacher participants articulated the twin pressures to keep up with constant software change and the new operational requirements of the school and English department. Such EdTech programmes focus on the technical affordances and operational support this type of software offers teachers in terms of communication and efficiencies. Several studies have now well established the idea that technology, including hardware, software, apps and algorithms, is not neutral (Lee, 2021; Martin, 2018; Selwyn, 1999; Williamson et al., 2020). When technology mediates teaching and learning, we need to understand what effects flow from such mediation and how it shapes our cognition.

Building on Vygotsky's (1978, 1981) foundational work, Kaptelinin (2015) explored how technological tool mediation can influence and affect human cognition and action. Kaptelinin

maintained that technology research should focus beyond the functional affordances of digital technologies toward the cognitive and social effects and should employ a mediational perspective that builds on the foundational concepts of sociocultural cognitive theory (Leontiev, 1981; Wertsch, 1998). If we look beyond the “enhancing human cognition” role of technology to consider how “natural”, neurological and unaided cognition is always mediated by language (from the point of early childhood acquisition), all human cognition is cultural by design and by extension, so is technology-enhanced cognition in all contexts (Kaptelinin, 2015 p. 212). Therefore, tool and technology mediation are critical concepts within sociocultural theory and can be seen as drivers of change in education and cognition.

The pressure to keep up with technological change by responding with adaptive behaviours and actions can be mapped onto the *Teaching with technology model* (Figure 6). In this figure, technology mediates and interacts with every level. At the core, technological artefacts mediate teacher TPACK knowledge. These artefacts also have a two-way interaction with a teacher’s informal personal-ethical conditions which include beliefs and attitudes. These personal orientations may result in awareness, concern and ultimately, teacher actions regarding technological impacts on the environment, society and individuals. Technological artefacts can also have a similar two-way mediational effect on a teacher’s personal-professional conditions. This mediation may be the result of internalisation of professional learning, the facilitation and shaping of shared knowledge via professional online networks and influencing teacher curation of digital knowledge according to socially generated and contextualised beliefs and attitudes.

The concept of technological artefacts mediating human cognition and action has evolved from Vygotskian theory (1978), that focused on four aspects of mediation: material, social, cognitive, and experiential. As Wertsch (1994) stated, the two-way mediation process occurs

when cultural tools will not result in human action if they are not appropriated and internalised by individuals to derive action in the real world. At the same time, humans cannot act without invoking cultural tools. In this respect, technological evolutionary change can be said to influence a teacher's pedagogical choices significantly.

Such influence can be illustrated by the example of SEQTA, or more generically, LMS dashboard software. External technological artefacts, such as a dashboard LMS platform, can mediate material data and metrics, such as student assessment data. The platform can also mediate the social by connecting teachers, students and parents/guardians via group messaging and commentary capabilities. The platform can mediate the cognitive aspects of education by prompting and aiding memory with submission dates and timelines, and it can mediate the experiential aspects of education by shaping teacher and student experiences through feedback capabilities. So, in a Vygotskian approach, knowledge, learning, action, are all facilitated and significantly changed by technology.

Summary

This chapter explored the potential for fundamental change in education through the ongoing use and integration of technology enhanced learning and the emergency pivot to online learning, as explored by a group of six secondary English teachers in Western Australia. Some significant barriers to consistent and ubiquitous technology use were found to be prominent. These were highlighted as: teacher orientations towards technological change, perceptions of teacher (dis)empowerment, English Department subcultures and how individual teachers conceptualise the subject of English and its syllabus with further cascading effects on student exposure to handwriting and typing skills. The next chapter summarises and concludes the research project,

considers the limitations of the study and suggests recommendations for practice and further research.

Chapter 6 Conclusion

Authoring this thesis was the culmination of an intense year of postgraduate study. However, this novice researcher's journey truly began in May of 2021, once the requirements of the ARMT course units were met. Additionally, the iterative process of formative research design and ethics approval provided the opportunity to gain valuable knowledge that benefitted the project's execution and operation for both researcher and participants. By exploring and analysing the lived experiences of a small group of secondary English teachers in Western Australia, this thesis has demonstrated how TEL integration was dependent on a suite of personal and professional conditions that teachers experienced. These conditions exist within a wider sociocultural context that is beginning to shift and re-frame the fundamentals of education in the twenty-first century.

The research aim was to investigate how a cohort of secondary English teachers experience technology-enhanced learning and teaching within their pedagogical practices. It also explored the possible enablers and barriers to quotidian digital technology use within the context of secondary English classrooms of Western Australia, both before and after the COVID-19 emergency response online teaching period of 2020. An interpretive, qualitative methodological approach provided the context through which to explore and understand the complex techno-sociocultural relationships between humans and technology generally, and English teachers' techno-pedagogical relationships to EdTech software in particular. These relationships and possible enablers and barriers to TEL were explored using a qualitative interview approach that encouraged participant reflection and expression of personal and professional experience. The choice of the semi-structured interview as a qualitative data collection instrument, was designed

to elucidate teacher beliefs attitudes and values regarding technology, its use, and further integration into everyday practice.

The study recruited early, mid, and late career teachers who, with considerable reflexivity and acuity, freely narrated their experiences, both positive and negative, of integrating technologies with English language arts teaching, in response to the interview questions. The main conclusions of this study can be summarised as follows:

1. All teacher participants found the COVID-19 emergency response online teaching period to be a transformative experience for individuals and the practice of education. The study found that for most participants, the experience increased teacher agency with technology and this suggests that further technology integration into pedagogical approaches have accelerated because of this period.
2. Individual English department cultures and leadership have a key determining role in technology use in secondary English classrooms. Old binary conceptions of traditional and innovative departmental cultures are still prevalent and were problematised by participants. This suggests that for some English departments, multimodal pedagogical approaches to multiliteracies, which form part of the 'new basics' for twenty-first century learning, are still seen as unconventional.
3. Teacher participants problematised handwriting versus typing narratives as a dilemma of conflicting pedagogical needs. A strong belief exists that quotidian and exclusive use of digital devices for student composition will degrade handwriting skills, speed and legibility. Such beliefs may represent a significant barrier to further TEL integration in English classrooms. Furthermore, participants problematised the pedagogical dissonance between the need for swift

typing skills in NAPLAN year 7 and 9 online assessments on the one hand, and the necessity of handwritten ATAR examinations in years 11 and 12. It is suggested, that pressure to re-assess the assessment mode of high stakes handwritten examinations may increase from within the profession and indeed the higher education sector as well.

4. It is argued that strategies to re-engage disengaged digital native students with their education should attempt to leverage the discursive sociocultural power of digital devices (including smart phones) and apps. This finding suggests that further discussion regarding the bans on mobile phones, along with consideration of curriculum-based programmes to teach healthy digital habits and self-regulation skills, may be beneficial in opening up debate on curriculum and policy settings. It is not suggested that the reintroduction of smart phones and mobile learning is to be considered a panacea to the problem of disengaged students; however, the debate may offer further nuanced solutions.
5. Teacher participants not only see and experience how technology can significantly change individuals, society and education. When given the opportunity, they articulate how it is profoundly changing the education landscape for every teacher. This recognition by practitioners may yet provide the conditions for a process based, and fundamental reconceptualization of what education is; a difficult endeavour that should include the perspectives of all stakeholders. Technology has the potential to disrupt the prevalent power structures in education that interact with stakeholders. It can dislocate the control of information, content, and learning and therefore alter what teachers teach in

schools and what students can learn in settings outside of traditional school curricula. How schools and education systems adapt to these challenges will be critical for education throughout the next decades.

Limitations of this study

The primary limitation of this study is the small participant sample size that was limited to higher socioeconomic area teachers in metropolitan Perth, Western Australia. Consequently, the findings cannot be extrapolated to a wider sociocultural context. Whilst there may not have been a wide diversity of participants (nor was it within the scope of this study), the findings could possibly assist understandings of different SES contexts as well as migrant /ESL and First Nations populations' access and use of digital technology for teaching and learning. A secondary limitation is related to the convenience sample of English teachers. Despite the extant participant career range including early, mid and late career teachers, a wider range of digital generational experiences may have benefitted the study. Specifically, a more in depth and higher-level study may benefit from a focus on early career graduate teachers, and possibly even undergraduate teacher education students in order to balance the data between pre-digital and digital native teachers.

Further research

Teachers, education stakeholders and decision makers in society are all endeavouring to understand the meaning of technology impacts on student cognition and behaviour. The aim of education and social research should be to support professional practice, inform curriculum development and assist stakeholders in creating the best conditions for learning in schools. As alluded to above, this study provides a pathway for further specific research into the possible

effects of technology on pedagogical approaches, handwriting, assessment, distractive behaviour and self-regulation, and indeed problematic and habitual technology use, to highlight a few of the issues that unexpectedly evolved from the data findings. Other results touched upon, but not explored in depth, were changes in online student behaviour and its management, as well as technology and gender related issues, which offer additional opportunities for research.

Summary

In conclusion, the five findings summarised above, represent a contribution to practice and policy in the field of technology-enhanced learning in education generally and in Western Australia specifically. This study suggests that in re-framing education for the twenty-first century, consideration should be given to pedagogical approaches that integrate student digital native discourses into already existing multiliteracies based teaching. It is also suggested that the pedagogical conflict arising from handwritten ATAR examinations should be addressed, as this precipitated a dilemma for teachers in the field. This study also proposed a *Teaching with Technology* conceptual model that builds on the significant contributions of Bower (2019) and Falloon (2020) and highlights Vygotskian sociocultural understandings in a constructive way. It is hoped this contribution to the field, despite its nascent quality, may inspire further theoretical investigation into how technology and education interact.

Finally, this research journey has provided this novice researcher, direct and practical experience of qualitative knowledge co-construction and research methodology. Additionally, two personally significant outcomes are evident; first, this journey has provided the weight of research experience to ontological and epistemological theory, assumptions, and positioning. Secondly, the research interactions with practitioners in the field have afforded this researcher enhanced respect for the work teachers do in educating the succeeding generations of learners. In

conclusion, this research journey has been both instructional and enlightening for this novice researcher.

References

- Abaci, S., Robertson, J., Linklater, H., & McNeill, F. (2021). Supporting school teachers' rapid engagement with online education. *Educational Technology Research and Development*, 69(1), 29-34. <https://doi.org/10.1007/s11423-020-09839-5>
- Abbott, R. C. (2016). Embracing digital technologies in classroom practice: The impact of teacher identity. *Australian Educational Computing*, 31(2). <http://journal.acce.edu.au/index.php/AEC/article/view/93>
- Ahrari, S., Roslan, S., Zaremohzzabieh, Z., Mohd Rasdi, R., & Abu Samah, A. (2021). Relationship between teacher empowerment and job satisfaction: A Meta-Analytic path analysis. *Cogent Education*, 8(1), 1898737. <https://doi.org/10.1080/2331186X.2021.1898737>
- Albion, P., & Ertmer, P. A. (2002). Beyond the foundations: The role of vision and belief in teachers' preparation for integration of technology. *TechTrends* 46(5), 34-38. <https://doi.org/10.1007/BF02818306>
- Allen, J., Rowan, L., & Singh, P. (2020). Teaching and teacher education in the time of COVID-19. *Asia-Pacific Journal of Teacher Education*, 48(3), 233-236. <https://doi.org/10.1080/1359866X.2020.1752051>
- Alvarez, M. (2019). (Digital) Media as Critical Pedagogy. *Media Theory*, 3(1), 73-102. <http://journalcontent.mediatheoryjournal.org/index.php/mt/article/view/80>
- Alvermann, D., Young, C. A., McGrail, E., Damico, N., & Zucker, L. (2019). "Beliefs for integrating technology into the English language arts classroom": Reflections from scholars in the field. *Contemporary Issues in Technology and Teacher Education*, 19(3), 318-326
- An, T., & Oliver, M. (2021). What in the world is educational technology? Rethinking the field from the perspective of the philosophy of technology. *Learning, Media and Technology*, 46(1), 6-19. <https://doi.org/10.1080/17439884.2020.1810066>
- Arndt, S., Asher, G., Knox, J., Ford, D. R., Hayes, S., Lăzăroiu, G., Jackson, L., Contreras, J. M., Buchanan, R., D'Olimpio, L., Smith, M., Suoranta, J., Pyyhtinen, O., Ryberg, T., Davidsen, J., Steketee, A., Mihăilă, R., Stewart, G., Dawson, M., Sinclair, C., & Peters, M. A. (2019). Between the blabbering noise of individuals or the silent dialogue of many: a collective response to 'Postdigital Science and Education' (Jandrić et al. 2018). *Postdigital Science and Education*, 1(2), 446-474. <https://doi.org/10.1007/s42438-019-00037-y>
- Auerbach, Y. (2009). The reconciliation pyramid-a narrative-based framework for analyzing identity conflicts. *Political Psychology*, 30(2), 291-318. <https://doi.org/10.1111/j.1467-9221.2008.00692.x>
- Australian Curriculum, Assessment and Reporting Authority (ACARA). (2018). *The Australian Curriculum*. <https://www.australiancurriculum.edu.au/f-10-curriculum/>
- Ávila, J., & Pandya, J. Z. (2013). *Critical digital literacies as social praxis: Intersections and challenges* (Vol. 54.). P. Lang.

- Ayebi-Arthur, K. (2017). E-learning, resilience and change in higher education: Helping a university cope after a natural disaster. *E-learning and Digital Media*, 14(5), 259-274. <https://doi.org/10.1177/2042753017751712>
- Bakhtin, M. M., & Emerson, C. (1984). *Problems of Dostoevsky's poetics* (Vol. 8.). University of Minnesota Press. <https://doi.org/10.5749/j.ctt22727z1>
- Ball, A. F. (2000). Teachers' developing philosophies on literacy and their use in urban schools: A Vygotskian perspective on internal activity and teacher change. In C. D. Lee & P. Smagorinsky (Eds.), *Vygotskian perspectives on literacy research: Constructing meaning through collaborative inquiry* (pp. 226–255). Cambridge University Press
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191-215. <https://doi.org/10.1037/0033-295X.84.2.191>
- Bandura, A. (1986). *Social foundations of thought and action: a social cognitive theory*. Prentice-Hall. <https://go.exlibris.link/f816z4bv>
- Bandura, A. (1997). *Self-efficacy: The Exercise of Control*. Freeman.
- Bate, F., MacNish, J., & Males, S. (2012). Understanding parent perceptions of a 1:1 laptop program in Western Australia. *Australian Educational Computing*, 27(2), 18-21. http://acce.edu.au/sites/acce.edu.au/files/pj/journal/27_2Understanding_Parent_Perceptions_p18.pdf
- Bates, A. E., Primack, R. B., Moraga, P., & Duarte, C. M. (2020). COVID-19 pandemic and associated lockdown as a “global human confinement experiment” to investigate biodiversity conservation *Biological Conservation*, 248, 108665. <https://doi.org/10.1016/j.biocon.2020.108665>
- Bayne, S. (2015). What's the matter with ‘technology-enhanced learning’? *Learning, Media and Technology*, 40(1), 5-20. <https://doi.org/10.1080/17439884.2014.915851>
- Bazon, A. (2020). The Lost Year. *The New York Times Magazine*, 32(L). <https://linkgalecom.libproxy.murdoch.edu.au/apps/doc/A635262745/AONE?u=murdoch&sid=AONE&xid=d09b7dfe>
- Beach, C. L. (2016). Evolving classrooms: Unlocking teachers' perceptions and how they impact digital literacy practices. *Journal of Literacy and Technology*, 17(1). http://www.literacyandtechnology.org/uploads/1/3/6/8/136889/jlt_sp2016.pdf
- Beetham, H. E., & Sharpe, R. E. (2019). *Rethinking Pedagogy for a Digital Age: Principles and Practices of Design*. (3rd Ed). Routledge. <https://go.exlibris.link/Ky5Prhll>
- Beland, L.-P., & Murphy, R. (2016). Ill communication: Technology, distraction & student performance. *Labour Economics*, 41, 61-76. <https://doi.org/10.1016/j.labeco.2016.04.004>
- Benson, A. D. (2002). Using online learning to meet workforce demand: A case study of stakeholder influence. *Quarterly Review of Distance Education*, 3(4), 443. <https://go.exlibris.link/zkPpTh1s>
- Benson, P. (2017). Teacher autonomy and teacher agency. In G. Barkhuizen (Ed.), *Reflections on Language Teacher Identity Research* (pp. 26-31). Routledge. <https://doi.org/10.4324/9781315643465-7>

- Bergdahl, N., & Nouri, J. (2020). Covid-19 and crisis-prompted distance education in Sweden. *Technology, Knowledge and Learning*, 26(3), 443-459. <https://doi.org/10.1007/s10758-020-09470-6>
- Berger, J. (1972). *Ways of seeing: based on the BBC television series with John Berger*. British Broadcasting Corporation. <https://go.exlibris.link/GB2tjQT3>
- Bernard, R. M., Abrami, P. C., & Lou, Y. (2004). How does distance education compare with classroom instruction?: A meta-analysis of the empirical literature. *Review of Educational Research*, 74(3), 379-439. <https://doi.org/10.3102/00346543074003379>
- Biesta, G. (2015). What is Education For? On Good Education, Teacher Judgement, and Educational Professionalism. *European Journal of Education*, 50(1), 75-87. <https://doi.org/10.1111/ejed.12109>
- Billieux, J., Schimmenti, A., Khazaal, Y., Maurage, P., & Heeren, A. (2015). Are we overpathologizing everyday life? A tenable blueprint for behavioral addiction research. *Journal of Behavioral Addictions*, 4(3), 119-123. <https://doi.org/10.1556/2006.4.2015.009>
- Blaikie, N., & Priest, J. (2017). *Social Research: Paradigms in Action*. Polity Press.
- Bloomberg, J. (2018). Digitization, digitalization, and digital transformation: Confuse them at your peril. *Forbes*. <https://www.forbes.com/sites/jasonbloomberg/2018/04/29/digitization-digitalization-and-digital-transformation-confuse-them-at-your-peril/?sh=273644d12f2c>
- Blume, C. (2020). German teachers' digital habitus and their pandemic pedagogy. *Postdigital Science and Education*, 2(3), 879-905. <https://doi.org/10.1007/s42438-020-00174-9>
- Blundell, C., Lee, K.-T., & Nykvist, S. (2020). Moving beyond enhancing pedagogies with digital technologies: Frames of reference, habits of mind and transformative learning. *Journal of Research on Technology in Education*, 52(2), 178-196. <https://doi.org/10.1080/15391523.2020.1726235>
- Boche, B., & Shoffner, M. (2017). Connecting technology, literacy, and self-study in English language arts teacher education. In D. Garbett & A. Ovens (Eds.), *Being Self-Study Researchers in a Digital World: Future Oriented Research and Pedagogy in Teacher Education* (pp. 61-72). Springer International Publishing. https://doi.org/10.1007/978-3-319-39478-7_5
- Bochner, A. P., & Riggs, N. A. (2014). Practicing Narrative Inquiry. In P. Leavy (Ed.), *The Oxford Handbook of Qualitative Research* (1st ed.). Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780199811755.013.024>
- Borsheim, C., Merritt, K., & Reed, D. (2008). Beyond technology for technology's sake: Advancing multiliteracies in the twenty-first century. *The Clearing House*, 82(2), 87-90. <https://doi.org/10.3200/TCHS.82.2.87-90>
- Borthwick, A. C., & Hansen, R. (2017). Digital literacy in teacher education: Are teacher educators competent? *Journal of Digital Learning in Teacher Education*, 33(2), 46-48. <https://doi.org/10.1080/21532974.2017.1291249>
- Borup, J., & Archambault, L. (2020). Responding to a crisis and planning for what is ahead. *Journal of Online Learning Research*, 6(2), 103-106. <https://doi.org/10.1016/j.iheduc.2011.11.001>

- Borup, J., West, R. E., & Graham, C. R. (2012). Improving online social presence through asynchronous video. *The Internet and Higher Education, 15*(3), 195-203.
<https://doi.org/10.1016/j.iheduc.2011.11.001>
- Bouffard, S. (2020). Technology moves from resource to lifeline. *The Journal of Staff Development, 41*(4), 5-5.
<http://libproxy.murdoch.edu.au/login?url=https://www-proquest-lifeline/docview/2435128529/se-2?accountid=12629>
- Bower, M. (2008). Affordance analysis - matching learning tasks with learning technologies. *Educational Media International, 45*(1), 3-15. <https://doi.org/10.1080/09523980701847115>
- Bower, M. (2019). Technology-mediated learning theory. *British Journal of Educational Technology, 50*(3), 1035-1048. <https://doi.org/10.1111/bjet.12771>
- Bower, M., & Vlachopoulos, P. (2018). A critical analysis of technology-enhanced learning design frameworks. *British Journal of Educational Technology, 49*(6), 981-997.
<https://doi.org/10.1111/bjet.12668>
- Boyle, T., & Cook, J. (2004). Understanding and using technological affordances: A commentary on Conole and Dyke. *Research in Learning Technology, 12*(3).
<https://doi.org/10.3402/rlt.v12i3.11260>
- Brayford, K. (2020). Myth and technology: Finding philosophy's role in technological change. *Human Affairs, 30*(4), 526-534. <https://doi.org/10.1515/humaff-2020-0045>
- Brennen, J. S., & Kreiss, D. (2016). Digitalization. In *The international Encyclopedia of Communication Theory and Philosophy* (pp. 1-11).
<https://doi.org/https://doi.org/10.1002/9781118766804.wbiect111>
- Brown, N., Te Riele, K., Shelley, B., & Woodroffe, J. (2020). Learning at home during COVID-19: Effects on vulnerable young Australians. *Peter Underwood Centre for Educational Attainment*.
<http://www.wscf.org.au/wp-content/uploads/2020/06/Learning-at-home-during-COVID-19-Effects-on-vulnerable-young-Australians.pdf>
- Buchanan, R., Southgate, Erica., Smith, S. P. (2019). 'The whole world's watching really': Parental and educator perspectives on managing children's digital lives. *Global Studies of Childhood, 9*(2), 167-180. <https://doi.org/10.1177/2043610619846351>
- Capterra Inc. (2021). Learning Management Systems: SEQTA.
<https://www.capterra.com.au/software/133140/seqta>
- Carter, D. (2019). Restoring purpose: applying Biesta's three functions to the Melbourne Declaration. *Curriculum Perspectives, 39*(2), 125-134. <https://doi.org/10.1007/s41297-019-00086-0>
- Cascone, K. (2000). The aesthetics of failure: "Post-digital" tendencies in contemporary computer music. *Computer Music Journal, 24*(4), 12-18. <https://doi.org/10.1162/014892600559489>
- Castañeda, L., & Williamson, B. (2021). Assembling new toolboxes of methods and theories for innovative critical research on educational technology. *Journal of New Approaches in Educational Research, 10*(1), 1-14.
<https://doi.org/10.7821/naer.2021.1.703>

- Catholic Education Western Australia (CEWA), (2020). COVID-19 teaching and learning. CEWA. <https://covid19.cewa.edu.au/covid-19-teaching-and-learning/>
- Cellan-Jones, R. (2021). *Always On. Hope and Fear in the Social Smartphone Era*. Bloomsbury Publishing.
- Cerniglia, L., Zoratto, F., Cimino, S., Laviola, G., Ammaniti, M., & Adriani, W. (2017). Internet addiction in adolescence: Neurobiological, psychosocial and clinical issues. *Neuroscience and Biobehavioral reviews*, 76(Pt A), 174-184. <https://doi.org/10.1016/j.neubiorev.2016.12.024>
- Chapman, A., & Buchanan, R. (2013). Opinion: Educational purposes and the Melbourne Declaration. *Professional Educator*, 12(5), 25-27. <https://search.informit-org.libproxy.murdoch.edu.au/doi/epdf/10.3316/aeipt.200159>
- Ching, K. L., & Wittstock, S. (2019). Teaching with digital peer response: Four cases of technology appropriation, resistance, and transformation. *Research in the Teaching of English*, 54(2), 161-182. <http://libproxy.murdoch.edu.au/login?url=https://www-proquest-com.libproxy.murdoch.edu.au/scholarly-journals/teaching-with-digital-peer-response-four-cases/docview/2329716954/se-2?accountid=12629>
- Chiumento, A., Machin, L., Rahman, A., & Frith, L. (2018). Online interviewing with interpreters in humanitarian contexts. *International Journal of Qualitative Studies on Health and Well-being*, 13(1), 1444887-1444810. <https://doi.org/10.1080/17482631.2018.1444887>
- Connelly, F. M., & Clandinin, D. J. (1995). Narrative and Education. *Teachers and Teaching*, 1(1), 73-85. <https://doi.org/10.1080/13540609500101010>
- Claro, M., Salinas, Á., Cabello-Hutt, T., San Martín, E., Preiss, D. D., Valenzuela, S., & Jara, I. (2018). Teaching in a digital environment (TIDE): Defining and measuring teachers' capacity to develop students' digital information and communication skills. *Computers & Education*, 121, 162-174. <https://doi.org/10.1016/j.compedu.2018.03.001>
- Cochrane, J. (2020). Factors affecting access to digital technologies and the resulting impact for students in a P-12 context. *Australian Educational Computing*, 35(1).
- Cochrane, T., & Antonczak, L. (2014). Implementing a Mobile Social Media Framework for Designing Creative Pedagogies. *Social sciences (Basel)*, 3(3), 359-377. <https://doi.org/10.3390/socsci3030359>
- Cole, M. (1983). *A Socio-Cultural Approach to the Study of Re-Mediation*. New Directions in Studying Children. Conference of the Erikson Institute., Chicago.
- Coleman, J. (1958). Relational Analysis: The study of social organizations with survey methods. *Human Organization*, 17(4), 28-36. <https://doi.org/10.17730/humo.17.4.q5604m676260q8n7>
- Coleman, W. (2016). *Only in Australia: the history, politics and economics of Australian exceptionalism*. Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780198753254.001.0001>
- Collins, H. (1985). Political ideology in Australia: The distinctiveness of a Benthamite society. *Daedalus* 114(1), 147-169. <https://go.exlibris.link/vC0x7rmp>
- Conle, C. (1997). Images of change in narrative inquiry. *Teachers and Teaching, Theory and Practice*, 3(2), 205-219. <https://doi.org/10.1080/1354060970030204>

- Connelly, F. M., & Clandinin, D. J. (1995). Narrative and education. *Teachers and Teaching*, 1(1), 73-85. <https://doi.org/10.1080/1354060950010106>
- Connolly, C., Hall, T., Jones, S.-L., & Procter, R. (2020). *Research informed teaching in a global pandemic: Opening up schools to research*. Association for the Advancement of Computing in Education (AACE). <https://www.learntechlib.org/p/216903/>
- Conole, G., & Dyke, M. (2004). What are the affordances of information and communication technologies? *Research in Learning Technology*, 12(2). <https://doi.org/10.3402/rlt.v12i2.11246>
- Corvellec, H. (2006). *Elements of narrative analysis*. Gothenburg Research Institute reports: Managing Big Cities, Issue. <http://hdl.handle.net/2077/2980>
- Creswell, J. W. (2014). *Educational research: planning, conducting, and evaluating quantitative and qualitative research* (Fourth, Pearson new international ed.). Pearson. <https://ebookcentral.proquest.com/lib/murdoch/detail.action?docID=5175977>.
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: qualitative, quantitative & mixed methods approaches*. (5th, International student ed.). SAGE.
- Crook, S., Sharma, M., & Wilson, R. (2017). Teachers' Transition into a 1:1 laptop environment: A longitudinal case study of four science teachers over 5 years. *International Journal of Innovation in Science and Mathematics Education*, 25(5). <http://libproxy.murdoch.edu.au/login?url=https://www-proquest-com.libproxy.murdoch.edu.au/scholarly-journals/teachers-transition-into-1-laptop-environment/docview/2247805482/se-2?accountid=12629>
- Dahlstrom, H. (2019). Digital writing tools from the student perspective: Access, affordances, and agency. *Education and Information Technologies*, 24(2), 1563-1581. <https://doi.org/10.1007/s10639-018-9844-x>
- Dalgarno, B. (2014). *Polysynchronous learning: A model for student interaction and engagement. Rhetoric and reality: Critical perspectives on educational technology*. Proceedings ASCILITE. Dunedin (pp. 673–677). <https://ascilite2014.otago.ac.nz/files/concisepapers/255-Dalgarno.pdf>
- Daniel, S., Brown, J., Bagiński, T., Sawko, J., Hissrich, L. S., Sakharov, A., & Gaub, S. (Executive Producers). (2019-2021). *The Witcher*. [TV Series]. Sean Daniel Company; Stillking Films; Platige Image; One of Us; Cinesite. Netflix.
- Daniel, S. J. (2020). Education and the COVID-19 pandemic. *Prospects (Paris)*, 49(1-2), 1-6. <https://doi.org/10.1007/s11125-020-09464-3>
- Daniels, H. (2008). *Vygotsky and research*. Routledge. <https://doi.org/10.4324/9780203891797>
- Daniels, H. (2015). Mediation: An expansion of the socio-cultural gaze. *History of the Human Sciences*, 28(2), 34-50. <https://doi.org/10.1177/0952695114559994>
- Daniels, H. (2016). *Vygotsky and pedagogy*. Routledge. <https://doi.org/10.4324/9781315617602>

- Davies, P., Kent, G., Laurillard, D., Mavrikis, M., Noss, R., Pratt, D., & Price, S. (2013). *The Royal Society vision: The impact of technological change on STEM education*. Institute of Education, University of London. <https://royalsociety.org/~media/education/policy/vision/reports/ev-6-vision-research-report-20140624.pdf>
- Decuyper, M., Grimaldi, E., & Landri, P. (2021). Introduction: Critical studies of digital education platforms. *Critical Studies in Education*, 62(1), 1-16. <https://doi.org/10.1080/17508487.2020.1866050>
- Delaney, B. (2021). Australia is once again the lucky country – but if we can't feel the virus pain beyond our shores we are simply cruel. In *The Guardian*. Guardian News & Media Limited. <https://go.exlibris.link/wVnwQnRF>
- Denzin & Y. S. Lincoln (Eds.), (2013). *Collecting and interpreting qualitative materials* (4th ed.), pp. 55–83. Sage.
- Department of Education Skills and Employment (DESE). (2008). *Delivering a Digital Education Revolution*. Canberra: Commonwealth Government of Australia Retrieved from <https://ministers.dese.gov.au/gillard/delivering-digital-education-revolution>
- Dewey, J., & Hinchey, P. H. (2018). *Democracy and education by John Dewey: With a critical introduction by Patricia H. Hinchey*. Myers Education Press.
- Dey, I. (2004). Grounded theory. In C. Seale, Gobo, G., Gubrium, J. F., & Silverman, D. (Ed.), *Qualitative research practice* (pp. 80-93). SAGE.
- Dimmock, C. (2002) Research methods in educational leadership and management, in: M. Coleman & A. R. J. Briggs (Eds) *Research methods in educational leadership and management*. Paul Chapman.
- Dron, J., & Andersen, T., (2016). The future of E-learning. In Haythornthwaite, C., Andrews, R., Fransman, J., & Meyers, E. (Eds.), *The SAGE Handbook of E-learning Research* (Second ed.). SAGE Publications Ltd. <https://doi.org/10.4135/9781529716696>
- Drossel, K., Eickelmann, B., & Vennemann, M. (2020). Schools overcoming the digital divide: In depth analyses towards organizational resilience in the computer and information literacy domain. *Large-scale Assessments in Education*, 8(1), 1-19. <https://doi.org/10.1186/s40536-020-00087-w>
- Duffy, C., & Kent, L. (2021). Parents reflect on homes schooling as teachers voice fears about schools during coronavirus pandemic. Australian Broadcasting Corporation. <https://www.abc.net.au/news/2020-04-26/coronavirushomeschooling-remote-learning-public-private-schools/12177112>
- Durdella, N. A., (2019). *Qualitative dissertation methodology: A guide for research design and methods*. Sage
- Eaglin, J. M. (2019). Technologically distorted conceptions of punishment. *Washington University Law Review*, 97(2), 483. <https://go.exlibris.link/yKQL8FPw>
- Education Council. (2019). *Alice Springs (Mparntwe) Education Declaration*. Education Services Australia. <https://www.dese.gov.au/alice-springs-mparntwe-education-declaration/resources/alice-springs-mparntwe-education-declaration>

- Education Horizons. (2021). SEQTA. The school LMS that gives teachers more time and better insights. <https://educationhorizons.com/seqta/>
- Edwards, R., & Holland, J. (2013). *What is qualitative interviewing?* (1st ed.). Bloomsbury Publishing. <https://doi.org/10.5040/9781472545244>
- Ekanayake, S. Y., & Wishart, J. (2015). Integrating mobile phones into teaching and learning: A case study of teacher training through professional development workshops. *British Journal of Educational Technology*, 46(1), 173-189. <https://doi.org/10.1111/bjet.12131>
- Elbaz-Luwisch, F. (2007). Studying teachers' lives and experience: Narrative inquiry into K–12 teaching. In D. Clandinin (Ed.), *Handbook of narrative inquiry: Mapping a methodology* (pp. 357-382). <https://doi.org/10.4135/9781452226552.n14>
- Elliott, J. G. (2009). The nature of teacher authority and teacher expertise. *Support for Learning*, 24(4), 197-203. <https://doi.org/10.1111/j.1467-9604.2009.01429.x>
- Engeström, Y. (2001). Expansive learning at work: Toward an activity theoretical reconceptualization. *Journal of Education and Work*, 14(1), 133-156. <https://doi.org/10.1080/13639080020028747>
- Engeström, Y. (2014). *Learning by expanding: An activity-theoretical approach to developmental research*. second edition. <https://doi.org/10.1017/CBO9781139814744>
- English, L. D. (2016). STEM education K-12: Perspectives on integration. *International Journal of STEM Education*, 3(1), 1-8. <https://doi.org/10.1186/s40594-016-0036-1>
- Ertmer, P. (2005). Teacher pedagogical beliefs: The final frontier in our quest for technology integration? *Educational Technology Research and Development*, 63(4), 25–39. <https://doi.org/10.1007/BF02504683>.
- Ertmer, P. A., Newby, T. J., Liu, W., Tomory, A., Yu, J. H., & Lee, Y. M. (2011). Students' confidence and perceived value for participating in cross-cultural wiki-based collaborations. *Educational Technology Research and Development*, 59(2), 213-228. <https://doi.org/10.1007/s11423-011-9187-4>
- EU Council (2006). Recommendation of the European Parliament and of the Council of 18 December 2006 on Key Competences for Lifelong Learning. Annex: *key competences for lifelong learning — a European reference framework*. <https://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:394:0010:0018:en:PDF>
- Falloon, G. (2015). What's the difference? Learning collaboratively using iPads in conventional classrooms. *Computers and Education*, 84, 62-77. <https://doi.org/10.1016/j.compedu.2015.01.010>
- Falloon, G. (2020). From digital literacy to digital competence: The teacher digital competency (TDC) framework. *Educational Technology Research and Development*, 68(5), 2449-2472. <https://doi.org/https://doi.org/10.1007/s11423-020-09767-4>
- Feenberg, A. (2002). *Transforming technology: A critical theory revisited*. Oxford University Press.

- Feenberg, A., & Jandrić, P. (2015). The bursting boiler of digital education: Critical pedagogy and philosophy of technology [Report]. *Knowledge Cultures*, 3, 132.
<https://link.gale.com/apps/doc/A435638669/AONE?u=murdoch&sid=AONE&xid=3b179085>
- Flack, C. B., Walker, L., Bickerstaff, A., & Margetts, C. (2020). Socioeconomic disparities in Australian schooling during the COVID-19 pandemic. *Melbourne, Australia: Pivot Professional Learning*.
https://www.pivotpl.com/wp-content/uploads/2020/07/Pivot_Socioeconomic-disparities-in-Australian-schooling-during-COVID-19_1July2020.pdf
- Forkosh-Baruch, A. (2018). Preparing Preservice Teachers to Transform Education with Information and Communication Technologies. In Voogt, J., Knezek, G., Christensen, R. & K.-W. Lai (Eds.), *Second Handbook of Information Technology in Primary and Secondary Education* (pp. 415-432). Springer International Publishing. https://doi.org/10.1007/978-3-319-71054-9_28
- Fransecky, R. B., & Debes, J. L. (1972). *Visual literacy: A way to learn--A way to teach*. Association for Educational Communications and Technology.
- Frisoli, P. S. J. (2010). Assumptions, emotions, and interpretations as ethical moments: navigating a small-scale cross-cultural online interviewing study. *International Journal of Qualitative Studies in Education*, 23(4), 393-405. <https://doi.org/10.1080/09518398.2010.492810>
- Gallop, G., Kavanagh, T., & Lee, P. (2021). *Valuing the Teaching Profession. An independent Inquiry*. The New South Wales Teacher's Federation. <https://www.nswtf.org.au/inquiry>
- Gee, J. P. (2014). *An introduction to discourse analysis: theory and method* (Fourth ed.). Routledge.
<https://doi.org/10.4324/9781315819679>
- Geertz, C. (1973). *The interpretation of cultures: selected essays*. Basic Books.
- Gibson, J. J. (1966). *The senses considered as perceptual systems*. Houghton Mifflin.
- Gibson, J. J. (1979). *The ecological approach to visual perception*. Houghton Mifflin.
- Giunco, K. M., Rosen-Reynoso, M., Friedman, A. A., Hunter, C. J., & Cownie, C. T., III. (2020). Lessons from the field: Catholic school educators and COVID-19. *Journal of Catholic Education U6* <https://doi.org/10.15365/joce.2301172020>
- Glaser, B. G. (1978). *Theoretical sensitivity*. University of California.
- Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory: strategies for qualitative research*. Aldine. <https://go.exlibris.link/dy2f0Tgg>
- Glesne, C. (2016). *Becoming qualitative researchers: An introduction*. Pearson.
<https://www.pearson.com/us/higher-education/program/Glesne-Becoming-Qualitative-Researchers-An-Introduction-5th-Edition/PGM214061.html>
- Goodman, L. A. (1961). Snowball sampling. *The Annals of Mathematical Statistics*, 32(1), 148-170.
<http://www.jstor.org.libproxy.murdoch.edu.au/stable/2237615>
- Gourlay, L. (2021). There Is No 'Virtual Learning': The Materiality of Digital Education. *Journal of New Approaches in Educational Research*, 9(2), 57-66. <https://doi.org/10.7821/naer.2021.1.649>

- Graham, A., & Sahlberg, P. (2020). *Growing up digital Australia phase 1 results: How screen-based technologies are impacting school students*. The Gonski Institute for Education. University of New South Wales. <https://www.gie.unsw.edu.au/growing-digital-australia-phase-1-results-how-screen-based-technologies-are-impacting-school-students>
- Graham, A., & Sahlberg, P. (2021). *Growing up digital Australia phase 2 results: How screen-based technologies are impacting school students*. The Gonski Institute for Education. University of New South Wales <https://www.gie.unsw.edu.au/growing-digital-australia-phase-1-results-how-screen-based-technologies-are-impacting-school-students>
- Greimas, A. J. (1970). *On meaning: selected writings in semiotic theory* (Vol. 38.). University of Minnesota Press. <https://go.exlibris.link/89wW6FHt>
- Grossman, P., & Stodolsky, S. (1995). Content as context: The role of school subjects in secondary school teaching. *Educational Researcher*, 24(8), 5-23. <https://doi.org/10.3102/0013189X024008005>
- Gudmundsdottir, G. B., & Hathaway, D. M. (2020). "We always make it work": Teachers' agency in the time of crisis. *Journal of Technology and Teacher Education*, 28(2), 239. <https://www-learntechlib-org.libproxy.murdoch.edu.au/primary/p/216242/>.
- Gurukkal, R. (2020). Will COVID 19 turn higher education into another mode? *Higher Education for the Future*, 7(2), 89-96. <https://doi.org/10.1177/2347631120931606>
- Guzman, A., & Nussbaum, M. (2009). Teaching competencies for technology integration in the classroom. *Journal of Computer Assisted Learning*, 25(5), 453-469. <https://doi.org/10.1111/j.1365-2729.2009.00322.x>
- Habib, L., & Johannesen, M. (2020). The role of academic management in implementing technology-enhanced learning in higher education. *Technology, Pedagogy and Education*, 29(2), 129-146. <https://doi.org/https://doi.org/10.1080/1475939X.2020.1722735>
- Hall, J., Roman, C., Jovel-Arias, C., & Young, C. (2020). Pre-service teachers examine digital equity amidst schools' COVID-19 responses. *Journal of Technology and Teacher Education*, 28(2), 435-442. <https://www-learntechlib-org.libproxy.murdoch.edu.au/primary/p/216180/>.
- Hammond, M. (2010). What is an affordance and can it help us understand the use of ICT in education? *Education and Information Technologies*, 15(3), 205-217. <https://doi.org/10.1007/s10639-009-9106-z>
- Harrison, C., Tomás, C., & Crook, C. (2014). An e-maturity analysis explains intention–behavior disjunctions in technology adoption in UK schools. *Computers in Human Behavior*, 34, 345-351. <https://doi.org/10.1016/j.chb.2013.10.042>
- Hausfather, S. J. (1996). Vygotsky and schooling: Creating a social context for learning. *Action In Teacher Education*, 18(2), 1-10. <https://doi.org/10.1080/01626620.1996.10462828>
- Heckathorn, D. D. (2011). Comment: Snowball versus respondent-driven sampling. *Sociological Methodology*, 41(1), 355-366. <https://doi.org/10.1111/j.1467-9531.2011.01244.x>
- Heeter, C. (1999). *Technology enhanced learning: A white paper* Internet 2 Sociotechnical Summit, 1999, Ann Arbor. <http://commtechlab.msu.edu/publications/files/TenhancedLearning.pdf>

- Higgs, J. (2020). Digital discourse in classrooms: Language arts teachers' reported perceptions and implementation. *Research in the Teaching of English*, 55(1), 32-55.
<https://www.proquest.com/docview/2450654786?pq-origsite=gscholar&fromopenview=true>
- Higher Education Funding Council for England. (HEFCE) (2009). “*Enhancing learning and teaching through the use of technology: A revised approach to HEFCE’s strategy for elearning.*”
http://www.hefce.ac.uk/media/hefce1/pubs/hefce/2009/0912/09_12.pdf
- Hinchman, L. P., & Hinchman, S. (1997). *Memory, identity, community: The idea of narrative in the human sciences*. Suny Press.
- Hobbs, R. (2019). Transgression as creative freedom and creative control in the media production classroom. *International Electronic Journal of Elementary Education*, 11(3), 207-215.
<https://doi.org/10.26822/iejee.2019349245>
- Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). The difference between emergency remote teaching and online learning. *Educause Review*, 27, 1-12.
<https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning>
- Holland, D. C. (1998). *Identity and agency in cultural worlds*. Harvard University Press.
- Horne, D. (1971). *The lucky country* (3rd. ed.). Penguin Books. <https://go.exlibris.link/dScLynj1>
- Howard, S. K., Chan, A., & Caputi, P. (2015). More than beliefs: Subject areas and teachers' integration of laptops in secondary teaching. *British Journal of Educational Technology*, 46(2), 360-369.
<https://doi.org/10.1111/bjet.12139>
- Howlett, M. (2021). Looking at the ‘field’ through a Zoom lens: Methodological reflections on conducting online research during a global pandemic. *Qualitative Research*, 1-16.
<https://doi.org/10.1177/1468794120985691>
- Hull, G. A., & Katz, M.-L. (2006). Crafting an agentive self: Case studies of digital storytelling. *Research in the Teaching of English*, 41(1), 43-81. <http://www.jstor.org/stable/40171717>
- Hutchby, I. (2001). Technologies, texts and affordances. *Sociology (Oxford)*, 35(2), 441-456.
<https://doi.org/10.1177/S0038038501000219>
- International Society for Technology in Education. (2017). *ISTE standards for educators*. International Society for Technology in Education.
<https://doi.org/https://doi.org/10.7821/naer.2021.1.703>
- Jacob, S., & Furgerson, S. (2015). Writing interview protocols and conducting interviews: Tips for students new to the field of qualitative research. *Qualitative Report* 17. 1-10
<https://doi.org/10.46743/2160-3715/2012.1718>
- James, N., & Busher, H. (2009). *Online interviewing*. Sage. <https://doi.org/10.4135/9780857024503>
- Jandrić, P., Knox, J., Besley, T., Ryberg, T., Suoranta, J., & Hayes, S. (2018). Postdigital science and education. *Educational Philosophy and Theory*, 50(10), 893-899.
<https://doi.org/10.1080/00131857.2018.1454000>

- Jandrić, P., Ryberg, T., Knox, J., Lacković, N., Hayes, S., Suoranta, J., Smith, M., Stekete, A., Peters, M., McLaren, P., Ford, D. R., Asher, G., McGregor, C., Stewart, G., Williamson, B., & Gibbons, A. (2019). Postdigital dialogue. *Postdigital Science and Education*, 1(1), 163-189. <https://doi.org/10.1007/s42438-018-0011-x>
- Janssen, J., Stoyanov, S., Ferrari, A., Punie, Y., Pannekeet, K., & Sloep, P. (2013). Experts' views on digital competence: Commonalities and differences. *Computers and Education*, 68, 473-481. <https://doi.org/10.1016/j.compedu.2013.06.008>
- Jay, M. (1973). *The dialectical imagination: a history of the Frankfurt School and the Institute of Social Research 1923-1950*. Heinemann Educational Books. <https://go.exlibris.link/bysXV8T9>
- Joia, L. A., & Lorenzo, M. (2021). Zoom in, Zoom out: The impact of the COVID-19 pandemic in the classroom. *Sustainability* 13(5), 2531. <https://doi.org/10.3390/su13052531>
- Joseph, D., & Trinick, R. (2021). 'Staying apart yet keeping together': Challenges and opportunities of teaching during COVID-19 across the Tasman. *New Zealand Journal of Educational Studies*, 1-18. <https://doi.org/10.1007/s40841-021-00211-6>
- Kajee, L. (2018). Teacher education students engaging with digital identity narratives. *South African Journal of Education*, 38(2), 1-9. <https://doi.org/10.15700/saje.v38n2a1501>
- Kaptelinin, V. (2015). The mediational perspective on digital technology: Understanding the interplay between technology, mind and action. In P. Sara, J. Carey, & B. Barry (Eds.), *The Sage Handbook of Digital Technology Research* (203-223). SAGE Publications, Ltd. <https://doi.org/10.4135/9781446282229.n19>
- Kardaras, N. (2016). *Glow kids: How screen addiction is hijacking our kids-and how to break the trance*. St. Martin's Press.
- Keane, T., & Keane, W. F. (2018). Parents' expectations, perceptions and concerns when schools implement a 1:1 program. *Education and Information Technologies*, 23(4), 1447-1464. <https://doi.org/10.1007/s10639-017-9671-5>
- Kervin, L., Verenikina, I., Jones, P., & Beath, O. (2013). Investigating synergies between literacy, technology and classroom practice. *Australian Journal of Language and Literacy*, 36(3), 135-147. <https://search.informit-org.libproxy.murdoch.edu.au/doi/10.3/informit.629312527289323>
- Khatchadourian, L. (2020). False dilemmas? Or what COVID-19 can teach us about material theory, responsibility and 'hard power'. *Antiquity*, 94(378), 1649-1652. <https://doi.org/10.15184/aqy.2020.195>
- Khlaif, Z., Salha, S., Affouneh, S., Rashed, H., & ElKimishy, L. (2020). The Covid-19 epidemic: Teachers' responses to school closure in developing countries. *Technology, Pedagogy and Education*, 30(1), 95-109. <https://doi.org/10.1080/1475939X.2020.1851752>
- Kirkwood, A., & Price, L. (2014). Technology-enhanced learning and teaching in higher education: What is 'enhanced' and how do we know? A critical literature review. *Learning, Media and Technology*, 39(1), 6-36. <https://doi.org/https://doi.org/10.1080/17439884.2013.770404>

- Kuczynski, L., & Navara, G. S. (2006). Sources of innovation and change in socialization, internalization and acculturation. In M. Killen & J. G. Smetana (Eds.), *Handbook of Moral Development*. Lawrence Erlbaum Associates.
- Kvale, S. (1996). *Interviews: An introduction to qualitative research interviewing*. Sage.
- Kvale, S., & Brinkmann, S. (2015). *InterViews: learning the craft of qualitative research interviewing* (3rd ed.). Sage Publications. <https://go.exlibris.link/Br0xV8bv>
- Laffey, J. (2004). Appropriation, mastery and resistance to technology in early childhood preservice teacher education. *Journal of Research on Technology in Education*, 36(4), 361-382. <https://doi.org/10.1080/15391523.2004.10782420>
- Lamb, A. J., & Weiner, J. M. (2021). Technology as infrastructure for change: district leader understandings of 1:1 educational technology initiatives and educational change. *Journal of Educational Administration*, 59(3), 335-351. <https://doi.org/10.1108/JEA-10-2020-0220>
- Lambert, K., & Gray, C. (2020). Performing 'teacher': exploring early career teachers' becomings, work identities and the [mis-]use of the professional standards in competitive educational assemblages. *Pedagogy, Culture & Society*, 28(4), 501-523. <https://doi.org/10.1080/14681366.2019.1663247>
- Lee, D. (2021). The ethics of extrapolation: Science fiction in the technical communication classroom. *Technical Communication Quarterly*, 1-12. <https://doi.org/10.1080/10572252.2020.1866678>
- Leontiev, A. (1981). *Problems of the Development of Mind. English translation, Moscow, 1981*. Progress Press. (Russian original published 1947).
- Lévi-Strauss, C. (1978). *Myth and meaning*. University of Toronto Press. <https://doi.org/10.3138/j.ctt1gxxr10>
- Lindfors, M., Pettersson, F., & Olofsson, A. D. (2021). Conditions for professional digital competence: the teacher educators' view. *Education Inquiry*, ahead-of-print(ahead-of-print), 1-20. <https://doi.org/10.1080/20004508.2021.1890936>
- Litvinova, M., Liu, Q.-H., Kulikov, E. S., & Ajelli, M. (2019). Reactive school closure weakens the network of social interactions and reduces the spread of influenza. *Proceedings of the National Academy of Sciences - PNAS*, 116(27), 13174-13181. <https://doi.org/10.1073/pnas.1821298116>
- Liu, C. H., & Doan, S. N. (2020). Psychosocial stress contagion in children and families during the COVID-19 pandemic. *Clinical Paediatrics*, 59(9-10), 853-855. <https://doi.org/10.1177/0009922820927044>
- Lloyd, M., Skyring, C., & Nykvist, S. (2015). Teacher professional conversations-the oz-Teachers story. *Australian Educational Computing*, 30(2), 1-13. <https://eprints.qut.edu.au/91399/>
- Lobe, B., & Morgan, D. L. (2021). Assessing the effectiveness of video-based interviewing: a systematic comparison of video-conferencing based dyadic interviews and focus groups. *International Journal of Social Research Methodology*, 24(3), 301-312. <https://doi.org/10.1080/13645579.2020.1785763>
- Lorente, L. M. L., Arrabal, A. A., Pulido-Montes, C. (2020). The Right to Education and ICT during COVID-19: An International Perspective. *Sustainability*, 12(21), 9091. <https://doi.org/10.3390/su12219091>

- Louis-Jean, J., & Cenat, K. (2020). Beyond the face-to-face learning: A Contextual Analysis. *Pedagogical Research*, 5(4), em0077. <https://doi.org/10.29333/pr/8466>
- Lynch, T. L., Hicks, T., Bartels, J., Beach, R., Connors, S., & Damico, N. (2019). Reprint: Beliefs for integrating technology into the English language arts classroom. *Contemporary Issues in Technology and Teacher Education*, 19(3), 305-317.
- Mackenzie, N., & Knipe, S. (2006). Research dilemmas: paradigms, methods and methodology. *Issues in Educational Research*, 16(2), 193-205. <http://www.iier.org.au/iier16/mackenzie.html>
- Majid, M. A. A., Othman, M., Mohamad, S. F., Lim, S. A. H., & Yusof, A. (2017). Piloting for interviews in qualitative research: Operationalization and lessons learnt. *International Journal of Academic Research in Business and Social Sciences*, 7(4), 1073-1080. <https://doi.org/10.6007/IJARBS/v7-i4/2916>
- Males, S., Bate, F., Macnish, J. (2017). The impact of mobile learning on student performance as gauged by standardised test (NAPLAN) scores. *Issues in Educational Research*, 27(1). https://researchonline.nd.edu.au/edu_article/179.
- Mansfield, C. F. (2020). *Cultivating Teacher Resilience: International Approaches, Applications and Impact* (1st 2020. ed.). Springer
- Maor, D. (2008). Changing relationship: Who is the learner and who is the teacher in the online educational landscape? *Australasian Journal of Educational Technology*, 24(5), 627-638. <https://doi.org/10.14742/ajet.1195>
- Maor, D. (2017). Using TPACK to develop digital pedagogues: A higher education experience. *Journal of Computers in Education (the official journal of the Global Chinese Society for Computers in Education)*, 4(1), 71-86. <https://doi.org/10.1007/s40692-016-0055-4>
- Maor, D., & Fraser, B. J. (2005). An online questionnaire for evaluating students' and teachers' perceptions of constructivist multimedia learning environments. *Research in Science Education*, 35(2), 221-244. <https://doi.org/10.1007/s11165-005-2148-3>
- Markham, A. N. (2004). The Internet as research context. In S. Clive, G. Giampietro, G. Jaber, & S. David (Eds.), *Qualitative Research Practice* (pp. 358-374). Sage.
- Marquart, M., & Russell, R. (2020). Dear Professors: Don't Let Student Webcams Trick You. *Educause Review*. <https://er.educause.edu/blogs/2020/9/dear-professors-dont-let-student-webcams-trick-you>
- Matusov, E. (2009). *Journey into dialogic pedagogy*. Nova Science Publishers.
- McGarr, O., & Engen, B. K. (2021). By-passing teachers in the marketing of digital technologies: the synergy of educational technology discourse and new public management practices. *Learning, Media and Technology*, 1-16. <https://doi.org/10.1080/17439884.2021.2010092>
- McLuhan, M. (1964). *Understanding media: the extensions of man*. Routledge & K. Paul. <https://go.exlibris.link/3TftWGF5>
- McLuhan, M., & Fiore, Q. (1967). *The medium is the message*. Penguin Books. <https://go.exlibris.link/7vs0cV6B>

- McLuhan, M., & Powers, B. R. (1989). *The global village: transformations in world life and media in the 21st century*. Oxford University Press. <https://go.exlibris.link/wJW8Hjv9>
- Means, B., Bakia, M., & Murphy, R. (2014). *Learning online: what research tells us about whether when and how*. Routledge, Taylor & Francis Group. <https://doi.org/10.4324/9780203095959>
- Meccawy, M., Meccawy, Z., & Alsobhi, A. (2021). Teaching and learning in survival mode: Students and faculty perceptions of distance education during the COVID-19 lockdown. *Sustainability*, 13(14), 8053-8076. <https://doi.org/doi.org/10.3390/su13148053>
- Mello, R. A. (2002). Collocation analysis: a method for conceptualizing and understanding narrative data. *Qualitative Research* 2(2), 231-243. <https://doi.org/10.1177/146879410200200206>
- Mertens, D. M. (2005). *Research methods in education and psychology: integrating diversity with quantitative & qualitative approaches* (2nd ed.). Sage Publications. <https://go.exlibris.link/pSdQYg2r>
- Messarlis, P., Moriarty, S. (2005). Visual literacy Theory. In K. L. Smith, S. Moriarty, K. Kenney, & G. Barbatsis (Eds.), *Handbook of Visual Communication* (pp. 503-524). Routledge. <https://doi.org/10.4324/9781410611581-45>
- Mishler, E. G. (1995). Models of narrative analysis: A typology. *Journal of Narrative and Life History*, 5(2), 87-123. <https://doi.org/10.1075/jnlh.5.2.01mod>
- Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, 108(6), 1017-1054. <https://doi.org/10.1111/j.1467-9620.2006.00684.x>
- Mitchell, W., & Irvine, A. (2008). I'm okay, you're okay?: Reflections on the well-being and ethical requirements of researchers and research participants in conducting qualitative fieldwork interviews. *International Journal of Qualitative Methods*, 7(4), 31-44. <https://doi.org/10.1177/160940690800700403>
- Moll, L. C. (1990). *Vygotsky and education: instructional implications and applications of sociohistorical psychology*. Cambridge University Press. <https://go.exlibris.link/Q05Hm35M>
- Moll, L. C. (2014). *L.S. Vygotsky and education*. Routledge. <https://doi.org/10.4324/9780203156773>
- Moore, S. D. M., Jayme, B. D. O., & Black, J. (2021). Disaster capitalism, rampant edtech opportunism, and the advancement of online learning in the era of COVID19. *Critical Education*, 12(2). <https://ices.library.ubc.ca/index.php/criticaled/article/view/186587>
- Murphy, C., Marcus-Quinn, A., & Hourigan, T. (2021). Exploring the Ripple Effect of 'Always On' Digital Work Culture in Secondary Education Settings. In A. Marcus-Quinn & T. Hourigan (Eds.), *Handbook for Online Learning Contexts: Digital, Mobile and Open: Policy and Practice* (pp. 339-353). Springer. https://doi.org/10.1007/978-3-030-67349-9_23
- Nasrallah, H. A. (2020). COVID-19 and the precipitous dismantlement of societal norms. *Current Psychiatry*, 19(7), 12. <https://go.exlibris.link/FtRz5dcK>
- National Health and Medical Research Council (NHRMC). (2018). *National Statement on Ethical Conduct in Human Research 2007 (updated 2018)*. <http://nhrmc.gov.au/guidelines/publications/e72>

- Ndongfack, M. N. (2015). TPACK constructs: A sustainable pathway for teachers' professional development on technology adoption. *Creative Education*, 6(16), 1697. <http://dx.doi.org/10.4236/ce.2015.616171>
- The New London Group. (1996). A pedagogy of multiliteracies: designing social futures. *Harvard Educational Review*, 66(1), 60-92. <https://doi.org/10.17763/haer.66.1.17370n67v22j160u>
- The New London Group. (2000). A pedagogy of multiliteracies: designing social futures. In B. Cope & M. Kalantzis (Eds.), *Multiliteracies: literacy learning and the design of social futures* (pp. pp. 9-38.). MacMillan Publishers Australia Pty Ltd. <https://go.exlibris.link/TMHY3Q52>
- The New South Wales Teachers Federation, (NSWTF). (2020). With community onside, it's time to lock down 'reset'. *Education*, 101(3), 1-1. <https://go.exlibris.link/rNKgp0bg>
- Nikolopoulou, K. (2020). Secondary education teachers' perceptions of mobile phone and tablet use in classrooms: Benefits, constraints and concerns. *Journal of Computers in Education*, 7(2), 257-275. <https://link.springer.com/article/10.1007/s40692-020-00156-7>
- Nikolopoulou, K. (2021). Mobile Devices and Mobile Learning in Greek Secondary Education: Policy Empirical Findings and Implications in Marcus-Quinn, A., & Hourigan, T. Eds. (2021). *Handbook for online learning contexts: Digital, mobile and open: Policy and practice*. p 69 Springer International Publishing. <https://doi-org.libproxy.murdoch.edu.au/10.1007/978-3-030-67349-9>
- Noy, C. (2008). Sampling Knowledge: The Hermeneutics of Snowball Sampling in Qualitative Research. *International Journal of Social Research Methodology*, 11(4), 327-344. <https://doi.org/10.1080/13645570701401305>
- Olivola, C. Y., & Oppenheimer, D. M. (2008). Randomness in retrospect: Exploring the interactions between memory and randomness cognition. *Psychonomic Bulletin & Review*, 15(5), 991-996. <https://doi.org/10.3758/PBR.15.5.991>
- O'Mara, J., Laidlaw, L., & Blackmore, J. (2017). The new digital divide: Digital technology policies and provision in Canada and Australia. In *The Case of the iPad* (pp. 87-104). Springer.
- Organisation for Economic Cooperation & Development. (2018). *The future of education and skills: Education 2030*. OECD Education Working Papers. [https://www.oecd.org/education/2030/E2030%20Position%20Paper%20\(05.04.2018\).pdf](https://www.oecd.org/education/2030/E2030%20Position%20Paper%20(05.04.2018).pdf)
- Orlando, J. (2014). Teachers' changing practices with information and communication technologies: An up-close, longitudinal analysis. *Research in Learning Technology*, 22, 1-15. <https://doi.org/10.3402/rlt.v22.21354>
- Ottenbreit-Leftwich, E., & Ertmer, P. (2010). Teacher technology change. How knowledge, beliefs and culture intersect. *Journal of Research on Technology in Education*, 42(3). <https://doi.org/http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.507.8357>
- Oxford English Dictionary. (2021a). "critical, adj.". Oxford University Press. <https://www.oed.com/view/Entry/44592?redirectedFrom=critical>
- Oxford English Dictionary. (2021b). "theme, n.". Oxford University Press. <https://www.oed.com/view/Entry/200321?rskey=4HxLtd&result=1>

- Page, R. E. (2003). Feminist narratology? Literary and linguistic perspectives on gender and narrativity. *Language and Literature*, 12(1), 43-56. <https://doi.org/10.1177/096394700301200103>
- Pajares, M. F. (1992). Teachers' beliefs and educational research: Cleaning up a messy construct. *Review of Educational Research*, 62(3), 307-332. <https://doi.org/10.3102/00346543062003307>
- Parker, J., Maor, D., & Herrington, J. (2013). Authentic online learning: Aligning learner needs, pedagogy and technology. *Issues in Educational Research*, 23(2), 227.
- Passey, D. (2019). Technology-enhanced learning: Rethinking the term, the concept and its theoretical background. *British Journal of Educational Technology*, 50(3), 972-986. <https://doi.org/10.1111/bjet.12783>
- Patston, T. J., Kennedy, J., Jaeschke, W., Kapoor, H., Leonard, S. N., Cropley, D. H., & Kaufman, J. C. (2021). Secondary Education in COVID Lockdown: More Anxious and Less Creative—Maybe Not? *Frontiers in Psychology*, 12, 391. <https://doi.org/10.3389/fpsyg.2021.613055>
- Patton, M. Q. (2015). *Qualitative research & evaluation methods: integrating theory and practice* (4th ed.). SAGE
- Pegrum, M., Oakley, G., & Faulkner, R. (2013). Schools going mobile: A study of the adoption of mobile handheld technologies in Western Australian independent schools. *Australasian Journal of Educational Technology*, 29(1). <https://doi.org/10.14742/ajet.64>
- Phillips, L.G., Cain, M., Ritchie, J., Campbell, C., Davis, S., Brock, C., Burke, G., Coleman, K., Joosa, E. (2021). Surveying and resonating with teacher concerns during COVID-19 pandemic. *Teachers and Teaching, Theory and Practice*, 1-18. <https://doi.org/10.1080/13540602.2021.1982691>
- Pies, R. (2009). Should DSM-V designate "internet addiction" a mental disorder? *Psychiatry* 6(2), 31-37. <https://pubmed.ncbi.nlm.nih.gov/19724746>
- Pinnegar, S., & Daynes, J. (2007). Locating narrative inquiry historically: Thematics in the turn to narrative. In J. Clandinin (Ed.), *Handbook on narrative inquiry: Mapping a methodology*. Sage Publications.
- Ponterotto, J. G. (2006). Brief Note on the origins, evolution, and meaning of the qualitative research concept "Thick Description". *Qualitative Report*, 11(3), 538. <https://go.exlibris.link/V90qSq6P>
- Preece, D. (2006). *Researching Education: Different Ways of Knowing and Doing*, University of Birmingham.
- Prensky, M. (2001). Digital natives, digital immigrants Part 1. *On the Horizon*, 9(5), 1-6. <https://doi.org/10.1108/10748120110424816>
- Puentedura, R. (2006). *Transformation, technology, and education*. <http://hippasus.com/resources/tte/>
- Radvansky, G. A. (2012). Across the Event Horizon. Current directions in psychological science. *Journal of the American Psychological Society*, 21(4), 269-272. <https://doi.org/10.1177/0963721412451274>
- Ramiel, H. (2019). User or student: constructing the subject in Edtech incubator. *Discourse*, 40(4), 487-499. <https://doi.org/10.1080/01596306.2017.1365694>

- Rapanta, C., Botturi, L., Goodyear, P., Guàrdia, L., & Koole, M. (2020). Online university teaching during and after the Covid-19 crisis: Refocusing teacher presence and learning activity. *Postdigital Science and Education*, 2(3), 923-945. <https://doi.org/10.1007/s42438-020-00155-y>
- Rasskazova, O., Alexandrov, I., Burmistrov, A., Siniavina, M., & Cornelis, E. (2020). Key competencies in the digital age and transformation of education. IOP conference series. *Materials Science and Engineering*, 940(1). <https://doi.org/10.1088/1757-899X/940/1/012093>
- Rehn, N., Maor, D., & McConney, A. (2018). The specific skills required of teachers who deliver K-12 distance education courses by synchronous videoconference: implications for training and professional development. *Technology, Pedagogy and Education*, 27(4), 417-429. <https://doi.org/10.1080/1475939X.2018.1483265>
- Reich, J. (2021). Ed tech's failure during the pandemic, and what comes after. *Phi Delta Kappan*, 102(6), 20-24. <https://doi.org/10.1177/0031721721998149>
- Rittel, H. W. J., & Webber, M. M. (1973). Dilemmas in a general theory of planning. *Policy Sciences*, 4(2), 155-169. <https://doi.org/10.1007/BF01405730>
- Robert, D., & Shenhav, S. (2014). Fundamental assumptions in narrative analysis: Mapping the field. *Qualitative Report*. <https://doi.org/10.46743/2160-3715/2014.1005>
- Rogoff, B. (1994). Developing understanding of the idea of communities of learners. *Mind, Culture, and Activity* 1 (4) 209-229. <https://www.tandfonline.com/doi/abs/10.1080/10749039409524673>
- Rokeach, M. (1972). *Beliefs, attitudes and values: a theory of organization and change*. Jossey-Bass.
- Rosenthal, G. (2004). Biographical Research. In S. Clive, G. Giampietro, G. Jaber, & S. David (Eds.), *Qualitative Research Practice* (pp. 48-64). SAGE. <https://doi.org/10.4135/9781848608191>
- Rushkoff, D. (2002). Renaissance now! Media ecology and the new global narrative. *Explorations in Media Ecology*, 1(1), 41-57. https://doi.org/10.1386/eme.1.1.41_1
- Ryle, G. (1949). *The concept of mind*. Hutchinson's University Library.
- Saudelli, M. G., & Ciampa, K. (2016). Exploring the role of TPACK and teacher self-efficacy: An ethnographic case study of three iPad language arts classes. *Technology, Pedagogy and Education*, 25(2), 227-247. <https://doi.org/10.1080/1475939X.2014.979865>
- Schatzman, L., & Strauss, A. L. (1973). *Field research: strategies for a natural sociology*. Prentice-Hall. <https://go.exlibris.link/C3ppthT3>
- School of Isolated and Distance Education. (SIDE). (2021). Third party services. <https://www.side.wa.edu.au/about/documents/policies/950-third-party-services-notification.html>
- Scolari, C. A. (2018). *Media evolution*. De Gruyter. <https://doi.org/10.1515/9783110481129-010>
- Segal, P., & Heath, M. (2020). The “wicked problem” of technology and teacher education: Examining teacher educator technology competencies in a field-based literacy methods course. *Journal of Digital Learning in Teacher Education*, 36(3), 185-200. <https://doi.org/10.1080/21532974.2020.1753600>
- Selwyn, N. (1999). Differences in educational computer use: the influence of subject cultures. *Curriculum Journal* 10(1), 29-48. <https://doi.org/10.1080/0958517990100104>

- Selwyn, N. (2011). Editorial: In praise of pessimism—the need for negativity in educational technology. *British Journal of Educational Technology*, 42(5), 713-718. <https://doi.org/10.1111/j.1467-8535.2011.01215.x>
- Selwyn, N. (2012). Bursting out of the 'ed-tech' bubble. *Learning, Media and Technology*, 37(4), 331-334. <https://doi.org/10.1080/17439884.2012.680212>
- Selwyn, N. (2013). *Distrusting educational technology: Critical questions for changing times*. Routledge. <https://doi.org/10.4324/9781315886350>
- Selwyn, N., & Aagaard, J. (2021). Banning mobile phones from classrooms—An opportunity to advance understandings of technology addiction, distraction and cyberbullying. *British Journal of Educational Technology*, 52(1), 8-19. <https://doi.org/10.1111/bjet.12943>
- Selwyn, N., Hillman, T., Eynon, R., Ferreira, G., Knox, J., Macgilchrist, F., Sancho-Gil, J. M. (2020). What's next for Ed-Tech? Critical hopes and concerns for the 2020s. *Learning, Media and Technology*, 45(1), 1-6. Göteborgs, University. <https://doi.org/10.1080/17439884.2020.1694945>
- Shah, S. (2004). The researcher/interviewer in intercultural context: a social intruder. *British Educational Research Journal*, 30(4), 549-575. <https://doi.org/10.1080/0141192042000237239>
- Shah, H. (2021). COVID-19 recovery: science isn't enough to save us. *Nature*, 591(7851), 503-503. <https://doi.org/10.1038/d41586-021-00731-7>
- Short, P. M. (1994). Defining teacher empowerment. *Education (Chula Vista)*, 114(4), 488. <https://go.exlibris.link/xY1YM525>
- Shin, D. (2014). Web 2.0 tools and academic literacy development in a US urban school: A case study of a second-grade English language learner. *Language and Education*, 28(1), 68-85. <https://doi.org/10.1080/09500782.2013.771653>
- Smirnova, L., Lazarevic, B., & Malloy, V. (2018). There is more to digital learning than counting on your fingers: Transforming learning and teaching with digital pedagogy. *Journal of Educational Multimedia and Hypermedia*, 27(2), 231-244. <http://sr4lp2wr3c.search.serialssolutions.com/?genre=article&issn=1055-8896>
- Smith, J. K. (1993). Thinking about technological change: linear and evolutionary models. In R. Thomson (Ed.), *Learning and Technological Change* (pp. 65-79). Palgrave Macmillan. https://doi.org/10.1007/978-1-349-22855-3_5
- Smith, P. (2020). *Hard lockdown and a “health dictatorship”*: Australia’s lucky escape from covid-19. *BMJ*, 371. <https://doi.org/10.1136/bmj.m4910>
- State School Teachers’ Union of WA (SSTUWA). (2020a). *Encouraging signs but safety concerns remain in schools*. <https://www.sstuwa.org.au/news-home-1/2020/may/media-release-encouraging-signs-safety-concerns-remain-schools>
- State School Teachers’ Union of WA (SSTUWA). (2020b). *COVID-19 Updates*. State School Teachers' Union of W.A. <https://www.sstuwa.org.au/COVID-19>
- Stobart, A., & Duckett, S. (2021). Australia's response to COVID-19. *Health Economics, Policy and Law*, 17(1), 95-106. doi:10.1017/S1744133121000244

- Stornaiuolo, A. (2017). Contexts of Digital Socialization: Studying Adolescents' Interactions on Social Network Sites. *Human Development*, 60(5), 233-238. <https://doi.org/10.1159/000480341>
- Stommel, J. (2014). Critical Digital Pedagogy: A Definition. *Hybrid Pedagogy: A digital journal of learning, teaching and technology*. <https://hybridpedagogy.org/critical-digital-pedagogy-definition/>
- Strauss, A., & Corbin, J. (1990). *Basics of qualitative research. Grounded theory procedures and techniques*. Sage. <https://go.exlibris.link/mZxLb6Ly>
- Strauss, A., & Corbin, J. (1994). Grounded theory methodology: An overview. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 273–285). Sage.
- Stieler-Hunt, C., Jones, C. (2019). A professional development model to facilitate teacher adoption of interactive, immersive digital games for classroom learning. *British Journal of Educational Technology*, 50(1), 264-279. <https://doi.org/10.1111/bjet.12679>
- Suárez-Rodríguez, J., Almerich, G., Orellana, N., & Díaz-García, I. (2018). A basic model of integration of ICT by teachers: competence and use. *Educational Technology Research and Development*, 66(5), 1165-1187. <https://doi.org/10.1007/s11423-018-9591-0>
- Surry, D. W., & Baker, F. W. (2016). The co-dependent relationship of technology and communities. *British Journal of Educational Technology*, 47(1), 13-28. <https://doi.org/10.1111/bjet.12349>
- Tawfik, A. A., Shepherd, C. E., Gatewood, J., & Gish-Lieberman, J. J. (2021). First and second order barriers to teaching in K-12 online learning. *TechTrends*, 1-14. <https://doi.org/10.1007/s11528-021-00648-y>
- Thompson, A. D., Lindstrom, D., & Schmidt-Crawford, D. A. (2020). COVID-19 era: A time for us to lead. *Journal of Digital Learning in Teacher Education*, 36(4), 204-205. <https://doi.org/10.1080/21532974.2020.1813238>
- Trust, T., & Whalen, J. (2020). Should teachers be trained in emergency remote teaching? Lessons learned from the COVID-19 pandemic. *Journal of Technology and Teacher Education*, 28(2), 189-199. <https://www-learntechlib-org.libproxy.murdoch.edu.au/primary/p/215995/>.
- UCISA (Universities and Colleges Information Systems Association). 2008. *2008 Survey of Technology Enhanced Learning for Higher Education in the UK*. <http://www.ucisa.ac.uk/~media/Files/publications/surveys/TEL%20survey%202008%20pdf>
- UNESCO (2011). *Digital Literacy in Education. Policy Brief*. UNESCO. <http://unesdoc.unesco.org/images/0021/002144/214485e.pdf>
- UNESCO. (2012). *Mobile learning for teachers in Europe: Exploring the potential of mobile technologies to support teachers and improve practice*. Paris 2012. <https://unesdoc.unesco.org/ark:/48223/pf0000216167>

- United Nations Children's Fund/United Nations Educational, Scientific and Cultural Organization. (2007) *A Human Rights-Based Approach to Education for All: A framework for the realization of children's right to education and rights within education*. UNICEF and UNESCO, www.unicef.org/publications/index_42104.html
- United Nations, (UN). (1989). *Convention on the Rights of the Child. Ratified by General Assembly Resolution 44/25, 20 November 1989*. The Office of the High Commissioner for Human Rights (OHCHR) <https://www.ohchr.org/Documents/ProfessionalInterest/crc.pdf>
- Vähäsantanen K. (2015). Professional agency in the stream of change: Understanding educational change and teachers' professional identities. *Teaching and Teacher Education*, 47, 1-12. <https://doi.org/10.1016/j.tate.2014.11.006>
- Valtonen, A. (2020). Approaching Change with and in Design. *She Ji: The Journal of Design, Economics, and Innovation*, 6(4), 505-529. <https://doi.org/10.1016/j.sheji.2020.08.004>
- Valverde-Berrocoso, J., Garrido-Arroyo, M. d. C., Burgos-Videla, C., & Morales-Cevallos, M. B. (2020). Trends in educational research about e-learning: A systematic literature review (2009–2018). *Sustainability*, 12(12), 5153. <https://doi.org/10.3390/su12125153>
- Vaske, J. J., M. P. Donnelly, M. P. (1999). A value-attitude-behavior model predicting wildland preservation voting intentions. *Society & Natural Resources*, 12(6), 523-537. <https://doi.org/10.1080/089419299279425>
- Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *The Journal of Strategic Information Systems*, 28(2), 118-144. <https://doi.org/10.1016/j.jsis.2019.01.003>
- Viner, R. M., Russell, S. J., Croker, H., Packer, J., Ward, J., Stansfield, C., Mytton, O., Bonell, C., & Booy, R. (2020). School closure and management practices during coronavirus outbreaks including COVID-19: a rapid systematic review. *The Lancet Child & Adolescent Health*, 4(5), 397-404. <https://go.exlibris.link/1Vb7McsT>
- Vygotsky, L. S. (1978). *Mind in society* (M. Cole, V. John-Steiner, S. Scribner, & E. Souberman, Eds.). Harvard University Press.
- Vygotsky, L. S. (1981). The Instrumental method in psychology. In J. V. Wertsch (Ed.), *The concept of activity in soviet psychology*. 3-35. Sharpe. <https://go.exlibris.link/2KjBDqQr>
- Wahlquist, C. (2021). *A State Apart: Mark McGowan's pandemic performance taps into WA's separatist past*. Guardian Australia. <https://www.theguardian.com/australia-news/2021/feb/27/a-state-apart-mark-mcgowans-pandemic-performance-taps-into-was-separatist-past>
- Walter, M. E. (2019). *Social research methods* (4th ed.). Oxford University Press.
- Watt, D. (2007). On becoming a qualitative researcher: the value of reflexivity. *Qualitative Report*, 12(1), 82. <https://go.exlibris.link/3CjBINxB>
- Weinstein, C. S. (1979). The physical environment of the school: A review of the research. *Review of Educational Research*, 49(4), 577-610. <https://doi.org/10.3102/00346543049004577>
- Wells, K. (2011). *Narrative Inquiry*. Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780195385793.001.0001>
- Wengraf, T. (2001). *Qualitative research interviewing: biographic narrative and semi-structured methods*. Sage

- Wertsch, J. V. (1993). *Voices of the mind: a sociocultural approach to mediated action*. Harvard University Press. <https://go.exlibris.link/nYdZJBqc>
- Wertsch, J. V. (1994). The primacy of mediated action in sociocultural studies. *Mind, Culture and Activity*, 1(4), 202-208. <https://doi.org/10.1080/10749039409524672>
- Wertsch, J. V. (1998). *Mind as action*. Oxford university press.
- Wertsch, J. V. (2002). Computer mediation, PBL, and dialogicality. *Distance Education*, 23(1), 105-108. <https://doi.org/10.1080/01587910220124008>
- Wertsch, J. V., Daniels, H., & Cole, M. (2007). *The Cambridge Companion to Vygotsky*. Cambridge University Press. <https://doi.org/10.1017/CCOL0521831040>
- Western Australia. Commissioner for children and young people. (2021). *Speaking out survey 2021. The views of children and young people on their wellbeing – a summary report*. Government of Western Australia. <https://www.cyp.wa.gov.au/our-work/projects/speaking-out-survey/>
- Western Australia. Department of Education. (2019a). *Applications. Evaluation Rubric for device applications*. <http://det.wa.edu.au/curriculumsupport/primary/detcms/navigation/tablet-technology-for-education/applications/>
- Western Australia. Department of Education. (2019b). The Student Mobile Phones in Public Schools policy. <https://www.education.wa.edu.au/mobile-phones>
- Western Australia. Department of Education. (2020). Applications. Evaluation Rubric for device applications. <http://det.wa.edu.au/curriculumsupport/primary/detcms/navigation/tablet-technology-for-education/applications/>
- Western Australia. Department of Education. (2020a). *Changes to government school learning from Monday. Government of Western Australia*. <https://www.mediastatements.wa.gov.au/Pages/McGowan/2020/03/Changes-to-government-school-learning-from-Monday.aspx>
- Western Australia. Department of Education. (2020b). *Soft Term 2 opening for public schools as part of COVID-19 response*. Government of Western Australia. <https://www.mediastatements.wa.gov.au/Pages/McGowan/2020/04/Soft-Term-2-opening-for-public-schools-as-part-of-COVID-19-response.aspx>
- Western Australia. Department of Education. (2020c). *All WA students to return to school from next week*. Government of Western Australia. <https://www.mediastatements.wa.gov.au/Pages/McGowan/2020/05/All-WA-students-to-return-to-school-from-next-week.aspx>
- Western Australia. Department of Education. (2020d). Learning at Home. <https://www.education.wa.edu.au/learning-at-home>
- Western Australia. Department of the Premier and Cabinet. (2020). *COVID-19 coronavirus: State of Emergency Declarations*. <https://www.wa.gov.au/government/document-collections/covid-19-coronavirus-state-of-emergency-declarations>

- Williams, L., Rollins, L., Young, D., Fleming, L., Grealy, M., Janssen, X., Kirk, A., MacDonald, B., & Flowers, P. (2021). What have we learned about positive changes experienced during COVID-19 lockdown? Evidence of the social patterning of change. *PloS one*, *16*(1), e0244873-e0244873. <https://doi.org/10.1371/journal.pone.0244873>
- Williamson, B., Eynon, R., & Potter, J. (2020). Pandemic politics, pedagogies and practices: digital technologies and distance education during the coronavirus emergency. *Learning, Media and Technology*, *45*(2), 107-114. <https://doi.org/10.1080/17439884.2020.1761641>
- Willis, L.-D., & Exley, B. (2018). Using an online social media space to engage parents in student learning in the early years: Enablers and impediments. *Digital Education Review* (33), 87-104. <https://go.exlibris.link/N8mrRXBB>
- Woolner, P., Thomas, U., & Tiplady, L. (2018). Structural change from physical foundations: The role of the environment in enacting school change. *Journal of Educational Change*, *19*(2), 223-242. <https://doi.org/10.1007/s10833-018-9317-4>
- World Health Organisation. (WHO). (2020a). WHO Director-General's opening remarks at the Mission briefing on COVID-19. 11 March. <https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020>
- World Health Organisation. (WHO). (2020b). WHO Director-General's opening remarks at the Mission briefing on COVID-19. 12 March. <https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-mission-briefing-on-covid-19---12-march-2020>

Appendix A

Information Letter

Technology-enhanced learning and teaching: Narratives of English secondary teacher practices in Western Australia.

Investigators: Dr Wendy Cumming-Potvin
Associate Professor,
School of Education
Murdoch University.

Dr Sian Chapman,
Senior Lecturer,
School of Education,
Murdoch University

Contact Person: Richard Gordon
Email: richard.gordon@murdoch.edu.au

Dear English Secondary Teacher,

My name is Richard Gordon and I am conducting a research project that investigates the effects of technology-enhanced learning in English classrooms. The aim of this study is to explore teacher attitudes and values decision-making processes regarding technology integration in secondary English classrooms and we invite you to participate in this project.

This research forms a part of my accelerated Masters by research Degree in Education, and is supervised by Associate Professor Dr. Wendy Cumming-Potvin at Murdoch University and Dr. Sian Chapman, Senior Lecturer at Murdoch University.

Nature and Purpose of the Study

It is often thought that technology use in pedagogical practice is ubiquitous, especially after the COVID-19 pandemic home learning experience. However, many researchers have questioned whether or not this is actually the case, because studies over the past decade have found that integration of technology-enhanced

learning practices may not be as widespread as once thought. This may be due to factors such as teacher values and attitudes towards technology and its deployment in their classrooms.

Therefore, the aim of this study is to investigate the factors that determine English teacher deployment of technology-enhanced learning and to find out whether their experiences during and after the COVID-19 pandemic lockdown period have resulted in changed pedagogical practices.

If you consent to take part in this research study, it is important that you understand the purpose of the study and the interview procedure you will be engaging with. Please make sure that you ask any questions you may have, and that all your questions have been answered to your satisfaction before you agree to participate.

What the Study will involve:

This study is based on interviews of a sample of WA secondary English teachers. The interviews will consist of a series of semi-structured interview questions designed to elucidate the experiences and uses of technology in your professional life.

If you decide to participate in this study, you will be invited to be interviewed by the researcher online and at a time of your convenience.

To volunteer for an online interview:

Complete the Consent form attached and email this back to the above address.

It is estimated that the online interview will take approximately 60 minutes.

Voluntary Participation and Withdrawal from the Study

Your participation in this study is entirely voluntary. You may withdraw at any time without discrimination or prejudice. All information is treated as confidential and no names or other details that might identify you will be used in any publication arising from the research. If you withdraw, all information you have provided will be destroyed. However, withdrawal from the study will not be possible after the interview transcripts have been anonymised and authorised, and the data will not be destroyed from that point in time. Interested teachers who volunteer to participate will be asked to sign a consent form (copy enclosed) prior to the interview session.

Privacy

Your privacy is very important. Only the researchers specified in this letter have access to the information provided by the participants. Privacy and confidentiality will be assured at all times. All information is treated as confidential and no names other details that might identify participants will be used in any publication arising out of the research. The data will only be used for this project and will not be used in any extended or future research without obtaining explicit written consent from participants.

Benefits of the Study

It is possible that teacher participants may benefit from participating in this study via the opportunity to share their experiences and reflections on technology integration in their classrooms. There is no guarantee that participants will personally benefit from this experience, but the knowledge gained may benefit future practice in the field.

Possible Risks

There are no specific risks anticipated with participation in this study. However, if participants find that they becoming distressed as a result of participation, they will be advised of support facilities available.

If you have any questions about this project please feel free to contact either myself, Richard Gordon at richard.gordon@murdoch.edu.au or my supervisor, Dr Cumming-Potvin, on ph. 08 9360 2192.

My supervisor and I are happy to discuss with you any concerns you may have about this study.

If you wish to receive a summary of the findings once we have analysed the information from this study we will email you a summary of our findings. You can expect to receive this feedback in approximately six to nine months.

Your participation and approval to conduct this study would be greatly appreciated. If you agree, please reply by email indicating your participation and attach the completed consent form that accompanies this letter and email.

Thank you for your assistance with this research project.

Sincerely

Richard Gordon
Accelerated Research Masters with Training Candidate.
Murdoch University.

Appendix B

Consent Form

Technology-enhanced learning and teaching: Narratives of English Secondary teacher practices in Western Australia.

I have read the participant information sheet, which explains the nature of the research and the possible risks. The information has been explained to me and all my questions have been satisfactorily answered. I have been given a copy of the information sheet to keep.

I am happy to be interviewed and for the interview to be audio recorded. I understand that I do not have to answer particular questions if I do not want to and that I can withdraw at any time without needing to give a reason and without consequences to myself. However, should withdrawal occur after the data sets have been anonymised, the data set will not be destroyed.

I agree that research data from the results of the study may be published provided my name or any identifying data is not used. I have also been informed that I may not receive any direct benefits from participating in this study.

I understand that all information provided by me is treated as confidential and will not be released by the researcher to a third party unless required to do so by law.

Participant's name: _____

Signature of Participant: _____

Date:/...../.....

I confirm that I have provided the Information Letter concerning this study to the above participant; I have explained the study and have answered all questions asked of me.

Signature of researcher: _____

Date:/...../.....

Appendix C

Semi-structured interview protocol



Semi-structured interview protocol

Project: Technology-enhanced learning and teaching: Narratives of secondary English teachers in Western Australia

Murdoch University Human Research Ethics Committee Protocol approval: 2021/115

Student researcher: Richard Gordon student No. 34012883

Lead researcher (Supervisor) Associate Professor Dr Wendy Cumming-Potvin

Co-supervisor: Senior Lecturer Dr Sian Chapman

School of Education

Murdoch University Western Australia

Beginning the interview

Hello and thank you for making this time available in your week for this.

I just want to confirm your written consent to participate was given and received by my myself.

This interview will take about one hour, and you can choose to pass on any question if you want to.

This session will be audio recorded only, not vision and the audio files transcribed.

Your anonymity will be assured by the use of pseudonyms in the final transcriptions for names, places of work and locations if mentioned during the course of the interview.

In this interview context technology can include hardware and software, such digital applications (apps), mobile devices (smartphones watches & tablets), e-learning software, interactive whiteboards, Learning Management Systems (LMS) and digital dashboards as well as overarching networked learning environments and virtual/augmented reality programs. To name a few.

Do you have any questions before we start?

I will begin the recording now.

Warm up question:

Can you begin by telling me your occupation and how many years you have been in the profession?

Question 1.

Can you describe your use of technology *outside* of your professional life?

How has this evolved over time? i.e. over your life so far?

Then: how has this evolved during and after the COVID-19 pandemic lockdowns?

My Prompts:

- Tell me about a time when...? a) back in the 90s when...b) early internet days c) smartphone introduction...your experiences with apps etc.?

Question 2.

Can you describe your use of technology in your professional life?

How has this evolved over time- over your career?

During and after the COVID-19 lockdowns?

My Prompts:

- Talk me through how you...?

Question 3.

What is your experience of integrating technology in your pedagogical practices?

Prompts:

- Can you think of a time when...?

Further help if necessary:

- Had great increases or difficulties in student engagement?
- You went through a process of research & decision making –used the Ed Dept framework?
- Had experiences of class exploration/freedom/transgression/safety?

Question 4.

What influences your choice of technology when you are planning secondary English classes (e.g., Apps, websites, software)?

My Prompts:

- Can you think of a time when ...?

Question 5.

As a secondary English teacher, what is your experience of using print and/or digital or other media texts to support different types of learners and learning styles?

My prompts:

- How does this impact when ...?
- How do you decide to ...?
- What are you thinking when ...?

Question 6.

What is your perception of your students' use of technology, particularly in the secondary English area?

My prompts:

- Tell me about a time when ...?
- What are you thinking when ...?
- How did it feel when ...?

Ending the interview

Warm-down discussion and thank you.

Do you have anything to add or comment about before we close the interview?

Thank you for your time today.

Protocol ends.

Appendix D

Teaching with Technology model

